

The Effects of Patient Anger on Treatment and Appraisal of Chronic Pain:

A Simulation Study

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Abstract

Medically unexplainable pain produces suffering, disability, and financial hardship. Assessment of pain by others is subjective and vulnerable to bias. Biased decisions may lead to inadequate care, suffering, and other undesirable consequences. It was proposed that patient anger would cause a naturally-occurring vicious cycle that leads to biased assessment, which in turn leads to more anger. It was hypothesized that angry patients would receive less sympathy, and be rated as being less disabled, in less pain, and more responsible for their pain. It was also hypothesized that angry patients would receive harsher treatment choices. One hundred thirty-one participants listened to audiotapes of fictitious male or female patients in a simulated doctor-patient interview of a patient with chronic pain. The interviews varied in whether or not the patient presented as angry. Participants then watched one of three videos of the patient undergoing a standard shoulder exam culled from previous research. Participants rated the sympathy they had for the patient, the amount of pain they saw the patient as being in, the control they perceived the patient to have over their pain, how much support they would give the patient, the Pain Disability Index, and the Family Health Questionnaire. Participants also chose between two treatments for the patient, one presented as involving greater pain than the other. Angry patients received significantly less sympathy and were viewed as being in significantly more emotional distress. However, the other hypotheses were not supported. While patients who presented as angry did receive less sympathy, and were viewed as being in less emotional distress, they were not viewed as being less

disabled, in less pain, or in more control of their pain. They did not receive less support from participants, nor were they assigned to harsher treatment options. The data did reveal that female patients received less sympathy, and were viewed as being in less pain and more emotional distress than male patients by both male and female participants. There was a trend towards viewing female patients as being poorer candidates for rehabilitation.

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I. Introduction

Pain is an important health and social problem. It has been suggested that more than a third of the world's population has problems with either chronic or recurring pain (Stucky, Gold, & Zhang, 2001). Pain is defined by the International Association for the Study of Pain (IASP) as "...[a]n unpleasant sensory and emotional experience associated with actual or potential tissue damage and described in terms of that damage" (Turk & Melzack, 2001, p.xiii). Chronic pain has been defined as pain lasting longer than six months. Four types of chronic pain have been identified: 1) pain outlasting healing time, 2) pain related to chronic degenerative diseases, 3) pain without an identifiable cause, and 4) cancer pain (Leo, 2003; Markenson, 1996). Many forms of chronic pain (e.g. fibromyalgia, chronic back pain) have no known specific medical cause (Jensen et al., 2001). Medically unexplainable pain produces suffering, disability, and financial hardship. At least 50 million people in the United States are disabled due to chronic pain (Markenson, 1996). In Canada, 10% of Canadians over 15 and 16.8% of Canadians 55-64 experience chronic pain, and the number of adults reporting disability due to pain in 2001 was at least 2.4 million (Government of Canada, 2004; Statistics Canada, 2001).

Care and proper assessment of persons with chronic pain is an important issue. Assessment of pain by others is subjective and based on social interaction, and is therefore vulnerable to bias (Tait & Chibnall, 2005). Assessment bias in pain can be defined as an inclination to systematically under- or over-estimate a patient's pain (Reber, 1995). Assessment bias can occur in health care decisions, leading people to underestimate the amount of pain or disability a person has (Marquié et al., 2003). This is a problem, as biased decisions may lead to inadequate care, suffering, longer periods of

recovery and disability, or other undesirable consequences (Lundquist, Higgins & Prkachin, 2002; Solomon, 2001). This study is addressed to the factors that can lead to biased assessment of people with chronic pain.

Lundquist et al. (2002) proposed a model of pain communication that stressed the changeability of an observer's response to another's pain, based on contextual (surrounding) factors. According to this model, contextual factors that may affect observers' responses include: onset controllability (an observer's perception of the degree of control a person has over the cause of his or her pain), and maintenance controllability (an observer's perception of the degree of control a person has over his or her continued misfortune). Studies have shown that such contextual factors do influence the assessment of pain and treatment choices made by others (Chibnall & Tait, 1995; Chibnall, Tait, & Ross, 1997; Lundquist et al., 2002; Tait & Chibnall, 1994). In a system in which the patient may have no recourse if a misassessment occurs, it is very important to understand how bias may affect assessments, especially in the case of medically unexplained pain.

There is good reason to believe that patient anger does create biases in evaluation. Anger has been defined as "A feeling involving a belief that a person one cares for has, intentionally or through neglect, been treated without respect and a want to have that respect reestablished" (Fernandez & Turk, 1995, p.165). Anger is a negative emotion of varying intensity which, like other emotions, is made up of a tendency towards action and a cognitive appraisal of the situation. Some action tendencies, such as aggression, are unique to anger (Fernandez & Turk, 1995). "...anger can be a major complicating factor in the treatment of chronic pain patients" (Fernandez & Turk, 1995, p.172).

Gatchel and Turk (1996, p. 278) noted, that "[a]nger is one of the most common and difficult emotions that chronic pain patients experience". Studies have reported that people who have medically unexplained pain report high levels of anger, hostility and depression. This may stem from feelings of frustration about the pain, lack of treatments that help, psychosocial stressors associated with chronic pain, mistreatment, and not being understood (Dodds, 2000; Fernandez, 2002; Gatchel, 2004; Greenwood, Thurston, Rumble, Waters, & Keefe, 2003; Okifuji, Turk & Curran, 1999; Petrie et al., 2005; Wasan, Wooton, & Jamison, 2005). Gatchel (2004) suggested that these feelings of mistreatment and the secondary loss associated with chronic pain also lead to entitlement issues. "The financial and material losses they may have sustained can add to the belief that someone... 'owes me'" (p.203).

Based on observations and the available literature, for the purposes of the present study, it is proposed that anger on the part of patients instills a naturally-occurring vicious cycle that leads to biased assessment, which, in turn, leads to more anger (See Figure 1). If medical evidence accounting for the origin of pain is absent, the situation may be amplified. No research has specifically assessed the bias that may occur from patient-expressed anger in their assessments.

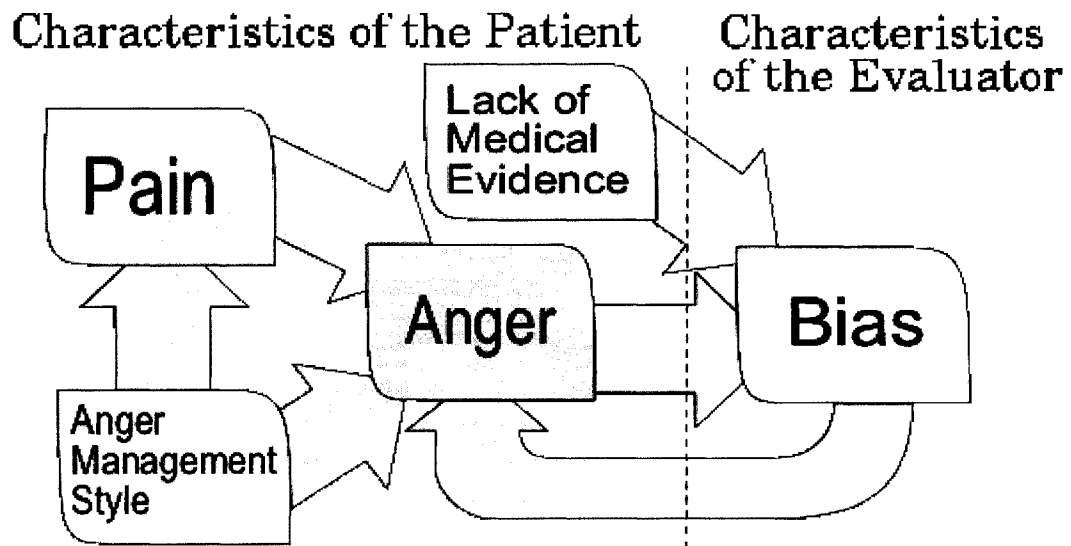


Figure 1. A Feedback Model of Anger and Bias in Pain Assessment.

Prevalence of Anger in Pain

Several studies have found higher levels of anger in those with chronic pain conditions, such as arthritis and headaches, compared to those without. Anecdotal evidence suggests that the same is true of persons with chronic pain of unknown origin (Bag, Hacıhasanoglu, & Tufekci, 2005; Bruehl, Burns, Chung, Ward, & Johnson, 2002; Feldman, Downey, & Schaffer-Neitz, 1999; Fernandez, 2002; Fernandez & Turk, 1995; Nicholson, 2001). In some cases this increase in anger may be more extreme. "A small proportion of chronic pain patients becomes (sic) angry, demanding and manipulative in the course of their illness" (Wall & Melzack, p.338).

One study by Moos & Solomon (1965) used the MMPI and a cognitive inventory to compare females with arthritis to their closest-aged sister without arthritis, with respect to anger (Wheeler, Little, & Lehner, 1951). Participants with arthritis showed higher levels of anger, and sensitivity to or awareness of anger. Another study, which surveyed Icelandic children aged 11-16 using a 256-item questionnaire, found that anger affected

76.5% of respondents who had back pain on a weekly basis, and 78.3% of participants who had headaches on a weekly basis (Fernandez, 2002). The prevalence of anger increased with the number of types of pains, and pain frequency. Other studies have confirmed that anger in chronic pain conditions is related to the level of pain experienced, but the direction of this relationship is not clear (Bruehl et al., 2002). One problem with relying on self-report measures of anger in chronic pain is denial of anger due to social desirability, which may be magnified in chronic pain (Fernandez & Turk, 1995).

Studies have reported that persons with chronic pain report high levels of hostility and depression as well as anger, possibly stemming from feelings of mistreatment (Fernandez & Turk, 1995). Anger may also stem from secondary loss associated with prolonged pain and disability (Gatchel, Adams, Polatin, & Kishino, 2002). Hostility has been defined as "an attitudinal bias that predisposes the individual to view others as untrustworthy, undeserving, and immoral" (Fernandez & Turk, 1995, p.167), or an anticipation of anger from others. Hostility increases the chance of perceiving anger in others and of reacting with anger (Greenwood et al., 2003).

One study found that 69% of chronic pain patients reported being angry with at least one person. Okifuji (1999) had 96 chronic pain patients from a multidisciplinary pain center fill out the Targets of Anger Scale (TAS), along with the Multidimensional Pain Inventory (MPI), a depression scale, and the Oswestry Disability Inventory (ODI) (Information on scales found in: Fairbank, Couper, Davies & O'Brien, 1980; Kerns, Turk & Rudy, 1985). Interestingly, in 74% of cases, the participants were angry with themselves. Health care professionals came in as the second target of anger at 62%, closely followed by those viewed as responsible for their pain (60%; Greenwood et al.,

2003; Okifuji et al., 1999). Gender differences were not found in the number of patients admitting to anger, anger intensity, or anger targets. Higher levels of anger were related to pain and disability, and anger at oneself was related to pain and depression. Interestingly, the anger towards health care professionals was *not* related to pain, disability, or depression (Okifuji et al., 1999). This pattern of anger and blame is important to understand in chronic pain, as it is the cognitive appraisal of pain that can potentially lead to anger. The appraisal of the effect of pain itself on one's life has been termed 'second order appraisal' in a model of pain by Price and Bushnell (2004). Second order appraisals include such factors as loss, interference with activities, etc., while first order appraisals are appraisals of pain unpleasantness. As we shall see later, anger can have further negative consequences on pain (Fernandez, 2005; Lombardo, Tan, Jensen, & Anderson, 2005).

It has been suggested that the chronic pain population is higher on state anger levels than trait anger levels. While state anger measures deal with the amount of anger a person feels at one time, trait anger measures deal with anger predisposition (Stuart-Hamilton, 1996). Fernandez & Turk (1995) showed that patients with chronic pain have higher state anger compared to controls, and that state anger was a positive predictor of the patients' pain ratings.

The existence of gender differences in the level of anger in chronic pain patients has been supported and disputed in the literature (Fernandez & Turk, 1995). For example, one study using Spielberger's Anger Expression scale and the Cynical Distrust Scale (Chesney & Rosenman, 1985; Greenglass & Julkunen, 1989), found no difference in the level of anger between male and female chronic pain patients entering a

rehabilitation program (Lisspers, Nygren, & Söderman, 1998). A more recent study in the United States also found no gender differences in anger level in chronic pain patients entering a pain management clinic (Riley et al., 2001). However, earlier findings indicated that men with chronic pain show more anger than women, and one recent study suggests that healthy women may be higher in levels of outwardly expressed anger (anger-out) than men following experimentally induced pain (Cesario, Hobara & Kuhl, 2005; Fernandez & Turk, 1995).

Relationship of Anger and Pain

Research suggests that anger does play a role in pain, and that this relationship has been underestimated until recently (Gatchel, Adams, Polatin & Kishino, 2002). There are many schools of thought on the relationship of anger and pain, and it is likely that no single theory can be used to explain all aspects of the relationship. One style of anger management, anger-in, refers to suppressing anger, while another style, anger-out, involves expressing anger verbally or physically (Fernandez & Turk, 1995). One theory is that repressed anger can lead to pain as a conversion symptom, as anger expression may be socially undesirable (Burns, 1997; Janssen, Spinhoven & Brosschot, 2001). This psychodynamic theory may explain why high anger-in is related to chronic pain, but it does not explain why high anger-out is also related to increased pain levels (Bruehl et al., 2002; Fernandez, 2002; Fernandez & Turk, 1995; Lefebvre, Labban, & Wofford, 2005). One study did find that anger-in accounted for 32% of the variability in depression, which accounted for 21% of the variability in perceived disability in chronic headache patients (Fernandez & Turk, 1995). Wade, Price, Hamer, Schwartz, & Hart (1990) found that only low pain levels were predicted by anger and anxiety. Higher levels of pain were

predicted by anxiety, but not anger. Therefore anger may play a more important role in exacerbating pain in those with lower levels of pain. Of course, in studies of this nature, there is the problem of directionality in the findings. For example, one study using headache patients found that pain increased before anger (Arena, Blanchard, & Andrasik, 1984). A prospective diary study using 109 patients with reflex sympathetic dystrophy found that depressed mood preceded pain increase, not anger or suppressed anger (indirectly measured). However, increased pain on the previous day was related to increased anger on the next day (Feldman, Downey, & Schaffer-Neitz, 1999).

High hostility scores are related to poor health habits, showing one way in which anger may prolong the experience of chronic pain (Fernandez & Turk, 1995). Poor health habits include such behaviours as: poor eating habits, not taking vitamins, taking drugs, and taking risks with one's health (Fernandez, 2000). Gatchel et al. (2002) noted that anger "can feed a destructive cycle in which the individual experiences increased problems and progressively loses coping abilities" (p.103). Anger may also promote 'maladaptive pain behaviours', such as avoidance of work activities, which can then play a role in the maintenance of chronic pain conditions (Greenwood et al., 2003).

Fernandez and Millburn (1994) found that, in an in-patient program for chronic pain management, the three most important emotions in predicting pain-related distress were anger, sadness and fear. It has also been found that 33% of pain severity in spinal cord injury patients could be explained by anger/hostility scores (Fernandez & Turk, 1995).

It has been proposed that certain unpleasant stimuli, including pain, can lead to anger simply by their physiologically unpleasant presence (Fernandez & Turk, 1995).

Pain has been shown to lead to aggression in humans and animals (Anderson, Anderson, Dill, & Deuser, 1998). Since the reaction of anger in this case does not require cognitive appraisal, it is hypothesized to be subcortical. However, as processing of stimuli can occur without awareness, it is not possible to rule out some processing of information (Fernandez & Turk, 1995). This hypothesis is supported by a recent study by Janssen, Spinhoven, and Arntz (2004) who studied the controllability of experimental pain in healthy controls, and the results of being incapable of controlling pain. Patients believed they had control over experimentally-induced pain based on their performance of a task, having been told that entering the 'correct' code would halt the electrical stimulus. There were two conditions studied. In one condition the code was always correct after the first few trials, in the other the code entered by the participant was never correct. It was found that in those unable to control their pain, there was an increase specifically in anger levels, but not in anxiety, depression or pain intensity. It is interesting to note that in the non-control condition, pain levels were not increased, which suggested to the authors that anger did not change pain levels, but changed how much pain one was willing to cope with (Janssen et al., 2004).

Treating anger levels can have an ameliorating effect on pain. Staats, Hekmat, and Staats (2004) conducted two small experiments looking at this issue. In one experiment, after taking measures of pain tolerance, they exposed participants to anger flooding (visual and audio reminders of recent angering events) followed by treatment for this anger. In the second study, participants were exposed to anger desensitization (relaxation techniques given while visualizing recently angering events). In both cases, anger levels went down after the manipulation, and pain thresholds increased.

Biology of Anger and Pain

Recent studies have shown that the same area of the brain activated in physical pain is also activated in emotional pain, highlighting a possible link between anger and pain (Eisenberger, Leberman, & Williams, 2003; Panksepp, 2003). This study used fMRI and a virtual game to assess the brain areas activated by social exclusion. It was found that the emotional pain caused by being excluded from the game coincided with the activation of the same areas activated in previous fMRI studies of pain (Right ventral prefrontal cortex; Eisenberger et al., 2003).

In another fMRI study, the areas associated with pain were not activated during painful tasks if the participants were distracted (in this case the participants were doing a virtual reality simulation). It could be hypothesized that chronic pain would be worsened by the opposite- excessive rumination, which can be caused by anger (Hoffman, 2004).

Some have hypothesized a relationship between anger and a dysfunctional opioid system (the descending pain modulation system). Bruehl et al. (2002) looked at the relationships among trait anger, anger management style, and opioid functioning, through the use of an opioid and a placebo blockade. They found that persons high in anger-out showed evidence of a compromised opioid system, by the lack of difference in pain sensitivity when given either a placebo blockade or an opioid blockade. Those with an intact opioid system would have been expected to show greater pain sensitivity when given an opioid blockade. A trend towards a compromised opioid system was also found for people high in trait hostility. These effects were still found after controlling for depression. Treatment through anger management can increase the production of opioids

(Peck, 2002). Contrary to expectations, people with a high anger-in management style were not found to lack an intact opioid system, leading the authors to conclude that anger-in management style influences pain sensitivity through mechanisms other than opioid dysfunction (Bruehl et al., 2002).

Further research by Bruehl using earlier data has increased our understanding of this relationship. Burns and Bruehl (2005) further supported the hypothesis of an opioid dysfunction in high anger-out patients with chronic pain. They hypothesized that chronic pain patients high in anger-out would be more likely to use opioids due to the dysfunction of their own opioid systems. Therefore, a relationship between anger-out and pain level should be found among high anger-out patients not taking opioids, and absent in those using opioids (n=136). The results supported their hypothesis, after controlling for depression and anxiety. The fact that levels of anger-in did not interact with opioid use to predict pain levels in the way that anger-out did was further support for their hypothesis. This suggested that only those high in anger-out gained a reduction in pain through the use of opioids.

Further studies have looked at the effects of anger-out in specific chronic pain groups (Bruehl, Chung, & Burns, 2003). Complex regional pain syndrome (CRPS) has been defined as "[a] variety of painful conditions that usually follow injury, occur regionally, and have a distal predominance of abnormal findings, exceeding both in magnitude and duration the expected clinical course of the inciting event, often resulting in significant impairment of motor function [which] shows variable progression over time" (Wall & Melzack, p.837). Although not completely understood, CRPS is associated with the sympathetic nervous system, specifically the adrenergic system. Given studies

that showed an increase in cardiovascular reactivity in participants high in anger-out, Bruehl et al. (2003) predicted that anger-out would have a greater impact on pain levels in CRPS than in other pain syndromes (in this case, non-CRPS chronic pain patients with limb pain). They studied 84 patients with chronic pain using a variety of questionnaires including the Anger Expression Inventory and the McGill Pain Questionnaire-Short form (Melzack, 1987; Spielberger et al., 1987). The results supported their hypothesis in that high anger-out predicted increased pain levels in the CRPS patients, but not in the non-CRPS chronic pain patients. This study reminds us that patients with chronic pain are not a homogenous group, and further research is needed on the effects of anger in various subgroups of chronic pain.

The reason for the hypothesized link between anger and opioids is not clear. In one study, experimentally-induced anger in healthy controls led to higher pain thresholds in those who controlled their anger expression (Janssen, Spinhoven, & Brosschot, 2001). It was hypothesized that the difference between these results and those in chronic pain populations may be due to the short-term effects of anger, rather than long-term effects of anger. It may be that habitual anger inhibition chronically increases the release of opioids, leading to either a depletion of endogenous opioids, or insensitivity to them (Bruehl et al., 2002). This would not explain the relationship between anger-out and pain. Anger-out may increase daily stress, and therefore lead to either a depletion of endogenous opioids, or insensitivity to them (Bruehl et al., 2002).

Bruehl, Chung, Donahue and Burns (In Press) recently investigated a possible genetic link between anger-out and pain. They investigated the A118G single nucleotide gene polymorphism in an opioid gene. They chose this target because of its relationship to

increased pain responses in patients after operations, where opioids were not found to work as well in patients with this polymorphism. They hypothesized that the relationships seen between opiod functioning and anger-out may be found in individuals who are 'predisposed' with this polymorphism. While the results did not show a direct relationship, they did suggest that while A118G was not directly related to anger-out, it did interact in determining use of analgesia post-operatively (Bruehl et al., In Press).

Further research done by Bruehl and Chung (In Press) in this area suggests that the defective opiod analgesia system described above may be inheritable. Using a double-blind crossover placebo-controlled study design, Bruehl and Chung tested whether an opiod blockage was more or less effective when controlling for parental chronic pain and current chronic pain of the participants. They expected that those with current chronic pain and/or parental chronic pain would not show increased experimental pain once an opiod blockade was induced, indicating that they were not using their endogenous opioids effectively. What they found was not only a lack of an effective opiod system for most types of experimental pain in those with current chronic pain or a parental history of chronic pain, but also an additive effect. Those with both a familial history of chronic pain and current chronic pain seemed to be most at risk of having a defective endogenous opiod system. A118G was not measured in this study, although it does lend credence to genetic links in this area. Research in this area is very new, and no doubt new discoveries will continue to be made. It is doubtful that one gene specifically will account for the relationship between anger-out and pain.

Others have suggested that anger leads to chronic muscle tension, (muscle reactivity or symptom-specific reactivity, tension myocitis syndrome), which is then

perceived as pain (Burns, 1997; Fernandez, 2002; Gatchel & Turk, 1996; Greenwood et al., 2003). Burns (1997) had 118 persons with chronic low back pain perform two tasks: a mental arithmetic task and anger recall interview. They expected to find symptom-specific reactivity (tightening of the muscles in the area of pain) during only the anger interview. It was found that, as predicted, anger and hostility were related to an increase of tension in the lower paraspinal muscle, but not the trapezius, during the anger recall interviews (Burns, 1997). A further hypothesis on the relationship between anger and pain in rheumatoid arthritis is that consistent anger could lead to immune dysregulation, thereby increasing pain (Greenwood et al., 2003).

"As a general rule, negative emotions generally increase clinical pain, particularly pain unpleasantness, and they are good predictors of pain-related behaviours and disability" (Price & Bushnell, 2004, p.133). Fernandez and Turk (1995, p.171) proposed a model of anger in pain that nicely summarizes some of the review so far (See figure 2).

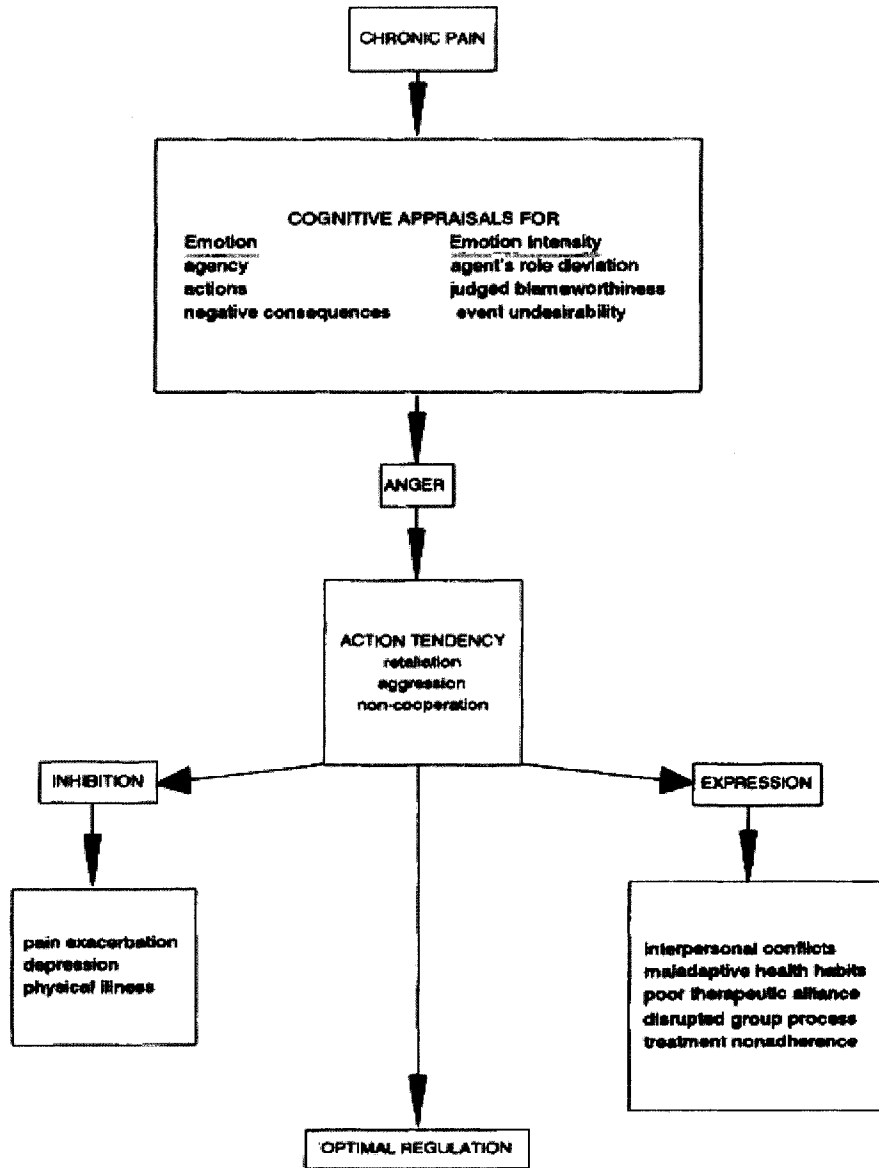


Fig. 2. Antecedents and consequences of anger associated with chronic pain (Fernandez & Turk, 1995, p.171).

Anger Management Style and Pain

As the foregoing review indicates, there is evidence that anger is related to pain. Higher anger levels have been linked to increased pain in patients with chronic pain, spinal cord injury pain, and cancer pain (Greenwood et al., 2003). Anger-management style, how one deals with anger when he or she is experiencing it has also been reported

to play an interesting role (Burns, Kubilus, & Breuhl, 2003). Fernandez & Turk (1995) reported that while men with chronic pain and anger tended to manage their anger in an anger-in manner, women showed an anger-out style of anger management.

A person's typical style of managing anger may influence his/her response to, and experience of, pain (Bruehl et al., 2002). Both anger-in and anger-out styles are related to sensitivity to pain and functional measures, such as decreased improvement in activity level or lifting capacity following a chronic pain program. (Bruehl et al., 2002; Fernandez & Turk, 1995; Gelkopf, 1997). A recent study involving 564 male veterans in a pain management program found that those with dysfunctional anger management styles (high on anger-out), and impaired anger control as measured by the Spielberger Anger expression scale (Spielberger et al. 1985) reported higher pain severity than veterans without dysfunctional anger management styles (Lombardo et al., 2005). People with a high anger-out management style have also been shown to have lower ischemic pain thresholds, and more postoperative pain compared with those without a high anger-out management style (Bruehl et al., 2002).

One study included over 100 patients from a multidisciplinary rehabilitation program for chronic pain (Burns, Johnson, Devine, Mahoney, & Pawl, 1998). Participants filled out the Anger Expression Inventory, and participated in functional capacity measures such as lifting capacity, and walking endurance. High anger-out was associated with less improvement in lifting capacity in men, while high levels of anger-in in men were related to less improvement in activity level. These effects were found after controlling for trait anger. However, contrary to expectation, people with a strong anger-in or anger-out style did not show less improvement overall. In a cross-sectional study of

patients with and without headache (n=422) it was found that participants in the headache group reported higher levels of anger-in after controlling for depression and anxiety, although the two groups did not differ in levels of hostility. (Nicholson, Gramling, Ong, & Buenevar, 2003).

It has been suggested that anger-in is related to increased pain because unexpressed anger may manifest itself as pain (Fernandez & Turk, 1995; Nicholson, 2001). Gelkopf (1997) exposed undergraduates to the cold pressor test. They provided reports of their pain using a verbal 101-point numerical rating scale. Features of their anger and anger management style were measured using the Multidimensional Anger Inventory. Gelkopf (1997) found a positive correlation between anger-in management style and the amount of pain the participants rated themselves as being in. It was also found that anger-in individuals had a significantly lower pain tolerance, shown by removing their hands more quickly from the cold pressor. The same effect, only smaller, was found for anger-out individuals (Gelkopf, 1997). Nicholson (2001), using a logistic regression, found that anger-in was predictive of temporomandibular pain.

In a study of 127 persons with chronic pain, and their spouses, Burns, Johnsons, Mahoney, Devine and Pawl (1996) found that anger management style and hostility both affected the patients' levels of adjustment. Female patients who were anger expressors, but had a low level of hostility, showed higher activity and lower pain levels, while males who did not express anger but harbored hostility, showed lower activity and higher pain levels. Anger may also serve to cut off social ties and disturb marital relations, again affecting the level of adjustment (Burns et al., 1996).

Further research has looked at the combined effects of emotion induction and anger management style on acute cold pressor pain (Burns, Kubilus, & Bruehl, 2003). In this study, 64 participants took part in a semi-structured interview during which they re-experienced an angry, sad or joyful memory. Anger management style was measured using the Anger Expression Inventory. Participants then underwent the cold pressor task. Participants scoring high on anger-out measures who went through the anger interview actually showed a higher pain threshold than those not going through the anger interview. It was hypothesized that this was due to the expression of anger that occurred during the interview, and that "anger expressors, when forced to suppress, show high pain sensitivity" (Burns et al., 2003, p.116). Those with an anger-in management style reported more pain than other participants in all conditions.

Burns, Bruehl and Caceres (2004) have since looked at whether or not anger needs to be provoked in order for anger management style to affect pain levels. The study used healthy participants, some of whom were provoked using mental arithmetic prior to being exposed to cold pressor pain. The authors found that high anger-out was related to pain only when anger was first provoked in the participant. Interestingly, participants scoring high on anger-in who were provoked showed a higher pain tolerance than if not provoked. Participants high on anger-in, therefore, showed low pain tolerance only if not first provoked. The authors hypothesized that this illustrated the excitation of endogenous opioids after provocation in the high anger-in group, but not the high anger-out group. Of course, one must take into account the use of acute pain rather than chronic pain in the experiment.

In summary, the studies reviewed in this section are quite consistent with the suggestion that anger is related to chronic pain intensity, in that higher anger is related to the experience of more pain, or lowered pain thresholds. This is true, in most circumstances, of anger-in and anger-out anger management styles, as well as hostility (Bruehl et al., 2002).

Biases in Assessment in Chronic Pain

The assessment of pain by others is subjective. A variety of factors can influence the perceptions that others have of the severity of the pain endured by those with chronic pain. There are doctors who may see cases of chronic pain as stemming from psychological causes, and therefore being less serious, as well as those who view chronic non-cancer pain as 'unreal' or 'invalid' pain, and see those who experience these conditions as malingerers (Chibnall & Tait, 1995; Sullivan & Ferrell, 2005; Tait & Chibnall, 1994).

There is a well-documented phenomenon in which doctors, health-care professionals, and others underrate the amount of pain a patient has, in comparison with the patient's self-rating (Chibnall & Tait, 1995; Lundquist et al., 2002; Marquié et al., 2003; Prkachin, Berzins, & Mercer, 1994). Many studies have been done using nurses, showing that patients with independent evidence of high levels of pain were rated as being in less pain (Solomon, 2001). However, the nurses did not say that the patients were exaggerating, leading Solomon to suggest that the underestimation was the product of a systematic bias. In support of this, studies have found that during a burn dressing, patient and nurse ratings of pain were in agreement only 31.5-37.7 % of the time (worst pain; overall pain; Solomon, 2001). It is important to understand this phenomenon further

as it is likely to affect patient care. "The most powerful predictor of inadequate cancer pain management in one study was the discrepancy between the physician's and the patient's estimate of the severity of the patient's pain and its interference with daily activities" (Sullivan & Ferrell, 2005, p.4).

One study found that students underestimated shoulder patients' pain by 50 - 80% (Prkachin et al., 1994). In this study, videos of patients undergoing shoulder examinations were shown to five students; student and patient ratings of pain were compared. Others have found that this relationship is 'dose-dependent', in that the more pain a patient reports, the larger the difference between patient and doctor reports (Chibnall & Tait, 1995; Chibnall et al., 1997).

There are several competing hypotheses as to the reason for this discrepancy. One is that health professionals have become desensitized by or hardened to the pain of their patients as a defense mechanism, which aids in protecting the doctor who may see a lot of pain and suffering in the course of his career. If the doctor were not able to distance him/herself it is hypothesized that he/she would become overwhelmed (Solomon, 2001). Another hypothesis is that the patient and the doctor may be using different high-end points on the scales used to measure pain, as the doctor may have seen more severe pain than the patient has (Chibnall & Tait, 1995). In support of this hypothesis, Marquié et al. (2003) found that expert physicians (when compared to novice physicians) showed a greater underestimation of a patient's pain. In this study, Marquié et al. compared physician and patient ratings of pain, upon entering and leaving the emergency room. When leaving, more experienced physicians showed a greater underrating of patient pain when compared to the residents' assessments. This same study found that the gender of

both the doctor and the patient affected pain ratings when the pain had no obvious cause. When the cause of pain was not obvious, female physicians underrated female pain as compared to male pain, and male physicians underrated male pain as compared to female pain (Marquié et al., 2003).

Marquié et al (2003) put forth another possible cause for the underestimations: that the doctors have learned to correct for patients' 'affective overreactions to pain'. Others have also suggested that doctors believe that patients exaggerate their pain (Biersdorff, 2000). It has also been postulated that due to the underestimation of pain by health care professionals, pain patients may feel the need to exaggerate their pain in order to be taken seriously (Prkachin et al., 1994).

Several studies (Chibnall & Tait, 1995; Chibnall, Tait & Ross, 1997; Tait & Chibnall, 1994) have looked at factors affecting the assessment of pain in a series of vignette studies. The vignettes used were hypothetical background stories about a pain patient, manipulated on a variable of interest (level of pain, whether or not there was medical evidence for his pain, etc.) Participants were asked to read the vignettes, respond to manipulation checks, and then answer questions about the pain patient, and their perceptions of them. These vignette and other types of studies have implicated a variety of characteristics as major determinants of assessment bias.

Characteristics of the Patient

The work of Tait and Chibnall has implicated patient characteristics as key influences on observers' judgments. Since their studies form a corpus of findings and are based on variations on a common design, their methods will be reviewed first, after which their general findings will be reported.

Tait and Chibnall (1994), manipulated perceptions of: objective medical evidence, the degree of control the person was perceived to have over their situation, valence of the relationship between the patient and the judge, judgment ratings of emotional distress, level of pain, and level of disability. Undergraduates were presented with eight hypothetical vignettes about chronic pain patients. The stories differed on the variables listed above, and were balanced in a Latin square design. Half of the vignettes were presented to females, and half to males. Perceptions of how much medical evidence was available, the valence of the relationship, and how responsible the chronic pain patient was for his current situation were measured on Likert scales, and completed as manipulation checks. Likert scales were also used to measure pain and emotional distress. Patient disability was measured using the Pain Disability Index (PDI), a measure of interference in seven areas of functioning, rated on a ten-point scale (Chibnall et al., 1994).

In a further study, Chibnall and Tait (1995) had participants rate the personality traits of the patient. Again, this study was done through written vignettes of patients. An addition included a report by the patient of his level of pain. This evaluation was done to look at stereotype functioning in the assessment of those with chronic pain.

Chibnall et al., (1994) studied medical students using vignettes. Medical evidence was either described as present or absent, and pain was rated as either low or high. Valence of the relationship (whether the participant saw the patient in a negative or positive manner) was measured by having the participant rate the patient on scales anchored with positive and negative stereotypic words (e.g. lazy-industrious, honest-

dishonest, and good-bad).

The findings of these studies suggest that medical evidence is given the greatest weight when assessing chronic pain patients (Chibnall et al., 1997). Patients whose pain was described as occurring in the absence of objective medical evidence were given lower pain ratings, and were rated as being less disabled (Tait & Chibnall, 1994). Further research showed that medical evidence was most important when the patients claimed high levels of pain (Chibnall et al., 1997). Interestingly, in a study with emergency room patients and doctors, Marquié et al. (2003) found that patients with an obvious cause of their pain were rated as being in less pain than patients lacking an obvious cause for their pain. It was hypothesized that those with non-obvious pain would have more anxiety, and therefore not only rate themselves as being in more pain (this was found to be true), but also that doctors would rate them as being in more pain.

The only close match found between patient and participant estimations of pain was when the pain was low, there was medical evidence, and the patients were well-liked (Chibnall et al., 1997). Therefore, lack of medical evidence is even more important when the patient is expressing high levels of pain (Chibnall et al., 1997). Those reporting low pain were rated as being in more pain than they claimed when they had medical evidence that was consistent with their report. Those with moderate pain were rated as being in moderate pain, and those claiming a high level of pain were rated as being in less pain.

Those with more medical evidence were viewed as being more disabled (Chibnall et al., 1997). Persons who were seen as responsible for their problems were seen as less disabled, less emotionally distressed, and as being in less pain (Tait & Chibnall, 1994). Participants rated the patients as having less pain, emotional distress

and disability when the patients reported less pain, if there was a lack of medical evidence, and when participants saw the patient in a negative manner (due to lack of medical evidence, etc; Chibnall & Tait, 1995). Contrary to these findings, Lunquist et al., (2002) found the presence or absence of medical evidence did not influence perception of patients' level of disability or emotional distress. Methodological differences, including the use of videos as well as printed materials may have been responsible for the inconsistency of these findings.

An interaction was found between the presence or absence of medical evidence for the patient's pain and the degree of pain reported by the patient (Chibnall & Tait, 1995). Without medical evidence to substantiate the claim of high amounts of pain, the gap between patient and observer ratings of pain widened considerably. This effect was also found in an interaction between medical evidence and disability, with medical evidence being more important when the patients presented themselves as being in a large amount of pain.

Distress ratings were also affected by an interaction (Chibnall & Tait, 1995). When there was a positive relationship between the patient and the participant, high levels of pain reported by the patient increased the perceived distress reported by the participant. When there was a low level of pain reported by the patient, the effect of the relationship on participants' assessments of the disability level of patients was mediated by the degree of control the patient was seen to have over the onset of his pain (Chibnall & Tait, 1995). Chibnall et al. (1997) found that level of distress attributed to the patient increased with the amount of pain the patient reported, while medical evidence did not play a role. They found that the perceived disability of the patient increased with the

patient's reported level of pain.

A complicated four-way interaction involving the weight given to medical evidence in assessing pain level and disability was also found (Chibnall & Tait, 1995). If the participant's relationship with the patient was positive, medical evidence was just as important across different levels of patient responsibility, and was always more important when the patient reported a high level of pain. However, if the relationship was negative, medical information was consistently as important in the low and high pain patients when the patient was not responsible for his pain. If the patient was considered responsible for his pain, medical information was most important in the high pain condition.

This bias may also extend to assessment of the patient's personality characteristics. Those patients who presented as non-victims with high pain and in negative relationships with the participants were rated as less well-adjusted, poorer in judgment, and poorer in character (e.g. lazy, complaining, weak) than patients who were liked, and who had medical evidence (Chibnall & Tait, 1995).

Lundquist et al. (2002) found that patients perceived to be not coping well with their pain, (e.g. not following doctor's instructions), received less sympathy and harsher treatment choices. They were also seen as less emotionally distressed than participants perceived as coping well. Significant influences of coping were not found for the participants' perceptions of patient's level of disability or severity.

Some studies have found that older patients may be viewed as being in more pain, but findings have been contradictory (Marquié et al., 2003). Ethnicity also plays a role in the evaluation of patient pain, with some ethnic groups rated as being in less pain and having less access to pain medications (Tait & Chibnall, 2005). Interestingly, type of

disease (constitutional, dermatological condition, fracture, sprain, headache, etc) was not found to have an effect on the miscalibration of pain ratings (Marquié et al., 2003). In a review of the literature, Green et al. (2003, p. 277) found that "racial and ethnic disparities in pain perception, assessment and treatment were found in all settings.... and across all types of pain (acute, cancer, chronic malignant and experimental)".

In summary, when there is a lack of medical evidence to support patients' pain, and the patients reports high levels of pain, the gap between patient and evaluator pain ratings will be larger than for patients claiming only low levels of pain. However, patients claiming high pain levels are viewed as more disabled. Patients who are not viewed as coping well with their pain, or are presented as non-victims, are viewed in a more negative manner, and less well-liked.

Studies have also been done on what factors play a role in physicians viewing patients as 'problem patients' (Staley, 1991). Problem patients have been defined as "a group with problems of treatment outcome not ascribable to the severity or complexity of the disease state...usually present with vague complaints which are functional and changing...(and) create difficulties in.. developing and maintaining a normative physician patient-relationship" (Malcolm, Foster, & Smith, 1977**PAGE**). In a review of the literature, Staley (1991) noted that patients with chronic pain, or patients having "medical conditions that made them feel helpless" were disliked by physicians (p.75). "Such patients leave their physicians feeling incompetent and frustrated; the frustration is reflected in the description of difficult patients as suffering from 'thick chart' syndrome" (Staley, 1991, p.75).

Klein, Najman, Fohkrman, and Munro (1982) sent out an anonymous questionnaire to 427 family doctors and asked them to name the medical and social conditions that lead to "discomfort, reluctance or dislike" (p.882). Musculoskeletal or chronic back pain was seen negatively by nearly 28% of doctors. It is interesting when thinking about chronic pain that not only were the most unpopular conditions ones for which there is no cure, the second most unpopular condition was also a pain condition (headache). The second most disliked social characteristic was angry or aggressive patients. The authors categorized the doctors' responses and suggested that they fit with the Protestant work ethic that includes the belief in modern medicine, self-sufficiency, stoicism, and self-discipline. Patients who do not meet these expectations will be viewed in a more negative manner. Malcolm et al. (1977) asked doctors to describe the common presentations of 'problem patients'. Once again, the two most commonly cited conditions were pain conditions (headache and abdominal pain). Eighty percent of the doctors stated that they did see psychological problems in their 'problem patients'. Age and years of experience of the doctor did not affect these responses. These factors suggest that doctors will negatively perceive the angry patient with chronic pain. Interestingly, when Cooperstock (1971, as cited in Beckman, 1991) asked doctors to describe the usual presentation of difficult patients, 72% of the doctors described a female patient, vs. 4% of doctors who referred to a male patient, while the remainder did not refer to a specific gender (Beckman, 1991).

Characteristics of the Assessor

In addition to characteristics of the patient, traits of the assessor appear to play some role in judging the pain of another. Personality variables, such as attributional

style, may influence the assessment and decoding of pain. An attributional style is a person's way of explaining the causes of events, in this case the patient's pain. A recent study by Lundquist et al. (2002) looked at the attributional style of participants', and how this affected their assessment and choice of treatment of patients with chronic pain. They assessed 96 undergraduate students' attributional styles, using the Reasons for Misfortune Questionnaire (RMQ), and then divided the participants into those with 'supportive' and 'unsupportive' attributional styles. An unsupportive attributional style is an inclination to see people as having control over/being responsible for negative events in their lives. People with a supportive attributional style would see negative events in people's lives as not controllable.

Participants were shown videos of facial expressions of persons in pain, and read written vignettes about their circumstances. Detection of the pain itself from the visual cues did not differ between those with supportive vs. unsupportive attributional styles. Judges with unsupportive attributional styles were more likely to choose a harsher treatment for pain patients, especially patients viewed as not coping well (e.g. not following doctor's instructions), indicating that bias doesn't end simply with pain detection/assessment. Persons with unsupportive attributional styles were affected to a larger degree by contextual variables, and likely to rate the patient as being in less pain, unless the patient was presented as having both medical evidence and good coping skills. For participants with a supportive attributional style, however, perceived coping of the patient did not affect treatment choices.

Von Bayer, Johnson and McMillan (1984) compared assessments made by those with differing degrees of nurturance. They divided students into high, medium, and low

nurturance groups, and had them view an interview of a patient in pain showing either high or low expressiveness. Students with a low level of nurturance were unsympathetic to patients in the high expressiveness interview, while students with a high level of nurturance were the most concerned with those in the low expressiveness interview (von Bayer et al, 1984). Training may also play a role, as the discrepancy between patient-nurse pain ratings is greater when a nurse's assistant with no training makes the assessment than when a trained nurse makes the assessment (Solomon, 2001).

Anger and the Doctor-Patient Relationship in Pain

People in chronic pain are subject to 'negative social perceptions' that can make things difficult for them (Gatchel et al., 2002, p.103). Due to the subjectiveness of pain experienced, and the stigma that is still present concerning those with chronic pain, persons with chronic pain "may be put in the position of having to convince physicians of their symptoms, a position diametrically opposed to the usual patient-physician relationship" (Fernandez, 2005; Tait & Chibnall, 1994, p.417). This is further illustrated by a self-report study by Beckman (2001) who found a bias against chronic (vs. acute) pain by doctors. Patients with chronic pain were seen as having more psychological problems, being more demanding, and as 'less enjoyable to treat'. As Pridmore, Oberoi and Samilowitz (2002, p. 52) have stated, "Anger may develop toward the medical staff who are seen to treat the patient as 'imagining' or faking symptoms...toward the legal system which is slow and adversarial. Anger can develop towards insurers who strive to avoid continuing payments...".

Anger displayed within the doctor-patient relationship may serve to make a tough task even harder, and interfere with medical pain management and compliance

(Fernandez & Turk, 1995; Greenwood et al., 2003). Burns et al. (1999) found that patients high on anger-out and hostility had a weaker alliance with their occupational/physical therapists, while Ciper, Fernandez and Clifford (2002) found that this was associated with poorer multidisciplinary treatment compliance, and therefore outcome. A positive alliance is necessary for successful treatment, and research has shown that angry patients with back pain show less improvement (measured by range of motion) than non-angry patients (Fernandez & Turk, 1995; Maxwell, 2000). Health professionals may be less helpful with patients who express anger towards them, and this will affect patient improvement (Burns et al., 1998). Staley (1991) notes that when there is a failure in the therapeutic alliance, doctors are prone to blame the patient for this failure. Angry patients may also create conflict when treatment occurs in a group setting (Fernandez & Turk, 1995).

According to Weiner's attributional model and theory of helping behaviour, people are more likely to help others towards whom they are sympathetic, and less likely to help those toward whom they feel anger (Weiner, 1995). Therefore anger expressed by the patient may be met with anger by the physician. "For health care providers, treating chronic-pain patients can lead to feelings of anger, of inadequacy, and of being manipulated, which, in turn, can even lead to actively disliking certain patients" (Wasan et al., 2005, p.185). These feelings could lead to a decrease in helping behavior, followed by bias. This may explain why anger conflicts with the formation of a working alliance. It has been demonstrated that angry/hostile individuals receive less social support than others (Fernandez & Turk, 1995).

This decrease in willingness to help may be magnified when the patient has chronic pain with little medical evidence, and is perceived by others as exercising little maintenance controllability, or personal attempts to control their pain. The expression of anger itself may trigger the belief that little maintenance controllability is being practiced. Therefore, "In addition to the usual tensions of the physician-patient relationship, the patient must deal with the consequences of being viewed by the physician as somehow undesirable" (Staley, 1991, p.76). As mentioned earlier, Lundquist et al. (2002) showed that people who were perceived as not coping well with their pain problems received significantly less sympathy, were rated as being more responsible for their problems, and were seen as being in less distress. It is uncertain whether those perceived as being more responsible for their problems and coping badly due to the expression of anger would still be viewed as being in less distress.

Anger can be seen as a sign of life stress, and perceived stressors may cause people to interpret symptoms as more psychological than physical, as this offers another possible cause for the symptoms (Chibnall & Tait, 1995). The less justifiable a physical complaint is seen to be, the fewer 'sick-role' units a person will be allowed. I.e. When a person lacks a physical reason for their complaint, they are seen as being less sick, or the injury is seen as less real than in someone with a physical reason for their pain (Chibnall & Tait, 1995). Staley (1991) notes that when there is a failure in the therapeutic alliance, doctors are prone to blame the patient for this failure.

Difficulties in the relationship due to anger need not stem from the physician. As noted by Fernandez and Turk (1995), treatment of people with chronic pain necessitates trust, acceptance and cooperation between the patient and the physician. An angry patient

may be mistrustful and uncooperative, damaging the therapeutic alliance.

In summary, bias in assessment of those with chronic pain can stem from patient characteristics (lack of medical evidence, anger, perceived responsibility, level of pain and perceived level of coping), assessor characteristics (attributional style, experience, training) and characteristics of the doctor-patient relationship (valence of the relationship).

A Model of Pain Attribution

Weiner (1994) has developed a general model of attribution processes that appears to offer promise as a framework for understanding what happens when people make assessments of the suffering of others. One version of this model is represented in Figure four. The basic supposition of the model is that when a person is deciding whether or not to help someone else, his/her perception of that person's control over that person's situation will play a very important role. If a person perceives that the reason someone is in need of help is 'their fault', (eg. missing a meeting to go skiing), this will lead them to experience anger. If, on the other hand, the reason for someone needing assistance is not perceived to be something that he/she could have controlled, (eg. missing a meeting due to a blizzard), then this will lead them to experience sympathy. An experience of sympathy will lead to a greater likelihood of helping the person in need than will an experience of anger.

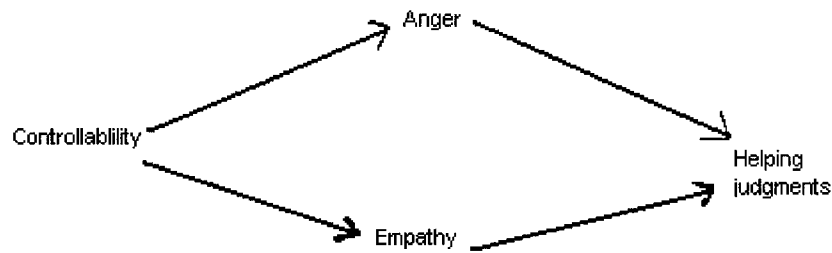


Fig.4. Weiner's attributional model of helping behaviour (Weiner, 1995, p.160).

This study was informed by Wiener's model, which suggests that angry patients will receive less sympathy and help than non-angry patients. It was hypothesized that patients expressing anger will be viewed more negatively and will be less likely to receive help and that their pain may be more likely to be attributed to emotional causes. Therefore they may be viewed as being more responsible for their pain, less disabled, and as poorer candidates for rehabilitation than patients not expressing anger. In keeping with previous research (Lundquist et al., 2002), anger expressed during an interview should negatively affect the valence of the relationship, and lead to harsher treatment choices by participants when compared to interviews where the patients do not express anger.

These hypotheses and subsidiary questions were addressed by constructing a method in which participants were required to render judgements about pain patients on measures of the aforementioned and related outcomes. Features of patients' pain were controlled by presenting judges with preselected videos of the pain-related behaviour of actual patients undergoing a painful procedure. Anger was manipulated by presenting specially constructed audiotapes of interviews of ostensible pain patients.

II. Methodological Issues

In the study of determinants of judgments of others' pain, much past research has employed written vignettes to manipulate independent variables and to characterize patients' pain. Though convenient, the use of written vignettes poses several problems. Firstly, the written scenarios will not connect with the participant in a close personal manner like the face-to-face contact with patients that doctors experience (Chibnall & Tait, 1995; Solomon, 2001). A taped interview, although still lacking in visual cues, would more closely approximate the experience. Secondly, pencil and paper manipulations may be more transparent to participants than an interview scenario, and it may be the transparency of the intent embedded in the vignette that affects judgments, rather than the variable being manipulated per se (e.g. wanting to please the experimenter; Lundquist et al., 2002). The use of audio and videotapes allows participants to see and hear a 'patient' making the experience closer to an actual clinical encounter. Lundquist et al. (2002, p.128) went so far as to suggest that "reactions to pain patients based on the presentation of written scenarios alone may not be valid indicators of how people will react in real life situations".

For these reasons, the present study employed alternative, more ecologically valid means of manipulating variables. Attributional variables were manipulated by specially constructed audio interviews, while pain judgments were evaluated by rating actual behaviour on video.

III. Methods

Participant Recruitment

Participants were recruited through the student pool in the Psychology Department at the University of Northern British Columbia. One hundred and three participants were recruited during the summer and fall semesters (64 female, 39 male). The average age of participants was 20.9 (sd = 1.3, range = 17-46yrs).

Measures

Manipulation Check

A likert scale assessing how much anger was perceived from the patient was used to check the manipulation of anger on the audio tape (See Appendix B).

Dependent Measures

Self-report responses were obtained from participants on several dependent variables. These included: sympathy felt towards the 'patient', amount of pain they felt the 'patient' was in, and amount of emotional distress they felt the 'patient' was in. Participants also reported on the degree of control participants felt the 'patient' had for his/her condition, and the extent to which they believe the 'patient' would make a good candidate for a rehabilitation program (See Appendix A). These variables were assessed via ten-point Likert scales, anchored by opposing words informed by Weiner's theories. Two measures of how much support participants would be willing to give to the 'patient' if they were physicians screening for a rehabilitation program were employed. One measure was previously used by Lundquist et al. (2002): participants chose one of two treatment options for the 'patient'. Participants could choose either 'activation therapy' or 'ultrasound therapy' as a treatment for the 'patient'. Activation therapy was described as

repetitive exercises that, although uncomfortable, are effective. Ultrasound therapy was described as ultrasonic stimulation that is not uncomfortable, and is effective (Lundquist, 2002). Both therapies were presented as equally effective (See Appendix C). The questions were presented randomly in three different counterbalanced orders.

To allow for comparison with other studies, perceived disability of the 'patients' was measured using the Pain Disability Index (PDI; Tait & Chibnall, 1994; See Appendix D). The PDI is a measure of interference related to chronic pain in seven (equally weighted) areas of functioning, rated on ten-point scales (no disability to total disability) (Tait, Pollard, Margolis, Duckro, & Krause, 1987). Areas rated include life-support, self-care, sex, occupation, recreation, social activities and family/home responsibilities (Chibnall, Tait, & Ross, 1994). A total score was then calculated by summing the scores from these areas, with a total of 70 possible (Tait et al., 1987). This total score was then used in the analysis. The PDI has been shown to have high reliability and internal consistency (Cronbach's alpha of .87 to .94) in chronic pain populations (Chibnall et al., 1997; Tait et al., 1987). Validity of the PDI is demonstrated in its ability to discriminate between patients with high vs. low reported levels of pain and disability, as well as between hospital patients and out-patients (Jerome & Gross, 1991; Tait, Chibnall, & Krause, 1990). Factor analyses of the PDI revealed two factors, the first representing disability in discretionary activities (such as social activity), and the second representing disability in obligatory activities (such as work) (Tait et al., 1981). Later research found a one-factor structure for the PDI, and normed it on a group of chronic pain patients (Chibnall & Tait, 1994; Tait et al., 1990). Tait et al. (1987) found no gender differences in scores on the PDI.

Background Variables

A demographic questionnaire (See Appendix E) was given to participants to determine age, gender, program of study, and year of study. As suggested by Tait and Chibnall (1994), there was a measure of past exposure to chronic pain, the Family Health Questionnaire (Appendix F). This questionnaire addresses past personal experience with pain, as well as experiences with family members with pain (Kountanji, Pearce, & Oakley, 1998). It lists 11 types of pain, and asks questions about the participants' personal and familial experience with that type of pain. Kountanji et al. (1998) evaluated the reliability of this instrument by giving it to a subgroup of participants a second time one year after their initial assessment. It was found that the test could distinguish between participants with high and low pain frequency.

Apparatus and Materials

The interviews, designed to simulate a consultation between a patient with shoulder pathology and a doctor, were constructed after consulting with several doctors. The responses were formed after discussions with persons with chronic pain about the types of medical situations and questions that they found frustrating. The interview prototype was then shown to a doctor who regularly makes these types of assessments to determine if there were any pertinent questions missing. One question was then added ('Does the pain come and go, or is it consistent?').

The interviews were designed to be approximately five minutes in length (See Appendix F), and varied in whether or not the 'patient' expressed anger. Interviews were counterbalanced for gender, and were read aloud by professional actors and audio taped. As mentioned above, manipulation checks were successfully performed before the

interviews were used.

A television in the front of the lab was used for viewing the videos, and audio was not used. A brief (approximately three to ten seconds) video (matched for gender of the person being interviewed) of the face of a person during a range of motion shoulder test was shown. The segments used were previously gathered from persons undergoing a standardized shoulder examination (Prkachin & Mercer, 1989), and have been previously scored using the Facial Action Coding System (FACS; Patrick, Craig, & Prkachin, 1986; Prkachin, 1992;). Tapes scoring high on pain levels using the FACS were selected. Three video tapes were made for each gender.

Procedure

Participants were randomly allocated to conditions before being scheduled for their laboratory session. The experimental conditions were angry vs. non-angry patients, and male vs. female patients. Three test orders and video selection were counterbalanced through randomization.

Participants entered the lab, and completed an informed consent form (Appendix G) and a demographic questionnaire (Appendix D). Participants were tested individually. Depending on the condition to which they had been assigned, participants then heard one of four interviews of a 'patient' with chronic pain. The interviews varied with respect to whether or not the 'patient' expressed anger, and the gender of the 'patient'. Anger was expressed not only by tone in identical parts of the script, but also by the addition of some phrases to the scripts of the 'angry patients' (e.g., 'I've answered all those questions before when you made me fill out all those forms'). All 'patients' were described as not having medical evidence consistent with their pain ('I see your MRI was normal'). Participants

then viewed the video described above, which was presented as the patient they had just heard, and filled out the Likert scale questions in Appendix A and the Pain Disability Index (PDI). The last questionnaire they filled out was the Family Health Questionnaire (Appendix E).

It was unclear whether personal judgments would differ from judgments made in a more professional setting. Therefore, participants were instructed to imagine that they were physicians, evaluating someone who might enter their rehabilitation program; for example: 'If you were a physician evaluating a patient who would be entering your rehabilitation program, which treatment would you choose for this patient?' Participants were asked to rate the degree of success they felt a rehabilitation program might have with the 'patient', and how much support they would give the 'patient' 'if they were a doctor'. Participants were also asked to choose between one of two equally effective treatment choices: a harsh treatment and one less severe (See Appendix C). In filling out the PDI, participants were instructed to rate 'how much you see the pain as preventing them ('patients') from doing what they would normally do...by indicating the overall impact of pain on their life, not just when the pain is at its worst'. Likert scales were also used to rate the 'patients' on a variety of other dimensions (e.g., 'In your opinion, how much emotional distress is this 'patient' in?').

IV. Results

The average year of study for the participants was 2.2 (s.d. = 1.31). Male and female participants did not differ in age or year of study. There were approximately equal n's across the experimental conditions (51 angry tapes, 52 not angry, 50 female 'patients', 53 male 'patients'). There were no differences in gender, age, or year of study of

participants in the anger vs. no anger conditions. This was investigated by looking at the confidence intervals of the variables. Male and female participants did not differ by more than three participants in any condition. There were also no differences in gender, age, or year of study of participants in the male or female 'patient' conditions.

Manipulation Checks

Following Tait and Chibnall (1994), participants' mean ratings of the 'patient's' anger were compared for the anger/no anger male and female 'patient' conditions. The participants in this sample included graduate volunteers. The manipulation check was analyzed using a one-tailed t-test. The results were in the direction expected: participants noted more anger from the angry 'patients' ($M = 7.36$; $SD = 1.44$) than from non-angry 'patients' ($M = 2.14$; $SD = .90$), $t(6) = 10.586$, $p < .001$. There were no differences in the anger scores of male and female 'patients' as the confidence intervals overlapped in both the anger and non-anger conditions.

Data were checked for input accuracy and out-of-range numbers. Data were also checked for skew/kurtosis. One variable, recent personal experience with pain from the Family Health Questionnaire was found to be extremely positively skewed. Removing two extreme outliers did not normalize the data. Natural log transformation was necessary to normalize the data. Both the original variable and the normalized variable were employed in preliminary regressions and MANCOVA. The Family Health Questionnaire was not found to add significantly to any analyses (MANCOVA or regression), either in its original or normalized form, and was subsequently dropped. Further correlation analysis revealed that the Family Health Questionnaire was not related to any of the dependent variables in this study.

*Primary Outcomes**Perceptions and Evaluations of the Patient*

Judges' rating variables were tested in a 2 (sex of observer) X 2 (sex of 'patient') X 2 (anger level of 'patient') multivariate analysis of covariance (MANCOVA). The covariates employed were the pain score for the 'patient' as measured by FACS coding, and the judges' self-ratings of family pain experience from the Family Health Questionnaire. Including the FACS scores controlled for pain level in the video ensured that any results found were not due to differing levels of pain presentation. The inclusion of the Family Health Questionnaire assessed whether or not any differences found were due to personal or family experience with pain. Neither covariate accounted for significant variability in any of the outcomes, and the Family Health Questionnaire was dropped from the analyses. There were seven dependent variables: ratings of 'patient's' pain, disability, emotional distress, value as a candidate for rehabilitation, amount of sympathy elicited by the 'patient', the 'patient's' control over his pain, as well as the amount of support the assessors would be prepared to give the 'patient'.

The overall MANCOVA resulted in significant effects for 'patient' sex, $F(6, 89) = 2.39, p < .05$, partial eta-square = .16, and 'patient' anger, $F(6, 89) = 2.63, p < .05$, partial eta-square = .17. There were no significant interactions in the overall MANCOVA. See Table 1 for a summary.

Table 1

Overall MANCOVA Results

Variable	F- Value	Eta-Squared
Video Pain Score	.49	.04
Patient Gender	2.39*	.16
Patient State (angry/not angry)	2.63*	.17
Participant Gender	.61	.05
Patient Gender* State	1.19	.09
Patient Gender* Participant Gender	.662	.08
State * Participant Gender	.66	.05
Patient Gender* Participant Gender * State	1.56	.11

* $p < .05$

Subsequent univariate analyses of the 'patient' sex effect indicated significant differences on disability, $F(1, 102) = 4.42, p < .05$, partial eta-squared = .05, pain, $F(1, 102) = 5.73, p < .05$, partial eta-squared = .06, distress, $F(1, 102) = 6.68, p < .05$, partial eta-squared = .07, and sympathy, $F(1, 102) = 5.09, p < .05$, partial eta-square = .05. In addition, there was a trend toward a significant difference for 'patients' on perceived rehabilitation potential, $F(1, 102) = 3.58, p = .06$, partial eta-squared = .04). Descriptive statistics are presented in Table 2. In comparison with male 'patients', female 'patients' were seen as less disabled, as being in less pain and less emotional distress. They received less sympathy, and also tended to be seen as poorer candidates for rehabilitation ($F(1, 102) = 3.58, p = .06$, partial eta-squared = .04).

Univariate analyses of 'patient' anger level identified significant differences in level of emotional distress, $F(1,102) = 4.13$, $p < .05$, partial eta-squared $< .05$, and level of sympathy the evaluator had for the 'patient', $F(1,102) = 5.23$, $p < .05$, partial eta-squared $= .05$. Descriptive statistics are presented in Table 3. 'Patients' who presented as angry were seen as being in more emotional distress and received less sympathy than 'patients' not presenting as angry. This result was consistent with the experimental hypotheses.

Table 2

Descriptive Statistics for Male and Female Patients

	Male Patients		Female Patients		F Value
	M	Std Dev	M	Std. Dev.	
Total disability score*	31.74	9.12	28.34	7.86	4.42
Level of emotional distress*	7.16	1.90	6.09	2.08	6.68
Level of sympathy*	4.67	2.83	3.58	2.04	5.09
Level of Pain*	6.15	1.83	5.12	1.98	5.73
How good a candidate for rehabilitation is this patient?	6.40	2.71	5.60	2.76	3.58

* $P < .05$

Table 3

Descriptive Statistics for Angry and Non-Angry Patients

	Angry Patients		Non-Angry Patients	
	M	Std Dev	M	Std Dev
Level of Emotional Distress	7.06*	1.67	6.17	2.31
Level of Sympathy	4.16*	5.40	5.40	2.91

*P<.05

Treatment Choice

Separate two-tailed Mann Whitney-U tests were conducted, relating choice of therapy to participant gender, 'patient' gender, and 'patient' anger. The only result was a marginal effect of sex of the 'patient' ($z = -1.6$ $p = .10$), indicating that female 'patients' may be more likely to be recommended for activation therapy than male 'patients'.

Hierarchical stepwise logistic regression was also done to predict treatment choice (ultrasound vs. activation therapy), using gender of the assessor and 'patient', as well as the anger of the 'patient' as covariates. The variables used to predict treatment choice were: disability, pain level, sympathy, emotional distress, perceived value of the 'patient' as a candidate for rehabilitation, and amount of control the 'patient' was seen as having over his/her pain. This was done to assess the possible predictive value of participants' perceptions of the 'patients' on treatment choice. Covariates were entered in the first block, and further predictor variables were entered in a stepwise fashion. Although level of support the evaluator would be willing to give the 'patient' added significantly to the

model, ($R^2 = .069$, $B = 1.21$, $\beta(102) = .19$, $p < .05$), the classification analyses were not readily understandable. Overall accuracy of the model decreased slightly with inclusion of the sympathy predictor (correct classification before inclusion of the predictor: 58.3%, after inclusion of the predictor: 53.4%).

It was originally hypothesized that 'patients' presenting as angry would be seen as being in less pain. This hypothesis was not supported consequently further analyses were undertaken to examine variables that may have been related to perceived pain. Pearson correlation analyses were conducted, correlating between perceived pain and: emotional distress, how good a candidate the 'patient' was considered to be for rehabilitation, support, sympathy, and control the 'patient' had over his/her pain. Overall correlations can be seen in Table 4. The amount of pain a 'patient' was seen as being in was positively related to: amount of emotional distress the 'patient' was perceived as being in, how good a candidate for rehabilitation the patient was seen as, and how much control the 'patient' had over their pain. Amount of pain the 'patient' was perceived as having was also positively related to how much support the assessor would give the 'patient', and how much sympathy the assessor felt for him. This means that, as the perceived pain level increased, 'patients' were seen as being in more emotional distress, better candidates for rehabilitation, and having less control over their pain. Participants reported more sympathy with increasing perceived pain levels, and were willing to give the 'patient' more support.

Patient Anger as a Moderator of the Relations Between Pain and Other Evaluations

Two- tailed Pearson correlation analyses were conducted relating certain variables to treatment choices, to investigate their possible moderating effects on the treatment

choice. The variables analyzed were: disability, pain level, sympathy, emotional distress, suitability of the 'patient' as a candidate for rehabilitation, and amount of control the 'patient' was seen as having over his/her pain. Three variables were found to correlate at the .05 level with treatment choice: pain ($r = .20$), support ($r = .22$) and control ($r = .21$).

Further analyses were conducted to examine whether the level of pain a 'patient' was perceived to be in had different impacts in 'patients' presenting as angry and those presenting as not angry. This is important because such differences may identify divergent patterns in which important components of patients' pain experiences are processed. Pearson correlations between perceived pain, on the one hand, and perceived distress, level of support, rehabilitation potential, sympathy, and perceived control on the other were conducted separately for angry and non-angry interviews (See Table 5). In the interviews where the 'patient' did not present as angry, perceived pain levels were not related to level of perceived emotional distress or control of the 'patient'. Levels of perceived pain in this condition were positively related to how good a candidate the 'patient' was seen as being for rehabilitation ($r = .56, p < .01$), how much support the participants would give the 'patient' ($r = .64, p < .01$) and how much sympathy they felt for the 'patient' ($r = .46, p < .01$).

However, in the interviews where the 'patient' presented as angry, perceived pain levels were positively related to emotional distress ($r = .47, p < .01$), and perceived control ($r = .40, p < .01$). Pain levels were still related to level of support the participant would give the 'patient' ($r = .63, p < .01$) and how much sympathy participants felt for the 'patient' ($r = .58, p < .01$). These correlations increased in the anger condition. In the anger condition, pain level was no longer related to how good a candidate the assessor

considered the 'patient' to be for rehabilitation ($r = .208$).

Table 4

Overall Correlations among Variables

	Perceived emotional distress	Level of support	Candidacy for rehabilitation	Sympathy	Control
Perceived level of pain	.30**	.64**	.40**	.53**	.32**

** $p < .01$

Table 5

Correlations with Pain in Anger and Non-Anger Conditions

	Perceived emotional distress	Level of support	Candidacy for rehabilitation	Sympathy	Control
Perceived level of pain, Anger	.47**	.63**	.21	.58**	.40**
Perceived level of pain, Non-Anger	.27	.56**	.56**	.46**	.24

** $p < .01$

Mediation Analyses

Mediation analyses were conducted to examine whether participants' evaluations of 'patients' level of pain or level of disability explain the participants' differing levels of sympathy for male and female patients. Following the steps suggested by Baron and

Kenny (1986) a series of regressions were conducted to assess whether patient gender was a predictor of sympathy, and whether the mediators (disability and pain) were predictive of patient gender, and sympathy. Lastly gender, pain and disability were regressed on sympathy. If all the regressions are significant, and if patient gender is no longer a predictor of sympathy when the proposed mediators are in the model, then perceived pain and disability can be shown to be mediators.

Regressions were first conducted to assess whether gender of the 'patient' was a significant predictor of sympathy. Gender of the 'patient' was, in fact, found to be a significant predictor of sympathy (R squared= .046, B= -1.20, $p < .05$, Table 6). Separate regressions were done assessing whether the proposed mediators (perceived pain and disability) were associated with 'patient' gender. 'Patient' gender was found to be predictive of both perceived disability (R squared= .198, B= .01, $p < .05$ Table 7), and perceived pain (R squared= .254, B= .07, $p = .01$, Table 8).

Table 6

Regression Gender on Sympathy

Model Summary:	R =.22	R squared = .05
Patient gender	B = -1.20	P<.05

Table 7

Regression of Disability on Gender

Model Summary	R =.20	R squared = .03
Disability	B = .01	P <.05

Table 8

Regression of Pain on Gender

Model Summary	R = .25	R squared = .06
Pain	B = -.07	P = .01

Table 9

Regression of Pain on Sympathy

Model Summary:	R = .54	R squared = .27
Pain:	B = .80	P < .01

Table 10

Regression of Disability on Sympathy

Model Summary:	R = .53	R squared = .28
Disability:	B = .80	P < .01

Table 11

Regression of Gender, Pain and Disability on Sympathy

Model Summary:	R = .63	R squared = .40
Disability:	B = .13	P < .01
Pain:	B = .47	P < .01
Gender:	B = -.33	P = .47

Another set of regressions assessed whether pain or disability were predictive of level of sympathy. Perceived pain levels were found to significantly predict levels of sympathy ($r = .529$, $B = .80$, $p < .01$, Table 9). Perceived disability levels were also found to significantly predict levels of sympathy ($r = .562$, $B = .181$, $p < .01$, Table 10). Lastly, an overall regression was performed in which 'patient' gender, pain level, and disability were regressed on sympathy levels. It was found that when pain and disability were in the equation, gender was no longer a significant predictor of sympathy (see Table 11). Thus the lower sympathy that participants felt for female patients was a product of perceiving

them as having less pain and disability relative to males.

V. Discussion

The findings of the present study indicate that assessors who were exposed to angry 'patients' attribute greater distress to them, and reported less sympathy for them than those exposed to non-angry 'patients'. Female 'patients' were judged to be in less pain, less disabled, deserving of less sympathy, and in less emotional distress than male 'patients'. In addition, assessors showed a tendency to view females as poorer candidates for rehabilitation. 'Patient' anger was unrelated to the evaluators' ratings of: pain levels, amount of control the 'patients' were seen to have over their pain, disability, and amount of support evaluators would be willing to give the 'patients'. None of the independent variables manipulated in this study influenced the treatment participants recommended for the 'patients'. Correlations suggested that the relationships between some of the variables differed in the anger and non-anger conditions. Finally, a series of logistic regression and correlational analyses suggested that intermediate variables of judged pain, support and control might have some influence on the treatment recommendations of participants.

Influence of Patient Anger

It was hypothesized that 'patients' presenting as angry would be taken less seriously, and assigned harsher treatment choices, than non-angry 'patients'. While 'patients' presenting as angry were viewed as being in more emotional distress, and received less sympathy, these perceptions did not affect the evaluators' assessments of disability levels, level of pain, level of control, or treatment choice. The lower level of sympathy seen for angry 'patients' does illustrate that they were taken less seriously.

However this did not result in the participants judging their pain as less real, or in the participants applying more punitive treatment choices for angry vs. non-angry 'patients'.

Correlational analyses revealed that relationships between perceived pain and other variables were affected by whether or not the participant was exposed to an angry or a non-angry 'patient'. Unlike the non-anger interviews, the pain levels in anger interviews were positively related to how much emotional distress the 'patient' was seen as being in. In the anger condition, when the level of perceived emotional distress increased, so too did the level of perceived pain of the 'patient'. Higher pain levels were related to seeing the 'patient' as a better candidate for rehabilitation in the non-anger condition, but not in the anger condition interviews. Pain levels in the anger condition showed a relationship with control, unlike non-anger interviews where they were not related. This means that as perceived pain levels increased in the anger condition, the amount of control the 'patient' was seen as having over their pain increased.

The fact that, in the anger condition, increased pain levels were no longer related to the 'patient' being seen as a better candidate for rehabilitation may indicate that pain was taken less seriously in these 'patients'. The same analyses also revealed that when 'patients' did not present as angry, perceived pain levels were not related to perceived level of control the 'patients' had over their pain. However, in the anger condition these variables were strongly related. This illustrates that the more pain the participant perceived the 'patient' to be displaying in the anger condition, the more control they were seen as having over their own pain. The fact that 'patients' presenting as angry were viewed as being in more emotional distress is expected, and confirms successful manipulation of anger. What is interesting is that in cases of anger, perceived pain level is

related to level of emotional distress, while in cases where the 'patient' presented as non-angry, these variables were no longer related. These variables are strongly related in the overall correlations and in the anger correlations, but not in the non-anger condition.

Anger affects judgements of emotional distress, but not pain. This suggests that although assessed pain and emotional distress are related to each other, they are judged independently and only assessed emotional distress is manipulated by anger.

Health practitioners may be unaware of some of their own reactions to anger, as they may be both conscious and subconscious (Back, 2000). Awareness of this would allow identification of high-risk patients and treatment of the anger, as well as help physicians to gauge their own reactions and strategies in dealing with the anger before making assessments and treatment decisions.

There are several different possible reasons for the lack of findings in the anger condition. In the present study, the term support was used in a very general way when participants were asked, 'How much support would you give this patient?'. It is very possible that support was therefore interpreted in comparison to standard care. While participants did not indicate that they would give angry patients less than standard care in this study, they did receive less sympathy. This indicates that angry patients may be less likely to receive support above the regular standard of care. Health care professionals may be less likely to offer emotional support or extra treatments to angry vs. non-angry patients.

In this study all 'patients' were presented as being not accountable for the onset of their pain. It is possible that this may have played a role in assessors' decisions about treatment choice. Vitaglione and Barnett (2003) discuss a new subtype of empathy that

they call empathetic anger, or "anger on behalf of a victimized person" (p.301). As would be expected by Weiner's model, empathetic anger was found to predict helping responses. If empathetic anger were elicited in this study, it would explain why treatment choice and level of support were not significantly different between the groups. This is also supported by Chibnall and Tait's (1995) findings that there was a "tendency to react less punitively to the problems of victims...." (p.432). Further research could look into this by altering the level of responsibility the 'patient' had for the onset of pain.

Although efforts were made to decrease the transparency of this study, it is possible that participants saw through the manipulation in this study. A measure of experiment transparency given at the end of the session would be useful. Future studies could also address transparency by making use of videotaped interviews of 'patients' to decrease transparency.

Influence of Patient Gender

Analysis revealed a negative bias in the assessment of female 'patients' in this study, in that their pain was taken less seriously than that of male 'patients'. Female 'patients' were seen as being in less pain, and less disabled, as well as receiving less sympathy. They were read as being in less emotional distress, and there was a tendency for females to be rated as poorer candidates for rehabilitation and for females to receive harsher treatment choices than males. It must be noted that the latter should be viewed cautiously, as it was only a trend in the analyses. It is interesting to note that gender was a better predictor of perceived level of pain than the pain scores of the videos. These findings of a gender bias are disconcerting as they have the potential to lead to differential treatment in some circumstances, and further research on gender bias in pain

evaluation is therefore needed.

Mediation analyses suggested that both perceived pain and perceived disability act as mediators on the effect of gender on sympathy. This suggests that the effect seen whereby female 'patients' received less sympathy was in part mediated by the fact that female 'patients' were seen as being less disabled and as being in less pain.

The results of the present study also fit nicely with past research on gender differences in medical care. In a study of consecutive patients with chronic pain, Lack (1982) found that female patients received more prescriptions for their emotional states (e.g. tranquilizers and antidepressants) than male patients, while male patients received more care for their pain in the form of prescriptions for narcotic analgesics, and pain-related surgeries and procedures (eg. nerve blocks) than female patients. Armitage (1979, as cited in Beckman, 1992) investigated doctors' use of procedures and investigations in back pain, headache, etc. They found that men received more tests and investigations than women for all complaints, and especially so for lower back pain. Bernstein and Kane (1981 as cited in Clark et al., 1991) used vignettes of male and female patients with stomach or back pain. They found that female patients were seen as more likely to present with psychosomatic and minor complaints, and were judged as more demanding than male patients. A more recent study by Weisse, Sorum, Sanders, and Syat (2001) presented medical vignettes to 111 primary care doctors, varying pain presentation (chronic back pain vs. acute kidney stone pain), gender, and race of the patient. They found that while there were no gender differences in the assigned treatments of the acute pain, gender did affect treatment of chronic back pain. Male doctors prescribed higher dosages of painkillers to males with back pain, whereas female

doctors showed the opposite effect, prescribing higher doses of painkillers for female patients with chronic back pain.

There has been some research suggesting differential treatment by gender in various medical conditions. In an investigation of cardiological treatments, Blomkalns et al. (2005) reported that, female patients with NSTEMI ACS [Non-ST-segment elevation acute coronary syndromes] showed more risk characteristics, and yet compared to male patients, were treated less aggressively and given fewer tests. Recent population-based epidemiological research in Canada found that females with congestive heart failure were less likely than males to receive tests such as assessment of left ventricular function (Sheppard, Behloul, Richard, & Pilote, 2005). Sheppard et al. did note that due to the nature of their data, they were unable to take into account factors such as functional class, drug allergies, etc. However, that does not explain differences in tests and basic medications.

Some of the studies looking at gender differences in treatment of patients have been contradictory, and not all have shown a disparity (Beckman, 1992; Clark, Potter & McKinlay, 1991). Beckman (1992) conducted a study designed to look at sex role stereotypes and patient treatments, using written vignettes of patients with acute or chronic pain. She did not find support for an effect of gender on treatment. McCranie, Horowitz and Martin (as cited in Clark et al., 1991) presented doctors with vignettes of male and female patients with headache or abdominal pain. Assessment of the patient was not found to vary by gender, and doctors were not more likely to suggest that they would find psychological reasons for the pain in female patients.

Little research has been done in the area of perceived differences in the level of

pain between male and female patients using visual stimuli such as video presentations. Interestingly, this study found just the opposite of what is found in the current research. Robinson and Wise (2003) conducted an experiment in which they showed participants short video clips of others undergoing a cold pressor task. They found that overall the women were seen by participants as being in more pain than the men, although they noted a small effect size for this result. Robinson and Wise (2004) conducted a follow-up study in which participants not only viewed videos of others undergoing the cold pressor task, but also underwent the cold pressor task themselves. Once again, females undergoing the cold pressor task were seen as being in more pain than males undergoing the same task. The females in the videos were also rated as more anxious than the males. However, these studies are limited by the fact that the videos were not scored for pain levels, meaning that the females in these videos may actually have been showing more pain than the males. Results from this current study suggest that this is an important factor to consider.

Patients with chronic pain are subject to stigmatization, and the results of this study suggest this effect may be amplified in females. If this gender bias is generalizable to health care professionals, it has implications for doctors treating patients with chronic pain, and insurance companies that assess patients with chronic pain. The current study suggests that female patients with chronic pain may be at risk of being taken less seriously than male patients. Since this could potentially lead to differential treatment between male and female patients, this is a subject that needs to be investigated further.

Treatment Choices

Pearson correlations suggested that treatment recommendations are affected by the level of support participants would be willing to give the 'patient', the level of pain perceived by the participant, and the amount of control the 'patient' is believed to have over their pain level. However, in regression analyses, only the level of sympathy added significantly to the model, and the results were not easily interpreted. It is possible that a larger sample size may yield more concrete results.

Limitations

One limitation of this research is its reliance on student populations. Using nurses, doctors, or post-doctoral students could improve this study by increasing generalizability of this study beyond a student sample. The sample was not split evenly between the sexes (38% of the participants were male), as is commonly the case in research using student populations. Although gender of the assessor did not make a large difference in this study, prior research has suggested that it may. The low number of males in this study may have reduced the ability to detect such differences.

In considering the clinical implications of this study, it should be noted that the paradigm used may not be representative of many health care interactions. Health care professionals would likely be required to see the patient more than once, and this may affect how decisions are made. In this study, participants only 'saw' the 'patient' on one occasion. Therefore improvements could be made if it were implied that participants would be seeing and/or hearing tapes of the 'patient' again at a later date.

Another limitation in this study was the use of audiotapes. Although more than one video was used to control for characteristics specific to the person in the video,

audiotapes were made by one 'patient' (male or female). The use of multiple audiotapes could have controlled for this, although it raises further issues of how to ensure audio equality in anger presentation. Improvement could also be made if videotapes were used for the vignettes, thus allowing participants to both hear and see the 'patient'. A possible reason for the non-significant effect of anger on treatment choices may be that the procedure was transparent to some participants, and a control for this would be useful in future studies. However, if this study was transparent and differences were minimized, this makes the findings of gender bias more robust.

The use of actual patients would extend the generalizability of the current findings. A larger number of participants would allow for more sophisticated analysis and use of covariates. Further research could manipulate not only anger expressed by the patient, but pain level and medical evidence to test for interaction effects.

A further addition to this study could be to take greater account of increased controls for characteristics of the assessor. For example, controls could be used for the level of locus of control of the participants. Another interesting idea would be to measure the level of empathetic anger present in the participants. By measuring locus of control of the participants, one could see the effect this had on sympathy towards the 'patient', and if the participants' own locus of control effected the perceived control the 'patient' had over his/her pain. A measure of empathetic anger could be used not only as a control variable, but one could test whether or not increased empathetic anger meant an increase in sympathy and helping behaviour.

Future research should look at whether expressions of different types of anger (frustration, hostility, etc.) have a differential effect on how people with chronic pain are

viewed. There were already too many variables in this thesis to consider adding another, which is why the anger expressions were held constant in the interviews.

Implications

Figure 1 is a proposed model of anger and bias in pain assessment. Part of the model proposed that anger would lead to bias in the assessment of the 'patient'. The current research suggests that although anger does lead to less sympathy as a form of bias, the way this may influence behaviour is more complicated. In the anger condition, perceptions of high levels of pain were related to perceptions of the control over the 'patient's' pain, possibly indicating that those who presented as angry with high pain levels are seen as more responsible for their pain, and therefore taken less seriously. This is one area for further research. In 'patients' without anger, increased pain was related to an increased belief that the 'patient' would be a good candidate for rehabilitation. This was not true for 'patients' presenting as angry. Correlational analyses also revealed a relationship between pain levels and emotional distress, but only in the anger condition. This suggests that pain is uniquely linked to distress when the 'patient' presents as angry.

However, none of these relationships led to punitive management of the angry 'patient' when it came to treatment choices. This would suggest one of two things: either anger leads to a decrease in sympathy but not to bias, which is unlikely, or anger leads to bias in other and possibly more subtle ways.

For example, if patients present with anger resulting in decreased sympathy from health care professionals, this could have multiple outcomes. Health care professionals may be less likely to act as advocates on behalf of the patients, and may spend less time actively treating the patients.

It has been documented that the therapeutic alliance is not as strong when a patient is angry (vs. not angry), and that angry patients are less compliant (Burns et al., 1999; CIPHER et al., 2002). This in turn has been shown to negatively affect treatment outcome (Fernandez & Turk, 1995). If angry patients are likely to be less compliant and show poorer outcomes, health care professionals may find it essential, due to limited resources and restrictions in the health care system, to prioritize treatment to those most likely to respond positively.

The model proposed in this paper does not include gender as a factor leading to possible bias. The research presented here clearly suggests that gender needs to be taken into account. It is therefore proposed that gender should also be added to the model, as a factor that can lead to bias in the assessment of 'patients' with chronic pain.

In conclusion, this research has shown that 'patients' with chronic pain, presenting as angry, are taken less seriously. They receive less sympathy, and are seen as more responsible for their pain. If these results generalize to patients seen by health care professionals, the implications are that their pain will be taken less seriously, and they may not receive the same standard of care as non-angry patients with chronic pain.

This research has also shown that female 'patients' with chronic pain are judged more harshly whether or not they present as angry. Their pain and disability are taken less seriously, and they may be seen as poorer candidates for rehabilitation. This has implications for possible unequal treatment by health care professionals. If the pain of female patients is viewed as less 'real' somehow, then they may receive less care than male patients. Although 'patient' gender did not predict treatment choice in this study, the possibility of differential treatment needs to be addressed.

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Appendix A Outcomes Employed in Manipulation Checks

Based on Chibnall & Tait (1999) and Weiner (1995).

Please circle the number that applies.

1) In your opinion, how much pain is this patient in?

0 10

No Pain 2 4 6 8 Unbearable Pain

2) Did this patient have medical evidence to back up his pain?

Yes No

3) Did you note anger coming from the patient during the interview?

0 _____ 10

None at all 2 4 6 8 A great deal

of anger

4) How much sympathy do you feel towards this patient?

0 2 4 6 8 10

No Sympathy A great deal of Sympathy

Based on Chibnall & Tait (1999) and Weiner (1995).

1) In your opinion, how much pain is this patient in?

2) In your opinion, how much emotional distress is this patient in?

3) How good a candidate is this patient is for physical rehabilitation in your opinion?

4) If you were a doctor, how much support (ex. Time and effort) would you personally put towards this person in a rehabilitation setting?

0 10

No support 2 4 6 8 Maximum

Support

5) How much sympathy do you feel towards this patient?

No Sympathy 2 4 6 8 A great deal
of Sympathy

6) How much control do you think the patient has for his/her current level of pain?

Under	2	4	6	8	Not under
Personal					Personal
Control					Control

Appendix C Therapy Choices (As taken from Lundquist et al, 2002, p.121-122).

Activation Therapy: This therapy addresses the shoulder pain through repetitive exercise. The therapy is delivered by a physiotherapist. The patient is prescribed a 30-min exercise routine, which is performed twice a week for 4 weeks. The purpose of the exercises is to promote healing by strengthening the muscles that support the shoulder joint. The exercises themselves are uncomfortable, but the overall effectiveness of the therapy is excellent in most cases.

Ultrasound Therapy: This therapy addresses the shoulder pain through exposure to ultrasonic stimulation. An ultrasound device is placed on the affected shoulder, and the beam is aimed at the underlying muscular tissue. The therapy is delivered by a physiotherapist twice a week in sessions that last a half hour. The purpose of this treatment is to promote healing by reducing inflammation in the shoulder joint. Although the treatment itself is not uncomfortable, it does leave the patient with a sensation of warmth in the shoulder for some time after the session. The overall effectiveness of the therapy is excellent in most cases.

Appendix D Pain Disability Index (As taken from Tait et al., 1987, 441).

The rating scales below are designed to measure the degree to which several aspects of the patient's life are presently disrupted by chronic pain. In other words, we would like to know how much pain is preventing them from doing what they would normally do, or from doing it as well as they would normally do. Respond to each category by indicating the *overall* impact of pain on their life, not just when the pain is at its worst.

For each of the seven categories of life activity listed, please circle the number on the scale which describes the level of disability they typically experience. A score of 0 means no disability at all, and a score of 10 signifies that all of the activities which they would normally have been involved have been totally disrupted or prevented by their pain.

1. Family/Home Responsibilities. This category refers to activities related to the home or the family. It includes chores and duties performed around the house (e.g., yard work) and errands or favors for other family members (e.g., driving the children to school).

0	1	2	3	4	5	6	7	8	9	10
no					total					
disability					disability					

2. Recreation. This category includes hobbies, sports, and other similar leisure time activities.

[illegible]

disability

3. **Social Activity.** This category refers to activities which involve participation with friends and acquaintances other than family members. It includes parties, theater, concerts, dining out, and other social functions.

0	1	2	3	4	5	6	7	8	9	10
no										total
disability										

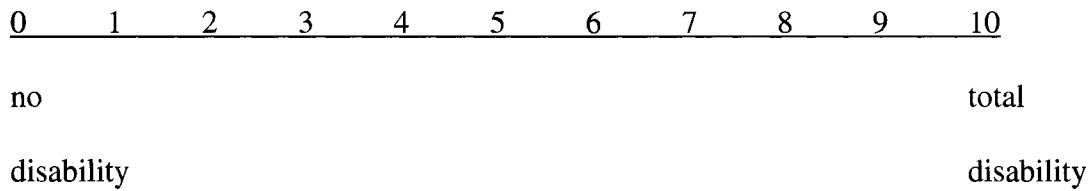
disability

4. Occupation. This category refers to activities that are a part of or directly related to one's job. This includes nonpaying jobs as well, such as housewife or volunteer worker.

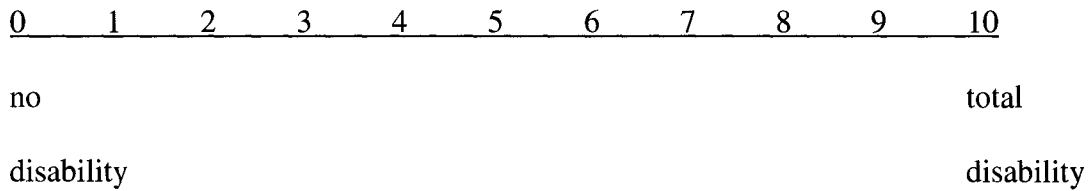
[illegible]

disability

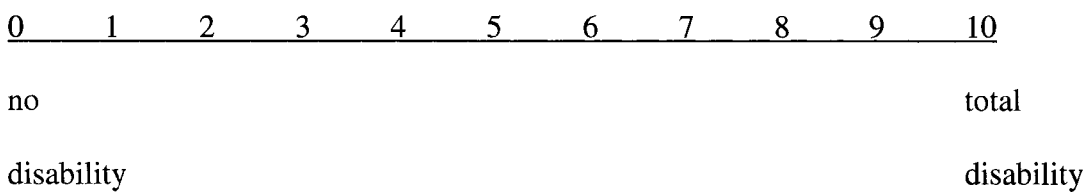
5. Sexual Behaviour. This category refers to the frequency and quality of one's sex life.



6. Self Care. This category includes activities which involve personal maintenance and independent daily living (e.g., taking a shower, driving, getting dressed, etc).



7. Life-Support Activity. This category refers to basic life-supporting behaviours such as eating, sleeping, and breathing.



Appendix E Demographic Questionnaire.

Demographics:

Age: _____

Program of Study: _____

Year of study: _____

Gender: _____

Appendix F Family Health Questionnaire:

Instructions: This questionnaire is designed to obtain information of your family health. Please answer the following questions as honestly as possible. The information is strictly confidential.

1. In the past month have you experienced any kind of pain? (Circle the correct answer)

Yes

No

If Yes, please provide further details as specified below using numbers

	In the past month, how often have you had this pain?	How intense was each episode on average, on a scale from 0 = no pain to 10 = extremely painful	On average, how long did the pain last? (Specify either in minutes, hrs, or days).
Headache			
Neck Pain			
Back Pain			
Joint Pain			
Muscle Pain			
Chest Pain			
Abdominal Pain			
Menstrual			

Pain			
Tooth/ear Pain			
Internal Pain (say where)			
Other Pain (please specify)			

2. Have any of your family members, close relatives, or any other important people in your childhood, and current life circumstances evidenced any **‘persistent’ pain or illness that you witnessed on a regular basis?** (Circle the appropriate answer)

Yes

No

If yes, Please specify the type of pain or what combination o the above common symptoms they evidenced from what kind of illness they suffered.

	Kinds of symptoms and/or illness	How often was/is this person complaining (specify number of times, either per day, per month, or per week)	For how many months or years had the person suffered from these symptoms?
Mother			
Father			
Sister/s			
Brother/s			
Grandmother			
Grandfather			
Uncle			
Aunt			
Close friend/s			

Family friend/s			
Other person/s important to you (please specify)			

Appendix G Interviews

Male, high pain, no medical evidence

Introduction:

Doc: I understand your shoulder has been a problem.

AngryP: - pause- no answer

P: Uh-huh

Doc: Is that right?

AngryP: Yes, Look; you know I've answered all those questions before when you made me fill out all those forms (*impatiently*). Is this going to take long?

P: Yes, I've tried to explain it all in those forms I filled out.

Onset:

Doc: (ignoring comment) When did it start?

AngryP: Like I told your receptionist, I was carrying some crates with Don at work. The bastard (angry) let go of his end, and I felt my shoulder give. It hurt some that day, but by the third day I was toast. My doc started me on some pills and therapy, but they haven't done a thing.

P: I was helping my partner Don carry a crate. He let go of his end, and I felt my shoulder give. It hurt some that day, but by the third day it was bad. My doc started me on some pills and therapy, but they haven't helped.

Medical Evidence:

Doc: I see your MRI was normal.

AngryP: I guess that test isn't very good then.

P: Well, a lot has happened since then, do you think I could have another one?

Progression:

Doc: Is the pain getting better or worse?

AngryP: Worse (impatiently)

P: It's worse

Location:

Doc: Where in the shoulder is it hurting?

AngryP: Everywhere.

P: Just all over the shoulder.

Radiation:

Doc: Does the pain go anywhere?

AngryP: What? (Sounding slightly annoyed and perplexed)

P: Excuse me?

Doc: Do you feel it in the neck or going down the arm?

AngryP: Yes, I feel it down the side of the neck AND down the arm.

P: Doc, it feels like it's all over- in the side of the neck and down the arm.

Severity:

Doc: How bad is the pain in your shoulder?

AngryP: Very bad.

P: Very bad.

Doc: Does it affect your sleep?

AngryP: Yes of course it has.

P: Yes, a lot. I haven't been sleeping well.

Character:

Doc: What sort of pain is it? Does it ache, or burn, or is it a sharp pain, for examples.

AngryP: More of a jabbing pain.

P: More of a jabbing pain.

Doc: Does it come and go, or is it there continuously?

AngryP: Comes and goes.

P: It comes and goes.

Aggravating:

Doc: When you lift up your arm, does your shoulder feel any different?

AngryP: Yes, as I have said, it gets sore the more I use it.

P: Its sore anytime I use it.

Doc: Is there anything in particular that makes your shoulder feel worse?

AngryP: Just trying to snip a few branches off my tree got me good. Almost anything physical will aggravate it. Having to deal with a lot of workman's comp doctors hasn't helped either (*bitterly*).

P: Just trying to snip a few branches off my tree got me good. Almost anything physical will aggravate it.

Temporal:

Doc: Is there any particular time of the day when the pain in your shoulder is worse?

AngryP: My shoulder hurts all the time (*frustrated*). Nights are bad.

P: My shoulder hurts all the time. Nights are bad.

Alleviating:

Doc: Is there anything that makes the pain in your shoulder feel better?

AngryP: My doc has me on some pain pills- I have to admit they help but I feel like shit on them. I was on some other pills that almost burned a hole in my stomach. I had a shot once in my shoulder, but it didn't do squat (*bitterly*).

P: My doc has me on some pain pills- I have to admit they help but they don't agree with me. . I was on some other pills that almost burned a hole in my stomach. I had a shot once in my shoulder, but it didn't help.

Doc: Did physiotherapy help your shoulder?

AngryP: I've been going to those guys for physiotherapy for months and they haven't done a thing.

P: I've been going to those guys for physiotherapy for months, and it hasn't helped.

Doc: Have you seen anyone else about your problems?

AngryP: I saw an orthopedic guy who sent me here. I waited six months to see him, and then I spent more time filling out forms than I did seeing him. I was also sent to see some shrink who was useless.

P: I saw an orthopedic guy who sent me here. My Doc also sent me to some shrink who didn't help any.

Associated:

Doc: Does your shoulder feel stiff?

AngryP: Yeah, it's stiff all the time.

P: Yeah, it's stiff all the time.

Doc: Have you noticed swelling around the shoulder?

AngryP: I'm not sure.

P: I'm not sure.

Doc: Have you noticed any weakness on using shoulder?

AngryP: Yeah, it's not good for anything.

P: Yes, I have very little strength in my shoulder.

Doc: Does your shoulder seem unstable - does it pop out on you at all?

AngryP: I'm not sure

P: I'm not sure

Doc: Does your shoulder make a clunking sound when you use it overhand?

AngryP: I don't know (*sounding mildly annoyed*).

P: I don't know.

Doc: Thank you for coming in, we will be in touch.

Female, high pain, no medical evidence

Introduction:

Doc: I understand your shoulder has been a problem.

AngryP: - pause- no answer

P: Uh-huh

Doc: Is that right?

AngryP: Yes, Look; you know I've answered all those questions before when you made me fill out all those forms (*impatiently*). Is this going to take long?

P: Yes, I've tried to explain it all in those forms I filled out.

Onset:

Doc: (ignoring comment) When did it start?

AngryP: Like I told your receptionist, I was carrying some crates with Mel at work. The idiot (angry) let go of her end, and I felt my shoulder give. It hurt some that day, but by the third day I was toast. My doc started me on some pills and therapy, but they haven't done a thing.

P: I was helping my partner Mel carrying a crate. She let go of her end, and I felt my shoulder give. It hurt some that day, but by the third day it was bad. My doc started me on some pills and therapy, but they haven't helped.

Medical Evidence:

Doc: I see your MRI was normal.

AngryP: I guess that test isn't very good then.

P: Well, a lot has happened since then, do you think I could have another one?

Progression:

Doc: Is the pain getting better or worse?

AngryP: Worse (impatiently)

P: It's worse

Location:

Doc: Where in the shoulder is it hurting?

AngryP: Everywhere.

P: Just all over the shoulder.

Radiation:

Doc: Does the pain go anywhere?

AngryP: What? (Sounding slightly annoyed and perplexed)

P: Excuse me?

Doc: Do you feel it in the neck or going down the arm?

AngryP: Yes, I feel it down the side of the neck AND down the arm.

P: Doc, it feels like it's all over- in the side of the neck and down the arm.

Severity:

Doc: How bad is the pain in your shoulder?

AngryP: Very bad.

P: Very Bad.

Doc: Does it affect your sleep?

AngryP: Yes of course it has.

P: Yes, a lot. I haven't been sleeping well.

Character:

Doc: What sort of pain is it? Does it ache, or burn, or is it a sharp pain, for examples.

AngryP: More of a jabbing pain.

P: More of a jabbing pain.

Doc: Does it come and go, or is it there continuously?

AngryP: Comes and goes.

P: It comes and goes.

Aggravating:

Doc: When you lift up your arm, does your shoulder feel any different?

AngryP: Yes, as I have said, it gets sore the more I use it.

P: It's sore anytime I use it.

Doc: Is there anything in particular that makes your shoulder feel worse?

AngryP: Just trying to snip a few branches off my tree got me good. Almost anything physical will aggravate it. Having to deal with a lot of workman's comp doctors hasn't helped either (*bitterly*).

P: Just trying to snip a few branches off my tree got me good. Almost anything physical will aggravate it.

Temporal:

Doc: Is there any particular time of the day when the pain in your shoulder is worse?

AngryP: My shoulder hurts all the time (*frustrated*). Nights are bad.

P: My shoulder hurts all the time. Nights are bad.

Alleviating:

Doc: Is there anything that makes the pain in your shoulder feel better?

AngryP: My doc has me on some pain pills- I have to admit they help but I feel like shit on them. I was on some other pills that almost burned a hole in my stomach. I had a shot once in my shoulder, but it didn't do squat (*bitterly*).

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P: I'm not sure

Doc: Does your shoulder make a clunking sound when you use it overhand?

AngryP: I don't know (*sounding mildly annoyed*)

P: I don't know

Doc- Thank you for coming in, we will be in touch.

Appendix H Informed Consent

Title: Appraisal of patients with chronic pain.

Investigator: Janice J. Montbriand, Graduate student, Psychology, University of Northern British Columbia

Supervisor: Dr. K Prkachin, Department of Psychology, University of Northern British Columbia

This research involves evaluating patients with chronic shoulder pain. This involves listening to a taped conversation between a doctor and patient with shoulder pain. You will then be shown a brief video, and asked to fill out some questionnaires. During this study you will be shown brief clips of people undergoing pain during a standard physical exam. Although there are no risks to you from taking part, some people may find viewing people in pain disturbing.

The study is expected to take 20-30 minutes. By signing this form you agree to participate in this study as described above. Participation is voluntary. If you agree to participate, you have the right to withdraw from the study at any time without consequences. If you are in a psychology class that offers bonus points for participation, you are eligible for these. You have the right to request a copy of this form.

All information will be kept strictly confidential, and you will be identified only by code. Data will be stored in numerical format in a computer database indefinitely. J. Montbriand and Dr. K. Prkachin will have access to the data, which will be stored in a secure database. If you have any questions about this research, please contact J. Montbriand at 960-5889. Should you have any complaints about your rights as a participant, please contact the Office of the Vice President of Research (960-5820). If you would like information about the results of this study, please contact J. Montbriand (960-5747) in April.

Participant's Name

Signature

Researcher's Name

Signature

Date