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Acceptance and Chronic Pain

Literature Review: A Review of Psychological Approaches to Chronic Pain, and the Possible Role of Acceptance

Empirical Paper: Are there relationships between acceptance and chronic pain?

By

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Thesis Abstract

This thesis examines psychological approaches to the understanding of chronic pain. The first paper reviews traditional psychological models, as applied to the understanding of chronic pain. The paper then reviews a newly proposed model of chronic pain, which includes the concept of acceptance.

The second paper replicates a study conducted by McCracken (1998), and examines the concept of acceptance of pain. McCracken conducted his study using participants who were awaiting treatment at a specialist pain clinic. The current study used participants who had exhausted all available treatment options and had been discharged from a specialist pain clinic. Correlational analysis revealed that greater acceptance of pain was associated with less pain severity, fewer depressive symptoms, less use of avoidance strategies, fewer fearful pain-related thoughts, less pain related anxiety, less physical disability, less psychosocial disability, and lower overall disability. Results are discussed both as stand alone, and in relation to those obtained by McCracken.

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DECLARATION OF AUTHORSHIP

I, **Ian Colpitts**, declare that the thesis entitled **Acceptance and Chronic Pain**, and the work presented in it are my own. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clearly exactly what was done by others and what I have contributed myself;
- none of this work has been published before submission;

Signed:…………………………………………………………………………………..

Date:………………………………………………………………….

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Literature Review

A Review of Psychological Approaches to Chronic Pain, and the Possible Role of Acceptance

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Literature Review

Abstract

Chronic pain is a condition that affects a significant proportion of the international population. Its impact upon the individual can be immense and wide ranging, and cannot be understood as a purely medical condition.

This paper examines the condition of chronic pain within a psychological framework. It discusses the definition of chronic pain, the financial impact of chronic pain, the psychological impact of chronic pain, and the prevalence of chronic pain.

The paper then critically discusses the traditional accounts and models of chronic pain, both behavioural and cognitive behavioural, before moving on to discuss the proposed alternative approach to understanding chronic pain, namely, the contextual cognitive behavioural model and the concept of acceptance.

The paper critically reviews the evidence for each model, discusses the clinical implications, and examines the need for further empirical research.

1. Introduction

The most widely used and accepted definition of pain is that posited by the International Association for the Study of Pain (IASP), in which they state that 'Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage' (Mersky & Bogduk, 1994).

The pain experience is not universal, instead it has to be viewed as being individually unique. Whilst individuals may experience a shared diagnosis, or suffer the same pain inducing injury/trauma, the way in which they react to, interpret, and feel the pain can be worlds apart. A further complicating factor in the understanding/study of pain results from the fact that the individual pain sufferer may interpret and react to their pain differently at any given time, thus making the pain experience both situationally and emotionally specific. Although the general consensus of opinion holds that pain is personal, private, and unique, this does not prevent health care providers, as well as family members, insisting that the pain experience be objectifiable, understandable, and reproducible.

Whilst it is accepted that the pain experience is individually unique, confounded by subjective interpretation, and is extremely complex in nature, thus making it difficult to quantify, it can still the subject of theoretical and empirical investigation, allowing for a better understanding.

2. Pain Classification

In essence, there are two distinct types of pain, however, within these two categories there are numerous sub-types of pain. One of the fundamental reasons for typing pain is to allow for the selection of appropriate pain management treatment regimes. The two principal categories of pain are acute pain and chronic pain. It is important to note that these labels refer to the type of pain experienced by an individual, and not to the degree of pain experienced. Whilst the classification of pain is useful, both in terms of understanding and treatment selection/implementation, a clear distinction is not always easily drawn as a result of overlap.

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 1994) recognises pain as a specific disorder, and specifies/classifies pain in terms of one of three sub-types:

i). Pain disorder associated with psychological factors. This subtype is applied if it is deemed that medical conditions constitute a minimal, if any, role in the onset and maintenance of pain. Instead, the pain is as a result of psychological variables, in terms of both severity and maintenance.

ii). Pain disorder associated with both psychological factors and a general medical condition. This subtype is applied if both psychological and medical variables play a significant role in the onset, severity, and maintenance of pain iii). Pain disorder associated with a general medical condition. This subtype is applied if the predominant factor in the onset and maintenance of pain is physical, and psychological factors play little or no part.

These subtypes are then further specified in terms of acute (duration of six months or less), or chronic (duration of six months or longer).

3. Acute pain

Acute pain is predominantly physiological in nature, and it has been argued that the role/purpose of acute pain is as being protective and functional (for example, McCaffery & Pasero, 1999). Indeed, if viewed within a teleological framework, this description is easy to understand. For example, if an individual touches a hot stove, the pain they experience immediately makes them remove their hand, thus preventing further injury. Further, the pain experienced post-injury ensures that the individual desists in using the injured limb and is protective of it, in this example their hand, thus ensuring a period of healing in which further injury is unlikely to occur. This account can further be understood when one considers individuals who are unable to experience pain sensations. For example, children who fall within this category often sustain injury as a direct result of not removing themselves from a dangerous situation, due to not being able to feel pain sensations (Melzack & Wall, 1982). It has to be noted that this is a simplistic account of the purpose of acute pain as it is not always positive in nature, for example, if post-operative patients subscribed to this theory they would restrict their mobility, which could lead to complications such as deep vein thrombosis (Raj, 1996).

In summary, acute pain is characterised by a well defined temporal pattern of pain onset and duration; it is accompanied by signs of hyperactivity in the autonomic nervous system; the severity/impact of the pain diminishes as healing occurs; and the underlying cause of acute pain is predominantly successfully treated with analgesics (Foley, 1996). Acute pain occurs as a direct result of an injury or disease, and occurs at the time of, and immediately following, said injury or disease. For example, acute pain is the type of pain experienced as a result of a fractured limb. Further, acute pain can persist through the healing phase of an injury or disease, and in some cases can be described as recurring, for example the pain experienced by an individual with arthritis, every time they move a joint.

Whilst acute pain can be clearly understood within terms of a medical model, it has to be noted that psychological variables do impact upon the acute pain experience, as well as the success of treatment (Dell'Angela, 1997). It has been argued that every category of pain must be viewed as being both a physiological event and an emotional event. In patients who experience acute pain, psychological variables tend not to have a significant impact as they are offset by the fact that the patient and healthcare provider have a shared understanding of the cause of the pain, and the treatment for the pain. However, if the patient's recovery deviates from the medically defined prognosis, fear induced physiological and emotional arousal may result. This, in turn, exacerbates the likelihood of psychological variables impacting upon the patient's interpretation of the pain they experience, as well as their perception of the probable success of the treatment that they are receiving. As a result, diagnosis is complicated and treatment approaches unclear and, in some cases, can lead to the onset of chronic pain (Chapman & Turner, 1990).

4. Chronic pain

4.1 What is chronic pain?

Despite the technological advances in medical techniques and knowledge, a general, agreed upon, description of chronic pain and its impact has not been forthcoming (Mersky & Bogduk, 1994). However, the majority of medical professionals support the view that chronic pain and tissue damage is linked, this despite the lack of empirical evidence to support such a position.

A popularly accepted medical definition of chronic pain is that posited by Bonica (1990). Bonica states "pain is chronic if it persists for a month beyond the usual course of an acute illness or a reasonable duration for any injury to heal, if it is associated with a chronic pathological process, or if it recurs at intervals of months and years". The IASP state that for pain to be defined as chronic it must persist for three months or more. Hardy (1997) states that chronic pain is pain that continues beyond the expected healing time of the disease process and is characterised by the patient's distress rather than a measure of pain. Despite these definitions focusing upon the time for which patients experience pain, it is important to note that chronic pain is not simply acute pain that has persisted for a longer period than anticipated, chronic pain is far more complex involving the interplay of physiological and psychological variables (McCracken, 1998).

Unlike acute pain, chronic pain does not serve a protective function (Bonica, 1990). Indeed, chronic pain consists of an array of complex and multifaceted features that cannot be interpreted simply by applying the theory and understanding of acute pain.

4.2 Prevalence of chronic pain

It is no exaggeration to describe chronic pain as a significant international problem for both individuals and health care providers' alike (Hirsch & Liebert, 1998). Indeed, it has been estimated that, within the United States, approximately 18 percent of adults suffer chronic pain at any given time (Wall & Jones, 1991). Further, it is suggested that this figure is transferable to the population of all developed nations. A study conducted for the World Health Organisation (Gureje, Von Korff, Simon, & Gater, 1998) further highlights the international impact of chronic pain, stating that in Asia, Europe, the United States, and Africa, approximately 22 percent of patients being treated in primary care settings report experiencing pain symptoms of such severity they have required medical treatment/intervention. Research conducted within the United Kingdom suggests that as many as 46 percent of the population suffer with chronic pain (Elliott, Smith, Penny, Cairns, Smith, & Chambers, 1999), and that a not insignificant proportion of the population suffer with severe and disabling chronic pain (5-10 percent) (Smith, 2002).

In terms of financial cost, the impact of chronic pain is massive. It has been reported that, in the United States, within any 14-day period, chronic pain effects 13 percent of the nation's workforce, resulting in the mean loss of 4.6 hours of productive time per person, costing approximately $61.2 billion per year (Stewart, Ricci, Chee, Morganstein, and

Lipton, 2003). Further, it has been estimated that, when you add the cost of treatment and compensation, chronic pain costs the United States $100 - $150 billion per year. Within the United Kingdom, it has been estimated that chronic back pain alone results in the loss of 116 million working days, at a cost of £10, 688 million (Maniadakis & Gray, 2000). The cost to health care providers is equally as astronomical, especially given that only a small proportion of individuals suffering with chronic pain receive treatment from a specialised pain clinic, with the majority of individuals consulting their GP instead. Indeed, a study in the United States revealed that only 1.1 percent of individuals with chronic pain were seen at clinics specialising in the treatment of chronic pain (Turk & Okifuji, 1998), this represents only a small proportion of the estimated 35 percent of Americans who suffer with chronic pain (Harstall, 2003).

4.3 Psychology of chronic pain

Chronic pain does not exist in a physiological vacuum. Indeed, despite the myriad investigations examining the supposed correlation between chronic pain and an identifiable pathology, there is scant evidence to support the supposition that pain can be understood as a singly physical phenomenon. For example, Jenson, Brant-Zawadski, Obuchowski, Modic, Malkasian, and Ross (1994) concluded that individuals who presented with identifiable physical abnormalities, for example disk bulges, reported few incidences of back pain. Fordyce (1995) reported that a significant number of individuals experiencing back pain do not have an identifiable pathology. Indeed, Waddell and Main (1984) state that whilst there is a link between physical impairment and self-reported pain experience, this link is not significant and, at best, can only be described as moderate.

It has been established that there is no perfect correlation between physical pathology and pain severity. Also, it is evident that pain experience is individually unique, as are the responses to chronic pain (Turk, 1996). For example, Turner and Romano (1984) state those individuals' experiencing chronic pain report levels of depression and disability that cover the range of the relative spectrums. Lackner, Carosella and Feuerstien (1996) report that the relationship between pain and depression and disability is mediated by psychosocial variables.

Individuals who suffer with chronic pain find it difficult to engage in a plethora of activities (Gamsa, 1994; Miles, Curran, Pearce, & Allan, 2005); experience sexual dysfunction (Kwan, Roberts, & Swalm, 2005); experience high levels of anxiety, depression, disability, relationship problems, and financial difficulties (Jenson, Turner, Romano, & Karoly, 1991; Katon & Sullivan, 1990; Romano & Turner, 1985; Turk & Holzman, 1986); and are more prone to suicidal ideation and intent (Fisher, Haythornthwaite, Heinberg, Clark, & Reed, 2001).

The empirical evidence to-date indicates that physical pathology alone is an insufficient explanation to account for chronic pain, chronic pain related disability or chronic pain induced depression. As a result, models that are multidimensional in nature have been proffered in an attempt to account for the experimental findings and clinical phenomenology.

5. Psychological Theories of Chronic Pain

5.1 Operant Theory

Fordyce (1976), a proponent of the operant account of chronic pain, distinguished between the medical mediator of the pain and displays of pain behaviour. In essence, the operant theory of chronic pain states that displays of pain, or pain behaviours, are subject to the same influences of conditioning as are any other behaviours (Fordyce, 1996). Therefore, if the pain behaviours are reinforced, they are likely to persist beyond what is considered a reasonable time scale for the medical cause of the pain to have healed (Sanders, 1996).

The approach adopted by Fordyce, drawing on the work of earlier behaviourists (e.g., Skinner, 1953), was considered innovative at the time as it represented a radical departure from the traditional theories of chronic pain, which stated that chronic pain was the result of either underlying tissue pathology, or some form of personality disturbance.

Fordyce proposed that chronic pain should be regarded as a behavioural issue rather than a pathological issue, with the focus being on an excess of pain behaviour and a lack of 'well behaviour'. Pain behaviours, according to Fordyce, included verbal reports and descriptions of pain, nonverbal vocalisations, facial expressions, altered patterns of posture or movement, avoidance, rest, and use of medication. Further, Fordyce argued that these behaviours were influenced by the effects of rest, use of medication, and the responses given by significant others.

According to the operant theory of chronic pain, the role of conditioning influences are unaffected by any pathological cause of chronic pain, indeed, the theory states that conditioning influences could play a role regardless. As a result of Fordyce focusing on the role of contingencies of reinforcement, rather than the role of tissue or personality pathology, chronic pain could be examined in terms of the social, emotional, and physical context of an individual's behaviour, rather than just in terms of internal factors.

Whilst it is agreed that treatments based upon the operant model are successful and supported by empirical evidence (American Psychological Association, 1993; Morley, Ecclestone & Williams, 1999), there is little in the way of concordance with regards to how operant based treatments are successful, and upon the validity of the empirical evidence offered in support of the underlying theory on which the treatments are based. Evidence in support of the operant account of chronic pain relies on studies that suggest behavioural interventions are successful in the treatment of chronic pain (Cairns & Pasino, 1977), that pain behaviours may be cued by the presence of a spouse (Block, Kremer, & Gaylor, 1980), and that responses from significant others/spouses are concomitant with pain behaviours (Romano, Turner, Friedman, Bulcroft, Jenson, Hops & Wright, 1992).

The studies in support of an operant account of chronic pain have been criticised. Turk (1996) argues that the operant perspective is weak as the validity of the pain behaviour construct is questionable; there is a lack of specificity with regards to the pain behaviour construct; it assumes that pain behaviours are maladaptive; the studies in support of an operant account of chronic pain have the potential for pain to be underreported; and, the studies do not take into account individuals lack of acceptance of operant treatment and/or dissatisfaction with operant treatment goals. In essence, the concerns raised by Turk (1996) fall into one of two categories. First, pain behaviours need interpreting so as to understand their purpose and, second, behavioural treatments are not always successful and, even following initial success, they are often followed by relapse (Turk and Ruddy, 1991). Further, operant theories of chronic pain rely heavily on the findings of several key studies, for example, Cairns and Pasino (1977), Block et al. (1980), and Romano et al. (1992).

Cairns and Pasino (1977) suggest that the success of environmental contingency modification in extinguishing/reducing pain behaviours offers evidence in support of the operant account of chronic pain. Whilst this is one interpretation, it does not discount other interpretations. For example, the operant model does not take into account the potential effect that an individual's interpretation of the environmental manipulation may have upon their pain behaviours. Thus raising the issue of a role for cognitions in the onset/maintenance of chronic pain. The argument proffered by proponents of the operant account of chronic pain is similar to the argument that, 'as antidepressants improve mood, depression must be a biological condition'.

It has been argued that there are a multitude of factors that influence pain patients' behaviour. Observable pain behaviour change in individuals receiving pain treatment is not necessarily a result of the supposed contingencies contained within the treatment package. For example, many treatments have been seen to be effective despite the fact that they neglect to address the issue of modifying spouse behaviours (Nicholas, Wilson, & Goyan, 1992). Also, interventions primarily designed to target spouses have been shown to be no more successful than standard interventions (Moore & Chaney, 1985). Therefore, the argument that the operant model is supported by studies that show behavioural treatment has an effect on an individual's behaviour can be seen to be flawed.

Romano et al. conducted several studies that assessed the association between pain behaviours and spouse response, and cited these studies as support for the operant account of chronic pain. However, it has been argued that due to an unrepresentative sample, their findings are not generalisable to individuals with chronic pain as a whole (Eimer & Freeman, 1998).

In essence, whilst there is sound empirical evidence in support of the efficacy of behavioural interventions in the treatment of chronic pain, this evidence does not conclusively support the operant model of chronic pain. As a result of the problems identified above, clinicians and researchers have begun to refer to cognitive behavioural theories as a more satisfactory explanation of chronic pain.

5.2 Cognitive-Behavioural theory

The first cognitive behavioural model of chronic pain was developed by Turk, Meichenbaum and Genest (1983) and was based upon the work of Beck (1976) and Beck, Rush, Shaw and Emery (1979). Turk et al. (1983) based their model on the notion that treatments described as behavioural were not exclusively behavioural. They noted that Fordyce (1976), a proponent of the behavioural account of chronic pain, stated that it was important for patients and clinicians to reach a 'shared conceptualisation'. Also, they pointed to the fact the architects of behavioural therapy, for example Wolpe (1958, cited in Turk, Meichenbaum & Genest, 1983) and Wolpe and Lazarus (1966) stressed the importance of eradicating 'patient's mistaken beliefs'. Current research supports the influence of these, and other cognitive factors. Jenson, Turner and Romano (1991) concluded that pain intensity and attempts to cope with pain is, in part, dictated by cognitions. Further, Wilson, Henry and Nicholas (1993) concluded that cognitions influence mood and pain related disability.

Current research investigating the relationship between pain and cognitions has highlighted several prominent themes. Vlaeyen, Kole-snijders, Boeren and van Eck (1995) state that patients who regard their experienced pain as an indication of more physical injury/damage occurring, will adopt avoidant behaviours and, thus, become more disabled. Research examining depression and the affective aspects of chronic pain has provided evidence in support of a link between these elements and patient catastrophising (Geiser, Robinson, Keefe & Weiner, 1994). Also, Arntz and Peters (1995) concluded that depression and behavioural performance are influenced by self-efficacy, predictions of pain and perceived ability to control pain.

The above studies are indicative of the need to recognise, and include, cognitive factors in a model of chronic pain. Whilst it is not argued that cognitions alone can result in chronic pain, the empirical evidence supports the supposition that that there is a relationship between pain related cognitions and beliefs, and the implementation of coping strategies, either helpful of unhelpful. Therefore, pain related cognitions and beliefs affect the impact that chronic pain has upon an individual's quality of life (Jensen, Turner & Romano, 1991).

The cognitive-behavioural model of chronic pain is based upon the assumption that problems experienced by individuals with chronic pain stem from the way in which the individual reacts to the pain. Reactions are not restricted to observable behaviours, but instead also include cognitions, for example pain related thoughts. The model proposes that the primary differentiating factors between individuals who experience distress and disability as a result of chronic pain and those individuals for whom chronic pain is not significantly problematic, is not necessarily sensory activity, but instead it is the individual's appraisals and interpretations of the pain experienced. The model consists of ten components: (i). Sensation (ii). Iatrogenic influences (iii). Environmental contingencies (iv). Learning history (v). Appraisals and evaluation (vi). Culture (vii). Physiological response (viii). Mood/Affect (ix). Motor behaviours (x). Somatic focus. These components of the model interact with, and exert influence upon, each other. The interactions between components can result in self-maintenance such that distress and disability, as well as physiological arousal, may persist beyond the original pathology (sensory input). Further, avoidance and/or safety behaviours have the capacity to intermeddle with disconfirmation, thus maintaining maladaptive beliefs. Also, at the same time, anxiety and distress have the ability to maintain autonomic arousal and, therefore, may validate an individual's beliefs that a sinister physical pathology exists. This can then result in an increase in levels of anxiety and depression, which, in turn, increases the likelihood of cognitive errors or negative appraisals, as well as having the potential to maintain avoidance and thus perpetuate the cycle.

The cognitive behavioural model incorporates the possibility that stress and iatrogenic factors may influence anxiety and arousal, as well as playing a role in the maintenance of certain behaviours. It stresses the importance of an individual's beliefs with regards to their symptoms and the tendency of individuals to seek reassurance. For example, a significant number individuals experiencing chronic pain report fearing that more physical damage is occurring and that further medical investigations and treatments are required. The cognitive behavioural model posits that the way in which the medical professionals involved in the individual's treatment respond to those fears may reinforce the anxiety experienced by the patient and, therefore, reinforce a passive coping approach and increase levels of disability (Kouyanou, Pither, Rebe-Hesketh & Wessely, 1998). Further, the model assumes that an individual's negative appraisal of experienced pain may result in an attempt at suppressing or neutralising these thoughts. Attempting to suppress or neutralise pain related thoughts may lead to an exacerbation in their frequency, as well as in their perceived aversiveness (Salkovskis & Campbell, 1994).

Further, the cognitive behavioural model predicts that as the chronic pain continues to be experienced, despite medical investigations and treatments, learned helplessness may develop. For example, individuals who gain little significant benefit from interventions may develop the belief that there is no treatment available that will reduce their levels of chronic pain. This, in turn, results in patients not fully emerging themselves in treatment, which, in turn, increases the likelihood of treatment failure, thus reinforcing the belief that there are no beneficial treatments available. This can result in the individual being regarded as unmotivated and may impact upon the treatments they are offered. However, if viewed from within the cognitive behavioural framework, these individuals would be regarded as having maladaptive cognitions and, therefore, require cognitive behavioural therapy (Jensen, Romano, Turner, Good & Wald, 1999). The model hypothesises that the development of pain related beliefs and cognitions are a result of early learning history and cultural background. For example, an individual attaches meaning to pain as a result of previous pain experiences, including other people's pain experiences, and these experiences are influenced by cultural factors (Bates, Edwards & Anderson, 1993).

The cognitive behavioural model interprets the role of significant others in terms of their responses confirming or disconfirming patients' beliefs. For example, an overly solicitous response from a spouse may confirm an individual's belief with regards to their pain-induced disability. This, in turn, prevents the individual from disconfirming their perceptions of disability. A similar influence can be exerted as a result of medication. For example, if an individual believes that they cannot cope without the use of medication (a safety behaviour), any relief, be it real or perceived, can interfere with effective evaluation of the belief (Eimer & Freeman, 1998).

The cognitive behavioural model hypothesises that these cognitions, and their allied behaviours, are inextricably linked and are mutually maintaining. Therefore, individuals who actively avoid activities, as a result of their fear that these activities will result in further damage, are unable to disconfirm their beliefs, and maintain that pain is indicative of danger. Further, if an individual does engage in previously avoided activities, their beliefs will continue to be maintained if they engage in protective behaviours, for example only lifting whilst wearing a back brace.

Viewing chronic pain within a cognitive behavioural framework is advantageous as it is able to explain existing evidence with regards to chronic pain, and it makes clear and testable predictions, including predictions with regards to treatment. Indeed, Turk (1990) states that the identification and treatment of significant chronic pain related cognitions would result in more effective treatments, as appose to the widely adopted blanket approach.

The cognitive behavioural model has received wide and consistent support. Numerous studies (for example, Eccleston, Crombez, Aldrich and Stannard, 1997; Crombez, Eccleston, Baeyens & Eelen, 1998) conclude that individuals who experience chronic pain and have catastrophic cognitions are more likely to be hypervigilant, which intermeddles with attention, as well as amplifying "somatosensory information and primes fear mechanisms" (Crombez et al., 1998, p. 187). The evidence provided by these studies offers support for the hypothesis that there exists a link between anxiety and hypervigilance. Indeed, McCracken, Faber and Janeck (1998) concluded that elevated anxiety levels in chronic pain suffers have the resultant effect of increased complaints of physical pain. This is consistent with the empirical evidence suggesting that pain induced anxiety causes individuals to be hypervigilant.

Crombez, Eccleston, Baeyens and Eelen (1998) concluded that fear of pain is better able to predict avoidance than is both pain severity and physical pathology, therefore, offering support for a cognitive behavioural model of chronic pain as appose to an operant model. This view is supported by numerous studies (for example, Asmundson, Kuperos and Norton, 1997; Vlaeyen, Kole-Snijders, Rottveel, Ruesink & Heuts, 1995).

Whilst the evidence available in support of the hypothesis that the suppression of pain related thoughts is linked to exacerbated pain levels (Sullivan, Rouse, Bishop & Johnston, 1997) was gained from a non-clinical sample, this does not make it invalid. Indeed, empirical evidence from the field of anxiety research suggests that thought suppression increases and maintains distress (Rutledge, 1998).

The autonomic arousal component of the model has strong empirical support. Flor and Turk (1989) conducted a review of the psychophysiology of pain literature and concluded that whilst there is little to differentiate individuals with chronic pain from controls, with regards to baseline physiological measures, there was a significant difference in the way that chronic pain sufferers responded to pain and/or stress.

Flor, Turk and Birbaunmer (1985) conducted a study in which participants were required to discuss subjects that they found personally stressful. During the discussions measures of heart rate and skin resistance levels were taken. They reported that in the chronic pain group, there was an association between stressful tasks and significant increases in paraspinal EMG levels, where as this was not the case in the control group. These findings support the hypothesis that pain and arousal is mediated by appraisal (Flor et al., 1985).

There is support for the role of iatrogenic factors to be included in the cognitive behavioural model of chronic pain. For example, Kouyanou et al. (1998) conducted a study comparing individuals whose chronic pain had a definite medical explanation to individuals whose chronic pain could not be adequately understood medically. The results showed a significantly higher prevalence of medical investigations and use of prescribed drugs in the group for whom no medical explanation was available. They argued that the way in which the medical profession managed this group maintained heightened levels of disability, as well as maintaining the individuals ‘sick role’. They concluded that the way in which the medical profession responds to individuals with chronic pain can exert an influence upon these individual’s pain beliefs and, thus, their pain related treatment-seeking behaviours.

The cognitive behavioural approach to chronic pain, both in terms of understanding and treatment, has been widely accepted as the most accurate and beneficial, to both patients and clinicians (Morley et al., 1999). Indeed, as a model, informing both understanding and treatment of chronic pain, it has received little in the way of theoretical or empirical criticism (Turk & Okifuji, 2002). Despite this, a number of limitations have been identified and reported upon, especially with regards to the model, and subsequent treatment approaches, being unable to 'catch all', nor being able to predict for whom treatment will be beneficial (McCracken, 1997, 1998, 1999).

A further criticism of the cognitive behavioural approach centers around treatment mechanisms. One of the core tenets of the cognitive behavioural approach is that by changing maladaptive thoughts and feelings, desired changes in behaviour will follow. (Burns, Kubilus, Bruehl, Harden, & Lofland, 2003). However, empirical investigation, albeit outside of the field of chronic pain, indicates that this assumption may be flawed. Burns and Spangler (2001) conducted a study examining cause and effect with regards to treatment and attitude change in depressed and anxious patients. There results were inconclusive, leading them to speculate that treatment effect is not dependent on changes in dysfunctional thoughts and attitudes. Further, if has been demonstrated that positive gains, post-cognitive behavioural treatment, are not dependent on altering maladaptive thoughts (Chambles & Gillis, 1993; Abramowitz, 1997).

Further, concerns of a more practical nature have been raised with regards to the cognitive behavioural model and resultant treatment approaches. Lee (1989, 1992) argues that current cognitive behavioural approaches are based upon hypothetical constructs that have invariably proved difficult to measure and, further, these constructs are only subject to change if variables of another level can be manipulated, for example social environment. Lee goes on to argue that, as a result of this theoretical stance, and the difficulties encountered in terms of measurement, the possibility of variable manipulation is prone to being missed or overlooked. McCracken and Eccleston (2003) states that if a contextual cognitive behavioural approach were adopted, this issue would not be problematic as cognitions would be considered in terms of meaning, setting, and history.

5.3 A contextual cognitive behavioural model of chronic pain

Traditionally, both behavioural and cognitive-behavioural therapies, designed for use with chronic pain patients have focused upon control of pain and coping mechanisms, for example, through the use of avoidance, thought suppression (Harvey & McGuire, 2000), distraction (Jaremko, 1978), and mood manipulation (Ahles, Blanchard, & Leventhal, 1983). Whilst there is a robust body of evidence in support of this traditional approach, it has to be noted that there is a certain population of chronic pain patients for which this approach is less than effective (Crook Weir, & Tunks, 1989; Turk & Rudy, 1991). Indeed, if unsuccessful, this approach can lead to an exacerbation of the chronic pain and its associated psychological variables. In an attempt to address the apparent failings that traditional psychological approaches to chronic pain sometimes encounter, it has been proposed that a contextual cognitive behavioural model of chronic pain be adopted, and the resulting treatments implemented.

The contextual cognitive behavioural approach has been described as a ‘third wave’ behavioural approach (behavioural, in this case, referring to the entire range of behavioural and cognitive models/theories/interventions). The ‘first wave’ being behavioural approaches, and the 'second wave' cognitive behavioural approaches. 'Third wave' behavioural approaches, in essence, address issues such as mindfulness, defusion, fusion, acceptance, and values, and includes such therapies as Dialectical Behavioural Therapy (Linehan, 1993), Acceptance and Commitment Therapy (Hayes, Stroshahl, and Wilson, 1999), and Mindfulness Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002). Hayes (2004, pp.658) describes the 'third wave' approaches as follows: "Grounded in an empirical, principle focussed approach, the third wave of behavioural and cognitive therapy is particularly sensitive to the context and functions of psychological phenomena, not just their form, and thus, tends to emphasise contextual and experimental change strategies in addition to more direct and didactic ones. These treatments tend to seek the construction of broad, flexible and effective repertoires over an eliminative approach to narrowly defined problems, and to emphasise the relevance of the issues they examine for clinicians as well as clients".

McCracken, the main proponent of the contextual cognitive behavioural approach in the understanding/treatment of chronic pain, describes it as "a natural evolution of behavioural and cognitive behavioural therapies and is based on acceptance and commitment therapy and mindfulness-based approaches" (McCracken, MacKichan, & Eccleston 2007, pp. 315). In essence, this approach states that the suffering experienced as a result of chronic pain, as well as the impact it has upon an individual's daily life, is the result of language. To better understand the contextual cognitive behavioural model, it is necessary to understand the two models from which it draws upon.

5.4 Acceptance and Commitment Therapy (ACT)

ACT is a combination of both functional contextualism (Biglan & Hayes, 1996) and Relational Frame Theory (RFT). One of the central tenets of RFT is the supposition that the strength of an individual's cognitions is not only dictated by form and/or frequency, but also by the context in which they occur.

ACT proposes that numerous types of psychopathology can be regarded in terms of i). Unhealthy attempts at controlling emotions, private memories, and thoughts (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996) ii). Unhealthy examples of domination of cognitively based functions over those based in actual experience, and iii). Unclear core values and, therefore, an inability to act in a fashion dictated by them. The overarching aim of ACT is to reduce the role, and impact, of literal thought (cognitive defusion), whilst at the same time allowing the individual to fully embrace psychological experiences in a healthy fashion (psychological acceptance). Further, this has to be achieved in a way that is consistent with the individual's chosen values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). ACT does not subscribe to the notion that striving for direct change is unattainable/ineffective and unhealthy, however, rather than an individual attempting to change personal history and automatic thoughts and emotions, ACT proposes that change should centre upon more realistically changeable domains, for example, overt behaviours or real life situations (Hayes, 2004).

It has been argued that, as a result of ACT being a therapy that centers upon language and cognition, it is a versatile therapy that can be successfully utilised in the treatment of an array of psychological issues (Hayes, Barnes-Holmes, & Roche, 2001). Indeed, there is a growing body of empirical evidence in support of the use of ACT for a wide and varied client group.

Randomised control trials have demonstrated that ACT has been shown to yield significantly better post-treatment results in the treatment of depressed women, when compared to cognitive therapy (Zettle & Hayes, 1986); to yield comparable results in respect to both cognitive therapy and partial cognitive therapy, in the treatment of depressed women (Zettle & Raines, 1989); to reduce levels of stress to a significantly greater degree than a behaviourally orientated innovation promotion programme (Bond & Bunce, 2000); to significantly reduce hospital admissions for patients with psychosis, when compared to treatments without an ACT component (Bach & Hayes, 2002); and, to be more successful in comparison to nicotine replacement therapy for smoking cessation at one-year follow up. Further, Strosahl, Hayes, Bergan, and Romano (1998) reported upon a quasi-experimental study examining the effectiveness of ACT. They compared therapists who had been trained in ACT to those who had not, in respect to client outcome (clients presented with a broad spectrum of psychological disorders). The clients of those therapists who had received ACT training completed therapy quicker than those clients whose therapist had not been ACT trained, demonstrated significantly better outcomes, and were more closely aligned to their therapists view with regards to future therapeutic direction.

5.5 Acceptance and Commitment Therapy as a specific treatment for chronic pain

Traditional behavioural and cognitive behavioural approaches (first and second wave) utilised in the treatment of chronic pain contain an exposure component. This component, by its very nature, is difficult for chronic pain patients to comprehend and, therefore, engage with. For example, patients may be asked to carry out tasks they associate with perceived or actual increased levels of pain which, given they are attempting to reduce their pain, makes little sense to them. Whilst ACT also utilises exposure, it does so with a significantly differing focus, expanding upon the traditional approach in three areas, which includes expanding exposure, defusing ridged cognitions, and clarifying patient values.

The first area of expansion concerns experiential avoidance. ACT interprets experiential avoidance as a pathogenic process, and the primary thrust of the therapy focuses upon this (Hayes et. al., 1999). With regards to chronic pain, experiential avoidance has been argued to occur when an individual refuses to maintain contact with pain sensations, emotions, or thoughts associated with pain, and, further, when the individual intentionally behaves in a way that reduces the likelihood of the aforementioned variables occurring, as well avoiding the context in which they occur. In order to address experiential avoidance, ACT expands upon traditional exposure techniques, and targets introspective cues, as well as pain associated cognitions, which may have previously been avoided by the chronic pain patient (Hayes et. al., 1999). In order to achieve this form of exposure work, the therapist targets negative cognitions as the principle component.

The second area of expansion involves cognitive defusion. Traditionally, CBT has targeted negative pain associated thoughts, with the aim of challenging their validity and subsequently altering them. In Contrast, ACT regards the problematic element as being the way in which the individual responds to their pain and the associated stressful thoughts (Hayes et. al., 2002). In essence, ACT does not focus upon challenging the negative automatic thoughts, instead, it focuses upon the process of responding to the avoided content of the cognition. Proponents of the ACT approach argue that this allows the individual to mindfully accept their pain associated negative cognitions.

Finally, the third area expanded upon involves the clarification of values. This aspect of ACT involves encouraging the chronic pain patient to identify and explore their values, and the impact which their attempts to control their pain has upon these values. In essence, the therapist and client explore the impact that attempting to eliminate pain has had upon their life with regards to moving towards their 'life aims'. Patients are then instructed to use these 'life aims' as both a directional measure of progress, as well as a motivational tool to succeed (Wilson & Murrell, 2004).

5.6 Mindfulness

Mindfulness has been described as "bringing ones complete attention to the present experience on a moment to moment basis (Marlatt & Kristeller, 1999, pp. 68). In terms of its use for the chronic pain patient, mindfulness is seen as a method to minimise the impact of reduced awareness, as well the impact of distressing emotional and behavioural psychological variables experienced by the chronic pain patient (Baer & Krietemeyer, 2006).

Mindfulness aims to allow the individual to change the way in which they experience events and, therefore, change the way in which said events influence their behaviour. In terms of a contextual cognitive behavioural model of chronic pain, mindfulness can be seen to be complimentary as it can easily operate within a functional and contextual framework, allowing invoked feelings to be changed, rather than trying to change behaviours that invoke feelings.

Empirical research investigating the use of mindfulness in the treatment of chronic pain is in its infancy. However, results to date show suggest that mindfulness based interventions can result in significant improvements in self-report ratings of pain, as well as general psychological symptoms (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, Burney, & Sellers, 1987; Randolph, Caldera, Tacone, & Greak, 1999).

6. Acceptance

As has already been noted, traditional cognitive behavioural approaches adopted in the understanding and treatment of chronic pain show a high degree of success (Morley et. al., 1999). However, there is a section of the chronic pain population for whom these approaches are less successful. McCracken (1998, 2005) argues that one of the primary reasons for this group failing to benefit from the traditional approach is as a result of its focus upon coping and control.

McCracken et al. (2004) state that psychological techniques to control the impact of pain are beneficial when they succeed and when they lead to overall improvement in long-term functioning for the individual. However, attempting to control the impact of pain can be problematic, for example, when it dominates the individuals' life; when it leads to unwanted side effects; or, when it causes the individual to neglect aspects of their life which are important to them i.e. family or work (McCracken et al., 2004). McCracken suggests that an alternative to attempted control of pain is acceptance (McCracken, 1997, 1998, 1999, 2005).

A generally recognised definition of acceptance is that proposed by McCracken (1998) in which he states that acceptance is 'acknowledging that one has pain, giving up unproductive attempts to control pain, acting as if pain does not necessarily imply disability, and being able to commit one's efforts towards living a satisfying life despite pain' (McCracken, 1998; p22). It has to be noted that this is not the only definition of acceptance, indeed, Risdon, Eccleston, Crombez, and McCracken (2003) suggest that there are as many as eight different accounts of acceptance. However each of the eight accounts share the following three common themes i) the need to direct attention away from pain aspects of life. ii) recognising that a cure for pain is unlikely iii) recognising that acceptance is not indicative of personal failure. McCracken (1998,1999) goes on to state that whilst encouraging acceptance of chronic pain maybe a legitimate treatment approach, it is not as straight forward as making a decision to accept, or engaging in a simple mental exercise. Instead, acceptance requires that the individual withdraw from their battle with chronic pain, that they adopt and implement a realistic approach to their pain, and that they engage in positive activities.

The majority of individuals diagnosed with chronic pain actively engage in the search for a solution to, or a minimisation of, the symptoms that they experience (Aronoff & McAlary, 1992). Whilst this pursuit of a reduction in pain symptoms appears to be laudable and, indeed, has been perceived as the obvious way in which to proceed for both clinicians and patients alike (Morley et al., 1999), it has been argued that this approach could be regarded as avoidance (McCracken, Gross, Aikens & Carnike, 1996). Further, if, as has been suggested, it is classified as avoidance, this approach could be considered to be maladaptive for individuals with chronic pain. The rational for this assumption is based upon the fear avoidance model (Fordyce, 1976; Letham, Slade, Troupe, & Bentley, 1983; Vlaeyen & Linton, 2000), which states that avoidance in chronic pain patients can often lead to physical deconditioning, the development of chronic disability, and the tendency to catastrophically interpret activities as likely to result in injury and increase pain. Also, avoidance in chronic pain patients has been demonstrated to be linked to depression, suicidal ideation and numerous other psychiatric disorders (McCracken, Zayfert, & Gross, 1992; Fisher, Haythornthwaite, Heinberg, Clark, & Reed, 2001).

Whilst there may appear to be little intrinsic logic in the supposition that giving up attempts to reduce chronic pain symptoms may be a useful treatment approach, data from elsewhere within the health field, including epilepsy research, end stage renal disease research, and research with patients on hemodialysis, would suggest otherwise

(Thompson, 1981). Indeed, it has been argued that if individuals have exhausted all available treatment options, without success, they may direct their efforts at attaining a level of understanding and acceptance of the situation in which they find themselves (Rothbaum, Weisz, & Snyder, 1982). This, in turn, can result in a more positive emotional outlook.

Acceptance is often seen as difficult concept to understand and comprehend when applied to the field of chronic pain and, therefore, is often misunderstood (Risdon, Eccleston, Crombez, & McCracken, 2003). As a psychological concept in the understanding and treatment of chronic pain, acceptance refers to the individual being willing to experience pain so as they can achieve a more fulfilling life, in concordance with their values. Further, it is about the individual realistically appraising their past attempts at controlling pain and willingly desisting in their unrealistic pursuit of a cure, and instead channelling their energies in the pursuit of achievable goals. Acceptance is not about the individual giving up, and it is not about viewing pain as a positive experience.

Acceptance is not an as yet fully explored area within the literature, however, there are a small number of studies that demonstrate a positive association between acceptance and successful adaptation to chronic pain (For example, Geiser, 1992; Jacob et al., 1993; Hayes et al 1994; Schmitz et al., 1996; McCracken, 1998, 1999; Hayes, Bissett, & Korn, 1999, Bach & Hayes, 2002). These studies have been demonstrative in highlighting the association between acceptance and the successful coping with chronic pain. Indeed, these studies have provided evidence to demonstrate that acceptance of chronic pain results in less interference in daily activity, an increase in daily activity, less depression, less overt pain behaviours, less pain related suffering, less anxiety, less medication usage, fewer hospital visits and, individuals being more likely to be considered adaptive copers as apose to dysfunctional.

McCracken (1998), the main proponent with regards to acceptance and chronic pain, conducted a study to investigate whether acceptance of pain would be associated with lower perceived pain intensity, less pain-related distress and avoidance, less depression and disability, and better daily function in persons seeking treatment for chronic pain. 160 chronic pain patients, who were on the waiting list for treatment at a specialised pain clinic, were recruited. Participants were required to complete a battery of questionnaires, including the Chronic Pain Acceptance Questionnaire (CPAQ, Geiser, 1992). The CPAQ is recognised as the primary measure of acceptance in chronic pain patients (McCracken, Carson, Eccleston, & Keefe, 2004). The results from this study indicated that greater acceptance of pain was associated with lower reports of pain, less pain-related anxiety and avoidance, less depression and disability, and better work status. Further, the significant relationships between acceptance and measures of functioning were independent of pain intensity. McCracken (1998) acknowledges that as the participants used within the study were on a waiting list for treatment at a pain clinic, they can be seen to demonstrate a level of pain unacceptance that may confound results. To address this issue, McCracken suggested further research is required using participants who are no longer seeking treatment for their pain.

In a further study (McCracken, Spertus, Janeck, Sinclair, & Wetzel, 1999), 190 chronic pain patients, again seeking treatment at a specialised pain clinic, were categorised in accordance to their coping style as identified by the Multidimensional Pain Inventory (Kerns, Turk, & Rudy, 1985). The Multidimensional Pain inventory (MPI) categorises individuals as dysfunctional, interpersonally distressed, or adaptive copers. The study aimed to investigate the role, if any, that pain-related anxiety and acceptance of pain contributed to the categorisation of coping styles, as measured by the MPI. Results indicated that acceptance of pain was strongly correlated with patient categorisation. Indeed, acceptance was revealed to be the strongest predictor of category, independent of the roles of pain, depression, and pain-related anxiety. This led the authors to conclude that acceptance of pain is a unique behavioural dimension of adjustment to chronic pain. Further, they state that if an individual is able to increase their levels of acceptance, they are more likely to b fall into the category of 'adaptive coper'.

McCracken and Eccleston (2005) conducted a study with aim of examining the relationship between acceptance of chronic pain and future patient functioning. 118 participants on the waiting list for treatment at a specialised pain clinic were recruited. The study differed from previous research as it did not rely upon a single time point cross-sectional methodology, instead, the study adopted a prospective methodology. Participants were on a waiting list for a mindfulness/acceptance based treatment. Measures were taken pre (time 1) and post (time 2) treatment, with a mean time interval between measure administration being 3.9 months. Results indicated that not only was treatment successful in terms of depression, pain-related anxiety, and physical and psychosocial disability, but also that those individuals with greater levels of acceptance at pre-treatment demonstrated significantly greater gains post-treatment. This led the authors to conclude that "willingness to have pain, and to engage in activity regardless of pain, can lead to healthy functioning for patients with chronic pain (McCracken and Eccleston, 2005, pp. 164).

Further studies, although not conducted with chronic pain patients, also lend support to the role of acceptance. Hayes et al. (1999) conducted a study examining the role of control versus acceptance processes in a cold-pressor task. They recruited participants (n=32) from a student population and assigned them to one of three groups. The first two groups were treatment focused, with group one being acceptance focussed and group two control focussed. The third group was termed an 'attention placebo' condition, and participants in this group received information on pain, however, with no treatment focus. Results revealed that those participants in the first group (acceptance focussed) were able to tolerate the pain for longer than those participants in the second (control focused) and third (attention placebo) groups. Further, there was no difference between the three groups with regards to perceived intensity of pain, this despite the fact that the second group (control focussed) directly targeted this variable. This led the authors to conclude that acceptance-based interventions are better able to increase pain tolerance without actually altering perceived levels of pain, than are control-based interventions and no-intervention at all.

Gutierrez, Luciano, Rodriguez, and Fink (2004) conducted a study similar to that described above. They recruited participants (n=40) from a university undergraduate population. Participants were assigned to one of two groups, the first being an acceptance focused group, with participants receiving instruction on how to reduce the influence of thoughts and feelings with regards to pain, and the second, a control focused group, with participants trained to control thoughts and feelings. Participants were given electric shocks that steadily increased in both intensity and duration. Pain tolerance was measured, both pre and post instruction, in terms of the number of shocks participants received before terminating a matching to sample task. Those participants in the acceptance group demonstrated a significant increase in pain tolerance, post-treatment, when compared to those participants in the control focused group. Further, those participants in the control focused group reported a significantly greater decrease in pain intensity, when compared to participants in the acceptance focused group, therefore demonstrating that, despite perceived pain intensity, the acceptance focused intervention was still more effective in terms of pain tolerance.

7. Conclusion

The understanding and treatment of chronic pain has advanced immeasurably over the last quarter of a century. Chronic pain is no longer thought of in terms of tissue damage, instead, psychological explanations have come to the fore, and are better able to explain onset and maintenance, as well as provide valid interventions, than can a standalone medical model.

The operant account of chronic pain paved the wave for an understanding of chronic pain in terms of a behaviour related to environment. This, in turn, allowed for the development of a range of treatments that proved to demonstrate some degree of success. The cognitive behavioural account of chronic pain built upon the foundations of understanding laid by the operant account, and brought into play cognitive variables. This allowed for a fuller understanding of chronic pain and its wider psychological impact, as well as the development of more successful treatment interventions.

Whilst both behavioural and cognitive behavioural models and interventions can be argued to have merit, there is no escaping the fact that they fall short within some areas, and do not benefit all chronic pain patients. However, rather than scrapping these approaches and starting again, a more beneficial direction to peruse would be an amalgamation of the two models, allowing for a contextual cognitive behavioural approach which, in turn, would allow for a complete model of chronic pain, rather than a mixture of competing methodologies.

The contextual cognitive behavioural model of chronic pain differs from the traditional cognitive behavioural model in as much as it is functional rather than mechanistic. Therefore, it does not view suffering, as well as the psychological variables associated with chronic pain, as being the direct result of pain-related experience, thoughts and emotions (as does the traditional cognitive behavioural model). Instead, the contextual cognitive behavioural model views the impact of chronic pain as being resultant of the function of pain-related experiences, thoughts, and emotions.

Traditional psychological approaches to chronic pain adopt a view focusing upon control, however, this approach is not always beneficial to the chronic pain patient. The recent concept of acceptance in the understanding and treatment of chronic pain is an exciting departure from traditional approaches, which allows for a fuller understanding of chronic pain, and the development of further interventions. Acceptance should not be regarded as just new psychological variable, instead, it should be viewed as a "description of a different set of processes of pain and suffering" (McCracken et al., 2004, pp. 7). It has to be noted that acceptance is not a treatment for all chronic pain patients, instead, it would benefit those patients for whom avoidance is a significant issue, and the pursuit of control/cure has become the overarching problem.

Acceptance, as a concept, is still in its infancy, however, its potential to further both understanding and treatment of chronic pain is immense. Further research is required in order to better understand and ratify the concept, however, this is already underway, with McCracken leading the field.

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Empirical Paper

Are there relationships between acceptance and chronic pain?

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Empirical Paper

Abstract

Background: Traditionally, psychological treatments for chronic pain patients are cognitive behaviourally orientated, with a focus upon control. Unfortunately, this treatment approach is not always successful and, in some cases, can exacerbate the pain experience. As a result, researchers/clinicians have re-examined the psychological variables involved in the understanding and treatment of chronic pain, in order to further understanding and formulate a differing treatment approach. Recently, it has emerged that acceptance, as a concept, maybe the way forward in terms of understanding and treating chronic pain patients. McCracken, the leader in the field, hypothesises that greater acceptance of pain correlates with lower perceived pain intensity, less pain-related distress and avoidance, less disability and depression, and better daily function. McCracken (1998) conducted a study in which patients, on a waiting list at a specialist pain clinic, were required to complete a battery of questionnaires assessing acceptance of pain, as well as their adjustment to main. Results from his study supported his hypothesis. The current study aimed to replicate that conducted by McCracken, however, participants were chronic pain patients who had exhausted treatment options, and had been discharged from a specialist pain clinic (research recommended by McCracken).

Method: 65 participants completed a battery of self-report questionnaires (Chronic Pain Acceptance Questionnaire; Beck Depression Inventory; Pain Anxiety Symptoms Scale; Sickness Impact Profile; Visual analogue scale for pain severity; and, a measure of daily uptime). A Pearson's correlational test was preformed to assess bivariate correlations between Chronic Pain Acceptance Questionnaire scores and patient adjustment to pain. Further, a hierarchical multiple regression analysis was carried out to assess the association of acceptance of pain with patient functioning, after partialing out variance attributable to pain severity and demographic variables.

Results: The results largely concurred with those of McCracken (1998), however, there were some differences, and these are discussed. Correlational analysis revealed that

greater acceptance of pain was associated with less pain severity, fewer depressive symptoms, less use of avoidance strategies, fewer fearful pain-related thoughts, less pain related anxiety, less physical disability, less psychosocial disability, and lower overall disability.

1. Introduction

Pain falls into one of two categories, namely acute pain and chronic pain, contained within these two categories are many sub-categories. Acute pain has been described as physiologically functional, and can easily be understood in terms of a medical model. It is characterised by a well defined temporal pattern of pain onset and duration; it is accompanied by signs of hyperactivity in the autonomic nervous system; the severity/impact of the pain diminishes as healing occurs; and the underlying cause of acute pain is predominantly successfully treated with analgesics (Foley, 1993). Acute pain occurs as a direct result of an injury or disease, and occurs at the time of, and immediately following, said injury or disease. For example, acute pain is the type of pain experienced as a result of a fractured limb. Further, acute pain can persist through the healing phase of an injury of disease, and in some cases can be described as recurring, for example, the pain experienced by an individual with arthritis, every time they move a joint.

In contrast, chronic pain is far more complex, and less easily understood within the framework of a medical model. Indeed, this is evidenced by the fact that a universally accepted definition of chronic pain has not been forthcoming. Unlike acute pain, chronic pain does not serve a protective function (Bonica, 1990). Instead, chronic pain is a complex interplay of both physiological and psychological variables.

Despite the technological advances in medical techniques, a general, agreed upon, description of chronic pain and its impact has not been forthcoming (Mersky & Bogduk, 1994). However, the majority of medical professionals support the view that pain and tissue damage is linked, resulting to a preference for medical interventions; this despite the lack of empirical evidence to support such a position.

A popularly accepted medical definition of chronic pain is that posited by Bonica (1990). Bonica states that "pain is chronic if it persists for a month beyond the usual course of an acute illness or a reasonable duration for any injury to heal, if it is associated with a chronic pathological process, or if it recurs at intervals for months and years". The International Association for the Study of Pain state that for pain to be defined as chronic it must persist or reoccur for a period of three months or more.

It is no exaggeration to describe chronic pain as a significant international problem for both individuals and health care providers' alike (Hirsch and Liebert, 1998). Indeed, it has been estimated that, within the United States, approximately 18 % of adults suffer chronic pain at any given time (Wall & Jones, 1991). Further, it is suggested that this figure is transferable to the population of all developed nations. A study conducted for the World Health Organisation (Gureje, Von Korff, Simon, & Gater, 1998) further hi-lights the international impact of chronic pain, stating that in Asia, Europe, the United States, and Africa, approximately 22 % of patients being treated in primary care settings report experiencing pain symptoms of such severity they have required medical treatment/intervention. Research conducted within the United Kingdom suggests that as many as 46 % of the population suffer with chronic pain (Elliott, Smith, Penny, Cairns, Smith, & Chambers, 1999), and that a significant proportion of the population suffer with severe and disabling chronic pain (5-10 %) (Smith, 2002).

In terms of financial cost, the impact of chronic pain is massive. It has been reported that, in the United States, within any 14-day period, chronic pain effects 13 % of the nation's workforce, resulting in the mean loss of 4.6 hours of productive time per person, costing approximately $61.2 billion per year (Stewart, Ricci, Chee, Morganstein, & Lipton, 2003). Further, it has been estimated that, when you add the cost of treatment and compensation, chronic pain costs the United States $100 - $150 billion per year. Within the United Kingdom, it has been estimated that chronic back pain alone results in the loss of 116 million working days, at a cost of £10, 688 million (Maniadakis & Gray, 2000). The cost to health care providers is equally as astronomical, especially given that only a small proportion of individuals suffering with chronic pain receive treatment from a specialised pain clinic, with the majority of individuals consulting their GP instead. Indeed, a study in the United States revealed that only 1.1 % of individuals with chronic pain were seen at clinics specialising in the treatment of chronic pain (Turk & Okifuji, 1998), this represents only a small proportion of the estimated 35 % of Americans who suffer with chronic pain (Harstall, 2003).

Whilst the financial cost of chronic pain can be seen to impact upon health budgets, the impact upon the individual is far greater. Individuals who suffer with chronic pain find it difficult to engage in a plethora of activities (Gamsa, 1994; Miles, Curran, Pearce, & Allan, 2005); experience sexual dysfunction (Kwan, Roberts, & Swalm, 2005);

experience high levels of anxiety, depression, disability, relationship problems, and financial difficulties (Jenson, Turner, Romano, & Karoly, 1991; Katon & Sullivan, 1990; Romano & Turner, 1985; Turk & Holzman, 1986); and are more prone to suicidal ideation and intent (Fisher, Haythornthwaite, Heinberg, Clark, & Reed, 2001). Further, the chronic pain patient experiences hidden costs associated with their condition, for example, the cost of non-prescribed medication, and the work hours lost by family members when acting as carer.

There are currently many interventions available at specialised pain clinics for individuals experiencing chronic pain. These interventions are aimed at eliminating pain completely, or at the very least significantly reducing the impact it has on the individual and their life. These treatments range from surgery to psychological based interventions. Unfortunately, it is rare for these interventions to be completely successful (Turk, 1990). Indeed, Crook, Weir, & Trunks (1989) state that approximately 82 % of patients seeking treatment at specialised pain clinics continue to experience pain at two year follow up. Further, it has been argued that a significant number of individuals diagnosed with chronic pain persist for many years in their attempt to find some cure/relief of their symptoms, but with little success (Crook, Weir, & Trunks, 1989; Elliot, Smith, Hannaford, Smith, & Chambers, 2002).

2. Current Interventions for chronic pain patients

2.1 Pharmacological Interventions

In terms of medical interventions for the treatment of chronic pain, the most commonly utilised is pharmacological pain management. Indeed, the second most widely prescribed drugs in the United States, after cardiac-renal drugs, are pain medications (Schappert, 1998). However, despite their frequent use, currently available pain medications do not cure the problem, or completely eliminate pain, rather they are palliative. Opioids, the most potent analgesics commonly prescribed for chronic pain, have been shown to be only moderately effective. Randomised controlled trials of opioid use as a treatment for chronic pain show a wide range of pain reduction, from 18 % to 66 % (Wilder-Smith, Hill, Spargo, & Kalla, 2001), with an overall weighted mean of all trials equivalent to 33 % (Turk, 2002), thus indicating that the majority of individuals will continue to experience significant levels of pain even with regular use of potent analgesics.

Tricyclic antidepressants and anticonvulsant medications have also been recommended for the management of chronic pain. Outcome studies indicate that up to 64 % of patients achieve at least a 50 % improvement in pain when treated with antidepressants, and 54 % achieve this level with anticonvulsants (Caldwell et al, 2007). However, there is a substantial placebo response of 30 % for antidepressants and 20 % for anticonvulsants, in which patients achieve at least a 50 % reduction in pain (Turk, 2002). Thus, it appears that patients with chronic pain achieve only limited benefits from what is an expensive treatment, with inherent side effects.

2.2 Surgical Management of Pain

After medication, surgery is the next most common treatment for chronic pain. Often the intent of surgery is the elimination of the cause of the pain rather than palliation, as is the case with pharmacological interventions. One of the most common disorders to receive surgery, to eliminate or reduce the associated chronic pain, is back pain. Whilst back surgery has been reported to be beneficial (Burkus, Schuler, Gormet, & Zdeblick, 2004), many large-scale studies indicate that back surgery is associated with poor outcomes (for example, Hanson & Hanson, 2000; Leclaire, Fortin, Lambert, Bergeron, & Rossignol, 2001). Indeed, it has been reported that up to 70 % of back surgery patients report continued or increased pain following surgery (Franklin, Haug, Heyer, McKeefrey, & Picciano, 1994). Further, in one follow-up study of back pain patients, only 20 % reported that they were pain free five years following surgery (Andersen, Christensen, Hansen, & Bunger, 2003).

2.3 Spinal Cord Stimulators (SCSs) and Implantable Drug Delivery Systems (IDDSs)

Over the past quarter of a century, technological advances have resulted in a number of sophisticated implantable devices that are used to treat patients with chronic pain. SCSs involve surgical placement, along the spinal cord, of electrodes that are connected to an external device capable of generating a current along the electrodes, with the aim of interrupting or masking the transmission of noxious sensations from the periphery to the brain. IDDSs consist of the implantation of a pump and a reservoir containing analgesic medication (usually opioids). The pump provides a steady administration of the medication directly into the spinal canal. Segal and Stacey (1998) have suggested that 10,000 SCSs had been implanted world-wide by 1996, 7000 of these in the United States. It has been projected that the 5-year costs required to treat and maintain just one patient with SCSs in the United States would equal $76,180. Thus, by 1996, in the United States, over half a billion dollars had been committed to these devices.

A meta-analysis (Anderson & Burchiel, 1999) of the outcomes of SCSs for chronic back pain concluded that 41 % of patients reported less than a 50 % reduction of their pain. A further study, using a large heterogeneous sample, noted a statistically significant improvement in pain after implantation of SCSs at four year follow up (Kumar, Kelly, & Pirlot, 2001). However, 61 % of the available sample (30 % were lost at follow up) reported that their pain continued to range from uncomfortable (30 %) through to Horrible (10.3 %). Additionally, complications from SCSs occur in approximately 42 % of cases (Turner, Loeser, & Bell, 1995).

Some promising findings have been reported with regards to the use of IDDs. For example, studies have demonstrated a mean pain reduction of approximately 60 % following epidural infusions (Hassenbusch, Stanton-Hicks, Soukup, Covington, & Boland, 1991; Paice, Penn, & Shott, 1996).

Although SCSs and IDDSs appear to be effective in providing pain relief for carefully selected patients, this technology can be expensive, with five year cost being approximately $125, 00 per patient. Thus, although SCSs and IDDSs seem to reduce pain more than pharmacological or surgical interventions, they are associated with high costs and can have a variety of complications.

3. Psychological factors associated with chronic pain

As has been discussed above, medical interventions for chronic pain are rarely 100 percent successful and, if they do result in an improvement for chronic pain patients, this improvement is rarely long lasting. This, therefore, has both financial implications, as well health implications, for the chronic pain patient.

Research has convincingly established that chronic pain should be viewed as a biopsychosocial phenomenon, rather than a purely biological one, and that psychological variables, as well as social variables, are important contributory factors in both successful treatment, as well as in the maintenance of chronic pain. Further, it is well established that chronic pain is associated with high rates of diagnosable psychopathology (Turk & Okifuji, 2002).

The literature to date clearly indicates that it is important to identify psychopathology in chronic pain patients as, if it is not acknowledged and addressed, it can sabotage any attempts to successfully rehabilitate these patients (Gatchel, 1996). Further, Psychopathology has been shown to result in a significant increase in both pain intensity, as well as pain-related disability, which, in turn exacerbates pain-related dysfunction (Holzberg et al., 1996). For example, research has demonstrated that an individual's pain threshold is significantly reduced if they are experiencing pain-related anxiety (Cornwall

& Doncleri, 1988); Biological/medical symptoms are significantly exacerbated as a result of pain-related depression and anxiety (Katon, 1996); the probability of treatment being successful is significantly reduced as a result of pain-related depression (Burns et al., 1998); and, emotional distress has been demonstrated to significantly increase physical symptoms (Sullivan & Katon, 1993).

Early research, conducted in the 1980's, indicated that, when compared to the general population, chronic pain patients demonstrated increased prevalence rates for depression, anxiety, substance misuse, somatisation, and personality disorders. However, flawed experimental methodology led to the questioning of the usefulness of these results/conclusions. For example, no standardised diagnostic criterion was employed, nor were any standardised assessment protocols.

More recent research, which addressed the shortcomings mentioned above, concluded that 77 percent of chronic pain patients met lifetime diagnostic criteria, and 59 percent demonstrated current symptoms for at least one psychiatric diagnosis, this was in comparison to 29-38 percent, and 15 percent, respectively, for the general population (Regier et al., 1988; Robins et al., 1984). Polatin et al. (1993) concluded that the most common diagnosis, within a chronic pain population, was depression and anxiety disorders.

A review of all psychological factors associated with chronic pain is well beyond the scope of the current study, therefore, it will aim to concentrate on those factors most prevalent within the chronic pain literature. In essence, psychological factors, associated with chronic pain, fall into one of two categories. The first category comprises factors that are associated with increased levels of pain, psychological distress/depression, physical disability, pain-related anxiety/fear, and helplessness. The second category comprises factors that are associated with decreases in pain/improved adjustment, decreases in psychological distress, decreases in physical disability, coping strategies, readiness to change, and acceptance.

3.1 Factors associated with poor adjustment to chronic pain

Depression

Pain related depression receives more attention in the literature than does any other psychological factor related to chronic pain. This, in part, is due to the fact that depression is the most consistently reported psychological issue by chronic pain suffers. For example, Polatin et al. (1993) reported that rates of depression within the chronic pain population are extremely high, with current and life time rates of 45 percent and 65 percent respectively. Kinney et al. (1993) suggest that the rate is even higher, reporting current, and lifetime rates of approximately 80 percent. This prevalence data is even more startling when compared to the general population, where recent estimates indicate current rates of five percent, and lifetime rates of 17 percent (Blazer et al., 1994).

In a review of the literature, Fishbain et al. (1997) report that there are five hypotheses posited to account for the strong relationship/association between chronic pain and depression, namely:

(1) The antecedent hypothesis, which argues that depression precedes chronic pain.

(2) The consequence hypothesis, which argues that depression is a consequence of chronic pain.

(3) The scar hypothesis, which argues that bouts of depression, preceding the onset of chronic pain, predisposes chronic pain patients to depression subsequent to the onset of chronic pain.

(4) The cognitive behavioural mediation hypothesis, which argues that cognitions play a mediating role in the relationship between chronic pain and depression.

(5) The common pathogenic mechanisms hypothesis, which argues that pain and depression are physiologically identical, and that chronic pain is a variant of depression.

In a review of 40 studies that addressed the five possible hypothesis above, Fishbain et al. (1997) concluded that there was little, if any support for the antecedent hypothesis; the consequence hypothesis was supported by all of the relevant studies (15 in total); the cognitive behavioural mediation hypothesis was supported by five of the six relevant studies reviewed; the scar hypothesis was partially supported, with some studies indicating that chronic pain patients have a higher percentage of immediate relatives with depressive disorders when compared to the general population and, therefore, there may be a genetic predisposition; and, the pathogenic mechanisms hypothesis received no support.

Fishbain et al (1997) conclude that of the five hypotheses, the consequence hypothesis receives the most support. Further, they argue that as the studies in support of the cognitive behavioural mediation hypothesis indicate that pain related-depression is unidirectional, i.e. depression is a result of chronic pain, this can be seen as further support for the consequence hypothesis.

Aside from the well established disabling affects of depression, depression within a chronic patient population has been shown to be associated with greater pain sensitivity, greater pain persistence, less life control, more use of passive avoidant coping strategies, and non-compliance with treatment (Clark & Triesman, 2004). Further, chronic pain-related depression has been found to be a better predictor of disability than both pain intensity and duration and, rates of suicidal ideation, attempts, and completion are increased when depression is associated with chronic pain (Fisher et al., 2001).

Pain catastrophising

Pain catastrophising has been described as the tendency to focus upon the pain, and to negatively appraise capacity to cope with the pain. In terms of perceived pain severity, catastrophising has been shown to be one the most significant predictors, indeed, it accounts for seven to thirty-one percent of the variance in chronic pain ratings (Biller et al., 2000; Sullivan et al., 2001). Further, empirical evidence points to the fact that pain catastrophising results in greater levels of disability, increased hospital visits, increased levels of pain behaviours, and increased medication usage (Gil et al., 1992; Gil et al., 1993;Jacobson et al., 1996; Keefe et al., 2000).

Whilst the majority of studies examining pain catastrophising have drawn upon data obtained from individuals attending specialised pain clinics, a few have investigated the concept using community chronic pain samples. For example, Severijns et al. (2002) recruited 2789 community based individuals with a diagnosis of chronic pain. They concluded that catastrophising was significantly associated with higher levels of depression, a more negative general health status, fewer social activities, and less energy levels. Further, in a similar study conducted by Turner et al. (2002), findings indicated that pain catastrophising was related to higher levels of psychological distress, and to greater pain-related disability.

Further, whilst it is well established that catastrophising is related to chronic pain, evidence also suggests that it continues to be related to other measures of adjustment even after controlling for pain level and, even after controlling for depression, catastrophising is an important predictor for pain outcomes (Keefe et al., 2000).

Pain-related anxiety, fear of pain, and avoidance

Empirical evidence supports the concept that chronic pain patients become extremely anxious with regards to perceived levels of expected pain and, as a result, engage in fear/pain avoidant behaviours (Vlaeyen & Linton, 2000). Further, data from both clinical, as well as experimental studies, suggests that pain-related anxiety, as well as pain-related fear, are significant predictors of how chronic pain patients adapt to their pain.

Crombez et al. (1999) argue that whilst avoidance of a fear provoking events may be functional within an acute pain population, within a chronic pain population it may actually impede recovery. Indeed, they argue that pain-related fear and avoidance can result in an exacerbation of pain levels. Further, chronic pain patients who experience heightened levels of pain-related anxiety have been shown to expect increased levels of pain when compared to chronic pain patients with low levels of pain-related anxiety (McCracken & Gross, 1993).

Data from empirical research has led to the supposition that when individuals are confronted with a feared scenario, for example, having to bend down to pick an object up, they are likely to experience a myriad of avoidance responses, including worry (McCracken & Gross, 1993); attempts to escape, so as to avoid perceived increase in pain levels, and perceived risk of further injury; and elevated levels of self-reported disability (Crombez et al., 1999).

Waddell et al. (1993) suggest that fear avoidance, with regards to physical activities, has a stronger association with disability than does biomedical variables, leading them to conclude that an individual's fear of pain is far more disabling than the actual pain itself. Further, it has been argued that fear induced passivity and protectiveness lead to a direct, and significant, decrease in several physiological domains, including mobility, muscle mass, and cardiovascular fitness which, in turn, leads to a significant increase in levels of disability (Hildebrandt et al., 1997). Indeed, Vlaeyen et al. (1995) concluded that, in terms of a predictor of disability, fear of re-injury was far stronger than were biomedical signs of pain severity. Further, McCracken and Gross (1993) concluded that a decrease in pain-related anxiety directly predicted significant improvement in functioning, affective distress, perceived levels of pain, and interference with daily activity.

In conclusion, with regards to pain-related fear and anxiety, it would appear prudent to accept that, as a concept, it plays a critical role in chronic pain and, therefore, is a factor that requires addressing in any treatment package.

3.2 Factors associated with improved adjustment to chronic pain

The four prevalent factors, reported within the literature, which are associated with improved adjustment to chronic pain, are self-efficacy, pain coping strategies, readiness to change, and acceptance. The first three factors are well established, and studies abound in support of them. Indeed, the majority of psychological interventions designed for chronic pain patients centre around these factors. Further, these interventions have been demonstrated to be extremely effective for a significant number of chronic pain patients (Burns et al., 1998). However, not all chronic pain patients' benefit from these interventions and, as a result, it has been proposed that clinicians should consider using acceptance as an intervention strategy.

4 Psychological interventions

Chronic pain does not exist in a physiological vacuum. Indeed, despite the myriad investigations examining the supposed correlation between chronic pain and an identifiable pathology, there is scant evidence to support the supposition that pain can be understood as a singly physical phenomenon. For example, Jenson, Brant-Zawadski, Obuchowski, Modic, Malkasian, and Ross (1994) concluded that individuals who presented with identifiable physical abnormalities, for example disk bulges, reported few incidences of back pain. Further, Fordyce (1995) reported that a significant number of individuals experiencing back pain do not have an identifiable pathology. Indeed, Waddell and Main (1984) state that whilst there is a link between physical impairment and self-reported pain experience, this link is not significant and, at best, can only be described as moderate. Indeed, research has shown that, in terms of predictors of patient functioning, psychological factors are more robust than are medical/physical factors (Grossi, Soars, Angesleva, & Perski, 1999).

It has been established that there is no perfect correlation between physical pathology and pain severity. Also, it is evident that pain experience is individually unique, as are the responses to chronic pain (Turk, 1996). For example, Turner and Romano (1984) state that individuals experiencing chronic pain report levels of depression and disability that cover the range of the relative spectrums. Lackner, Carosella and Feuerstien (1996) report that the relationship between pain and depression and disability is mediated by psychosocial variables.

The role of a psychologist within a Pain Clinic is to help individuals manage their pain, predominately through the use of cognitive behavioural therapy, with the aim of improving physical and social functioning, as well as reducing distress (Morley et al., 1999; Simon & Folen, 2001). Indeed, pain management can be seen as being biopsychosocial, as the pain experienced by the individual is biological in origin, the way in which an individual perceives pain, and their cognitive and behavioural responses to pain are psychologically mediated and, the way in which the individual reacts to pain can have significant social effects. Therefore, referrals are made on the understanding that the purpose of the psychological intervention is to teach cognitive and behavioural techniques for reducing the experience and impact of pain.

The role of behavioural therapy and cognitive behavioural therapy as a treatment approach for chronic pain is well established (Flor, Fydrich, & Turk, 1992; Morley, Eccleston & Williams, 1999), and in the majority of clinical settings, is the psychological treatment of choice for chronic pain. Indeed, there is a plethora of research within the literature that supports its validity as a treatment approach.

Treatment approaches that fall within this category generally follow one of two main courses. First, there are the treatments based upon the concept of 'operant pain behaviours'. Following the operant model, behaviours related to pain may be positively reinforced by their desirable consequences, such as increased care, sympathy, and nurturance, whilst at the same time negatively reinforced by avoidance of aversive consequences. Treatment therefore consists of changing environmental contingencies to stop reinforcing learned pain behaviours, while systematically rewarding 'well' behaviours (Benjamin, 1989).

In essence, cognitive behavioural therapy for chronic pain generally aims to alter patient's cognitive and behavioural responses to pain, and involve training the patient to identify inappropriate negative beliefs and expectations about pain, and to employ specific cognitive strategies to replace these with more functional positive ideation and coping responses (Burns et al., 2003; Hanson & Gerber, 1990).

In conclusion, current psychological interventions for the treatment of chronic pain are, on the whole, extremely successful. However, there are a small, but significant, number of patients for whom these interventions are not successful. Therefore, it has been suggested that acceptance be considered as a treatment variable.

5. Acceptance of chronic pain

The majority of individuals diagnosed with chronic pain actively engage in the search for a solution to, or a minimisation of, the symptoms that they experience (Aronoff & McAlary, 1992). Whilst this pursuit of a reduction in pain symptoms appears to be laudable and, indeed, has been perceived as the obvious way in which to proceed for both clinicians and patients alike (Morley et al., 1999), it has been argued that this approach could be regarded as avoidance (McCracken, Gross, Aikens & Carnike, 1996). Further, if, as has been suggested, it is classified as avoidance, this approach could be considered to be maladaptive for individuals with chronic pain. The rationale for this assumption is based upon the fear avoidance model (Fordyce, 1976; Letham, Slade, Troupe, & Bentley, 1983; Vlaeyen & Linton, 2000), which states that avoidance in chronic pain patients can often lead to physical deconditioning, the development of chronic disability, and the tendency to catastrophically interpret activities as likely to result in injury and increase pain. Also, avoidance in chronic pain patients has been demonstrated to be linked to depression, suicidal ideation and numerous other psychiatric disorders (McCracken, Zayfert, & Gross, 1992; Fisher, Haythornthwaite, Heinberg, Clark, & Reed, 2001).

Whilst there may appear to be little intrinsic logic in the supposition that giving up attempts to reduce chronic pain symptoms may be a useful treatment approach, data from elsewhere within the health field, including epilepsy research, end stage renal disease research, and research with patients on haemodialysis, would suggest otherwise (Thompson, 1981). Indeed, it has been argued that if individuals have exhausted all available treatment options, without success, they may direct their efforts at attaining a level of understanding and acceptance of the situation in which they find themselves (Rothbaum, Weisz, & Snyder, 1982). This, in turn, can result in a more positive emotional outlook.

McCracken, Carson, Eccleston, and Keefe (2004) state that psychological techniques to control the impact of pain are beneficial when they succeed and when they lead to overall improvement in long-term functioning for the individual. However, attempting to control the impact of pain can be problematic, for example, when it dominates the individuals' life; when it leads to unwanted side effects; or, when it causes the individual to neglect aspects of their life which are important to them i.e. family or work (McCracken et al., 2004). McCracken suggests that an alternative to attempted control of pain is acceptance (McCracken, 1998, 1999, 2005).

A generally recognised definition of acceptance is that proposed by McCracken (1998) in which he states that acceptance is 'acknowledging that one has pain, giving up unproductive attempts to control pain, acting as if pain does not necessarily imply disability, and being able to commit one's efforts towards living a satisfying life despite pain' (McCracken, 1998; p22). It has to be noted that this is not the only definition of acceptance, indeed, Risdon, Eccleston, Crombez, and McCracken (2003) suggest that there are as many as eight different accounts of acceptance. However each of the eight accounts share the following three common themes i) the need to direct attention away from pain aspects of life. ii) recognising that a cure for pain is unlikely iii) recognising that acceptance is not indicative of personal failure. McCracken (1998,1999) goes on to state that whilst encouraging acceptance of chronic pain maybe a legitimate treatment approach, it is not as straightforward as making a decision to accept, or engaging in a simple mental exercise. Instead, acceptance requires that the individual withdraw from their battle with chronic pain, that they adopt and implement a realistic approach to their pain, and that they engage in positive activities.

Acceptance is not an as yet fully explored area within the literature, however, there are a small number of studies that demonstrate a positive association between acceptance and successful adaptation to chronic pain (For example, Geiser, 1992; Jacob et al., 1993; Hayes et al 1994; McCracken, 1998, 1999; Hayes, Bissett, Korn, & Zettle 1999, Bach &

Hayes, 2002). These studies have been demonstrative in highlighting the association between acceptance and the successful coping with chronic pain. Indeed, these studies have provided evidence to demonstrate that acceptance of chronic pain results in less interference in daily activity, an increase in daily activity, less depression, less overt pain behaviours, less pain related suffering, less anxiety and, individuals being more likely to be considered adaptive copers as appose to dysfunctional.

McCracken (1998), the main proponent with regards to acceptance and chronic pain, conducted a study to investigate whether acceptance of pain would be associated with lower perceived pain intensity, less pain-related distress and avoidance, less depression and disability, and better daily function in persons seeking treatment for chronic pain. 160 participants were recruited, all of whom were on a waiting list for treatment at a specialist pain management centre. The age of the participants ranged from 18 to 82 years old, with a mean age of 46.9 years old. Of the 160 participants, 66.3 percent were female, and 52.5 percent were married, with 22.5 percent being single, 15 percent divorced and 10 percent widowed. Further, participants had experienced chronic pain for a median of 36 months. Participants were required to complete a battery of self-report measures, which included the Chronic Pain Acceptance questionnaire (CPAQ), the Beck Depression Inventory (BDI), the Pain Anxiety Symptoms Scale (PASS-20), the Sickness Impact Profile (SIP), and a visual analogue scale (VAS) for pain severity. The results from this study indicated that greater acceptance of pain was associated with lower reports of pain, less pain-related anxiety and avoidance, less depression and disability, and better work status. Further, the significant relationships between acceptance and measures of functioning were independent of pain intensity. McCracken (1998) acknowledges that as the participants used within the study were on a waiting list for treatment at a pain clinic, they can be seen to demonstrate a level of pain 'unacceptance' that may confound results. To address this issue, McCracken suggests further research is required using participants who are no longer seeking treatment for their pain.

The current study aims to replicate the work of McCracken (1998), however, the target population will be individuals who have been treated at a pain management clinic, as well as having attended a psychology run pain management programme, and have subsequently been discharged as they have exhausted all treatment options available to them. The study aims to be a direct replication of that conducted by McCracken (1998), whilst employing a differing population.

6. Rationale for the current study

As has been discussed, the chronic pain literature clearly states that numerous psychological variables are associated with increased levels of pain, psychological distress/depression, physical disability, pain-related anxiety/fear, and helplessness. Further, unless these variables are addressed, there is little chance of patient improvement.

Whilst current interventions have proved successful in addressing these issues with a significant number of chronic pain patients, there is still a significant number of patients for whom these interventions have proved less than successful. Recently, it has been suggested that acceptance, as a treatment concept, maybe a viable alternative to current interventions, or, indeed, combined with current interventions in an attempt to make them more successful.

Indeed, acceptance has been shown to be associated with better adjustment to chronic pain; lower pain intensity; less pain-related anxiety and avoidance; less depression; les physical and psychosocial disability; more daily uptime; and better work status. However, the data in support of these associations has been gathered from chronic pain patients waiting for treatment, or engaged in treatment. The current study gathered data from individuals who had been treated, and then discharged from a specialised pain clinic, any area lacking within the literature.

7. Hypothesis

As with McCracken's Study (1998), the current study aims to test the hypothesis that greater acceptance of pain will be associated with lower perceived pain intensity, less pain-related distress and avoidance, less depression and disability, and better daily functioning. The essential difference between the current study and that of McCracken is that the current study will employ a participant group who have exhausted available treatment options, and have subsequently been discharged from a specialised pain clinic.

8. Method

8.1 Participants

Participants were recruited via the Pain Clinic at St Mary's Hospital (Portsmouth City NHS Trust). They were required to have been diagnosed with chronic pain, to have attended the psychology pain management programme (a 16 session CBT based programme, that did not include an acceptance module), and subsequently been discharged from the Pain Clinic's Psychology Service, as well as the pain clinic itself.

100 patients met the inclusion criterion, and were invited to take part in the study, via opt-in letter. Of those 100 invited, 68 opted-in, three of whom latter decided to withdraw. Of the 65 participants who opted-in, a majority were female (70.8%) and married (60%; single 12.3%, divorced 18.5%, widowed 9.2%). Subjects ranged in age from 27 to 83 years (mean = 53.35 years, SD = 10.97) and they had suffered with chronic pain for a median of 10 years (range 2–40 years). A significant proportion of the subjects were medically retired, or not working due to their pain (90.8%).

8.2 Ethical Issues

In terms of research ethics, every effort was made to ensure that participants did not feel pressured to take part in the study, that they were fully aware of the aims of the study, and that they would remain anonymous.

To ensure that personal details of individuals were not accessible to the researcher prior to consent being gained, the Consultant Clinical Psychologist at the Pain clinic identified potential participants using the inclusion criteria. Once potential participants had been identified, the Consultant Clinical psychologist wrote to the perspective participants, explaining the proposed study, and asking if they were willing to partake. Included within the invitation letter were an information sheet, an opt-in slip, a consent form, and a stamped addressed envelope (See Appendix 1). Participants were required to complete the opt-in slip and the consent form, and return them within ten days. Those participants that agreed to take part in the study were contacted, and a convenient time and venue were arranged for the interview to take place. The details of those participants that did not return the opt-in slip were destroyed, and they were not contacted again.

The information sheet included within the invitation letter was intended to promote transparency, and clearly outlined the aim of the study; the reason for the participant having been approached; consent procedure; confidentiality; and, stressed the fact that potential participants did not have to take part and, further, could withdraw at any time even if they did initially consent to take part. Further, included on the information sheet was the contact number for both the researcher and the Ethics committee at the University of Southampton so, if potential participants had any questions, they had a clear pathway to pursue.

To ensure anonymity, all participants were allocated a study code number which only the researcher was able to identify participants from. All data was entered and analysed in terms of the study code number, and at no point were names entered into the database. All completed questionnaires were stored in a locked filing cabinet at St Mary’s Hospital, and was only accessible by the researcher. All data collected was used for the current study only, and was collated onto SPSS, using study code numbers, and stored on a password protected computer, only accessible by the researcher.

In terms of further ethical issues, it was felt that there was the slight possibility that participants may have become distressed when completing the questionnaires, however, it was made clear that any issues could be discussed with the researcher and, if this failed to resolve the problem, they would be offered an appointment with the consultant clinical psychologist at the specialised pain clinic. No one within the research sample felt the need to take up the above offer, indeed, no one reported feeling any distress.

There was also the possibility that participants may have become inconvenienced as a result of the amount of time they had to spend completing the questionnaires, however, they were informed that they could withdraw at any time, and withdrawing would result in no repercussions. No one opted to withdraw on commencement of questionnaire completion.

The current study and protocol was approved by the ethics board of the Southampton University School of Psychology, and the Local research ethics committee.

8.3 Procedure

The consultant psychologist wrote to the perspective participants, explaining the proposed study, and asking if they were willing to partake. Included within the invitation letter was an information sheet, an opt-in slip, a consent form, and a stamped addressed envelope. Participants were required to complete the opt-in slip and the consent form, and return them within ten days. Those participants that agreed to take part in the study were contacted, and a convenient time and venue were arranged for the interview to take place.

At the start of the interview, participants were briefed on the study, and what was expected of them, and were once again given the option to withdraw. Participants were then required to complete the Chronic Pain Acceptance Questionnaire (CPAQ), the Beck Depression Inventory (BDI), the Pain Anxiety Symptoms Scale (PASS), the Sickness Impact Profile (SIP), and a Visual Analogue measure of pain severity (VAS), as well as completing a questionnaire to glean demographic data. On completion of the questionnaires, participants were given the opportunity to ask any questions. Each interview lasted approximately 90 minutes.

9. Measures

The data for this study was collected through the use of self-report measures, which the participants completed in their own homes. Information was gathered with respect to the following areas: demographic data, measure of perceived pain, daily 'uptime', acceptance of pain, depression, pain-related anxiety, and physical and psychosocial disability. All the measures utilised are frequently employed in both clinical and research settings. All measures can be found in appendix 2.

9.1 Perceived Daily up-time

Participants were asked to estimate the percentage of their waking hours that they would describe as 'useable', and not spent in periods of forced inactivity as a result of pain.

9.2 Chronic Pain Acceptance Questionnaire (CPAQ)

The psychological concept of acceptance, in relation to chronic pain, is a fairly recent advance and, as such, other than the CPAQ, there are no other psychometric tools available that are designed specifically to measure the concept. Indeed, a trawl of the psychological literature revealed that in all chronic pain studies assessing the concept of acceptance, the CPAQ was always used. The only exception to this was a study conducted by Viane et al. (2004), in which a sub-scale of the Illness Cognition Questionnaire was utilised, however, this questionnaire was not designed to measure the concept of acceptance and, therefore, it was felt it was unsuitable for the current study.

Therefore, a measure of pain acceptance was obtained using the CPAQ (McCracken et al, 2004). The CPAQ is a 20-item questionnaire, derived from a measure designed by Geiser (1992), and is designed to measure acceptance of pain. Items on the CPAQ are rated on a 0-6 scale, with 0 being 'never true' and 6 being 'always true'. The questionnaire yields two sub-scales, activity engagement (11 items, for example, "I am getting on with the business of living no matter what my level of pain is") and pain willingness (Nine negatively keyed items, for example, "I would gladly sacrifice important things in life to control this pain better"), as well as a total score. The maximum score obtainable on the CPAQ is 120 (maximum score on activities engagement sub-scale = 66 - maximum score available on pain willingness sub-scale = 54), with the higher the score indicating a higher level of acceptance with regards to chronic pain. The CPAQ has been shown to be reliable and valid measure of pain acceptance (McCracken et. al, 2004). Both the sub-scale scores and total score have been shown to be internally consistent (α=. 78 - .82;

McCracken et al, 2004) and have been shown to correlate significantly with various measures (for example, avoidance, emotional distress, and patient functioning) lending support to the supposition that they are a valid measure of acceptance of chronic pain.

9.3 Beck Depression Inventory (BDI)

As has been discussed, depression is one of the most commonly reported psychological issues within the chronic pain population. Further, depression can exert an influence upon a number of areas which, in turn, negatively impact upon physical and psychosocial functioning. Therefore, for the current study, it was necessary to identify a valid psychometric measure of depression, for use with a chronic pain population.

It has been suggested that various symptoms of depression (for example, decreased libido, appetite, and weight loss (somatic aspects of emotional functioning)) are also symptoms commonly associated with chronic pain, or the medications used to treat chronic pain (Gallagher & Verma, 2004). However, there is no consensus within the literature with regards to whether the presence of somatic symptoms in chronic pain patients should be regarded as evidence of depressed mood, or whether depression in chronic pain patients should be measured via symptoms not considered secondary to physical disorders (Wilson et al., 2001).

There are numerous psychometric measures of depression reported within the psychological literature, however, with regards to use for a chronic pain population, there are fewer. The most commonly used measure of depression for chronic pain patients, both for clinical purposes, as well as research purposes, is the BDI (Wesley et al., 1999). It has been argued that when the BDI is used as part of an intervention package for chronic pain patients, a revised scoring system should be adopted to take into account the possible impact of somatic variables (Wesley et al., 1999; Williams & Richardson, 1993). However, when the BDI is used for research purposes with chronic pain patients, the evidence suggests that it is a reliable and valid measure, and that a revised scoring system is not necessary, nor indeed recommended (Dworkin et al. 2005).

The Initiative on Methods, Measurements, and Pain Assessment in Clinical Trials (IMMPACT) use the following criteria when evaluating core outcome measures: (1) appropriateness of the measure's content and conceptual model; (2) reliability; (3) validity; (4) responsiveness; (5) interpretability; (6) precision of scores; (7) respondent and administrator acceptability; (8) respondent and administrator burden and feasibility; (9) availability and equivalence of alternative forms of administration; and (10) availability and equivalence of versions for different cultures and languages. With regards to the measuring of emotional functioning/depression within a chronic pain population, IMMPACT recommend the use of either the BDI or the Profile of Mood States (McNair et al., 1971), stating that both measures have well established reliability and validity in the assessment of symptoms of depression and emotional distress, and they have been used in numerous clinical chronic pain trials. Further, they state that the BDI provides a well accepted measure of the level of depressed mood in a chronic pain sample (Dworkin et al., 2005). Additional support for the use of the BDI with a chronic pain sample is offered by numerous researchers, for example, Novy et al. (1995), Turner and Romano (1984), and Wesley et al. (1999).

The BDI is a 21 item self-report questionnaire designed to assess common cognitive, affective, and vegetative symptoms of depression. Each item is scored on a scale of 0 (neutral) to 3 (maximum severity), and a total score is obtained by summing all items. The minimum score obtainable is 0 and the maximum 63, with a score of 20 or above indicating clinically significant symptoms. The BDI has well established psychometric properties, and has been shown to be a reliable and valid measure of depression (Beck, Steer, and Garbin, 1988). Further, it is widely used in both clinical and research settings, and has been validated with chronic pain patients, demonstrating good sensitivity, specificity, and validity (Turner & Romano, 1984). In a review of major studies which utilised the BDI, conducted by Beck et al. (1988), it was concluded that the BDI has high internal consistency (mean alpha=0.87); good test-retest reliability (>0.60); and, high concurrent validity with clinical assessments of depression. Further, as well as being related to clinical assessments of depression, the BDI has demonstrated strong positive relationships with numerous well established psychometric measures of depression, for example, the Hamiliton Psychiatric Rating Scale for Depression and the Zung Self-reported Depression scale. Also, it has been demonstrated that the construct validity of the BDI is good, with the instrument being able to identify relationships between physiological, behavioural, and attitudinal variables theorised as being indicative of depression.

Given that IMMPACT recommended the use of the BDI, coupled with the fact that it is the most widely used measure when assessing depression in a chronic pain population, it was decided that the most appropriate measure of depression would be the BDI (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

9.4 Pain Anxiety Symptoms Scale (PASS-20)

As previously described, the chronic pain experience is significantly exacerbated as a result of invoked pain-related anxiety, and fear responses/avoidance. This, in turn, can lead to a direct increase in both suffering and disability (Vlaeyen et al., 1995(a); Vlaeyen et al., 1995(b); Crombez et al., 1999). Further, it has been argued that pain-related anxiety, and fear responses/avoidance, negatively impact upon an individual's perceived level of pain, as well as maintaining undesirable chronic pain behaviours (Philips, 1987; Asmundson et al., 1999). Therefore, in order to investigate the impact/influence that levels of acceptance have upon pain-related anxiety, and fear responses/avoidance, it was necessary to select a psychometric instrument that would allow for an accurate measure of these two psychological variables.

Whilst there is a plethora of research supporting the supposition that pain-related anxiety, and fear responses/avoidance, have a significant negative impact upon individuals with chronic pain, there is a scarcity of psychometric tools designed to measure the relationship between these two psychological variables and chronic pain (Larsen, Taylor, & Gordon, 1997). Further, it is well established that anxiety and fear are comprised of at least three separate components, namely, (i) cognitive (ii) motoric (iii) physiological responses (Lang, 1968; Rachman & Hodgson, 1974; Hugdahl, 1981). Therefore, any psychometric measure selected would need to measure across these domains to be considered valid (Larsen et al., 1997; McCracken, 1997). Of the measures available, only one, the PASS, measured across the three domains. Other measures contained within the literature, for example the Pain Sensitivity Index (Gross, 1992), only measured one response modality (Burns et al., 2000). Indeed, research comparing the PASS to the two other possible measures of pain-related fear and anxiety (Speilberger Trait Anxiety Index and Fear of Pain Questionnaire) demonstrated that scores obtained on the PASS were significantly more correlated with disability, avoidance, and complaint, when compared to scores obtained on the Speilberger Trait Anxiety Index (Speilberger, 1983), and, further, they were significantly more correlated with pain and disability than were scores obtained by Fear of Pain Questionnaire.

Therefore, given the criterion to be met by any psychometric tool deemed appropriate for the current study, it was felt there were only two options. First, a combination of psychometric measures could be employed to gain a measure across all modalities. However, it was felt that this option was inappropriate as there was no previous research available to support the validity of such a combination and, further, even if there were, it would be overly time consuming for the participants of the study. The second, and chosen option, was to use the PASS.

The original version of the PASS (McCracken et al., 1992) was designed specifically to measure pain related anxiety within a chronic pain population. It consists of 40 items, which provide a measure on four sub-scales (each sub-scale consisting of ten items), namely, cognitive anxiety symptoms, escape avoidance, fearful thinking, and, physiological responses. A frequency scale, rated from 0 (never) to 5 (always), is employed to rate each of the 40 items. The four sub-scales of the PASS have been shown to be moderately correlated (r=0.51 to r=0.75). Further, the four sub-scales and the total score are internally consistent (alpha=0.74 to alpha=0.94), and they achieve good test-retest reliability (r=0.74 to r=0.87). When demographic variables were analysed, results indicated that scores obtained on the PASS were independent of pain duration, location, sex, and marital status.

There is a significant body of evidence in support of the PASS being a valid and reliable measure of pain-related anxiety and fear. For example, scores obtained on the PASS have been shown to correlate with scores obtained on general measures of pain severity, anxiety, and depression (McCracken et al., 1992; Burns et al., 2000; Strahl et al., 2000). Further, it has been demonstrated that the PASS correlates with measures of disability, anxiety sensitivity, hypervigilance and preoccupation to pain, general physical complaints, and lifting capacity (McCracken et al., 1996; Crombez et al., 1999; McCracken et al., 1993; Asmundson et al., 1995, McCracken, 1997; McCracken et al., 1998; Burns et al., 2000). Also, the PASS has been demonstrated to predict a patient's physical functioning beyond the contributing factors of depression, general anxiety, and pain (Burns et al., 2000).

In summary, the PASS was designed, and developed, to assess pain-related anxiety and fear in those individuals diagnosed as suffering with chronic pain. Theory and research support the instruments use of a multi-modal approach, as well as establishing the instruments validity, reliability, and clinical utility. However, the 40-item PASS can prove rather time consuming to complete, which may not prove too much of a problem within clinical settings, but, when used as part of a battery of questionnaires for research purposes, can pose a problem. In order to address this issue, McCracken and Dhingra (2002) revised the 40-item PASS so as to produce a 20 item version, the PASS-20.

To revise the original 40-item PASS, 282 chronic pain patients completed the Beck Depression inventory, the 40-item PASS, and the Sickness Impact Profile. The first stage of the revision process involved conducting intercorrelational analyses of the four subscales. Items for the revised version (PASS-20) were selected in sequence, based on the size of their corrected item-total correlation. Following the intercorrelational analysis, a repeat reliability analysis was conducted, and this showed that the original ten item sub-scales could be reduced to five item sub-scales, whilst retaining satisfactory reliability and variance (average alpha=0.81, range 0.75 to 0.87).

Following the repeat reliability analysis, an analysis was conducted to explore the interrelations between the sub-scales of the 40-item PASS and the sub-scales of the PASS-20. This analysis revealed that the sub-scales of the PASS-20 had good convergent, as well as divergent, validity. Further analysis revealed that all four of the sub-scales of the PASS-20 had good to excellent internal consistency.

Further evaluation of the PASS-20 (Roelofs et al., 2004), confirmed that it is a good reflection of the original PASS, and supported the original findings of McCracken and

Dhingra, concluding that the PASS-20 is a valid instrument in the measurement of pain-related anxiety and fear responses/avoidance.

In summary, as with the original PASS, the PASS-20 consists of four sub-scales containing five items: cognitive, Escape/avoidance, Fear, and Physiological anxiety, with each of these sub-scales scored on a six point scale (0=Never through to 5=Always). A total score is obtained by summing the sub-scale scores. The maximum total score obtainable on the PASS-20 is 100 (maximum score per sub-scale being 25), with the higher the score indicating a higher the level of anxiety. The shortened version of the PASS has been shown to demonstrate good internal consistency (mean alpha=0.81), criterion reliability and construct validity. Further, it has demonstrated strong correlations with the original sub-scales and with measures of patient functioning, and an appropriate factor structure, supporting the validity of the derived scores as indicies of pain related anxiety responses.

Therefore, given the need to gain a valid and reliable measure of pain-related anxiety and pain-related avoidance, coupled with the need for an instrument that is not too time consuming to complete, the PASS-20 was selected, as it was felt that it was the most, if not only, appropriate measure available.

9.5 Sickness Impact Profile (SIP)

Research has consistently demonstrated that chronic pain patients experience high levels of both physical and psychosocial disability (for example, Asmundson et al., 1999; Keefe et al., 2004; Turk & Okifuji, 2002). Therefore, it was necessary to gain a measure of these concepts.

The most commonly used psychometric tool in the chronic pain literature to gain a measure of both physical and psychosocial disability is the SIP (McCracken et al., 2005). The SIP has been described as a well established functional status instrument, meeting high psychometric standards (Lindeboom et al., 2004). Further, it has been utilised with a diverse range of diagnoses and disease severity, and is often used as a criterion against which other scales are evaluated (McDowell & Newell, 1996). Indeed, it has been described as the 'gold standard' for measuring health status (McDowell & Newell, 1996), and as one of the most valid measures of quality of life (Bowling, 1991).

The SIP is a 136-item behaviourally based questionnaire providing a measure of the effect of illness across 12 categories of functioning/daily activity. As well as being able to obtain scores for each of the twelve categories, an overall disability score, as well as scores for two dimensions, physical disability and psychosocial disability, can be obtained (the current study utilises these three scores). The SIP scores are calculated in terms of percentages, with the higher the score indicating the higher the level of disability. The SIP has been shown to have satisfactory internal consistency (r=0.94), test-retest reliability (r=0.92), temporal stability (r-0.92), also, it has demonstrated good convergent and discriminant validity (Bergner et al., 1981), and has been validated for use in populations of chronic pain patients (Follick et al., 1985; McCracken et al., 2005). Further, given the broad range of items/variables covered within both dimensions (physical and psychosocial), the SIP does not suffer from floor/ceiling effects as do most offer measures of disability (Haan et al., 1993)

A measure of both physical and psychosocial disability, as well as a total disability score, was obtained using the SIP (Bergner, Bobbitt, Carter, & Gilson, 1981).

9.6 The Visual Analogue Scale (VAS) for pain severity of the previous week

As part of the data analysis, a hierarchical multiple regression analyses is to be conducted, examining the relationship between acceptance of pain and patient functioning, after controlling for the contribution of pain severity. Therefore, it was necessary to gain a measure of pain severity.

There are three commonly used tools designed to measure pain severity, namely, the visual analogue scale (VAS), the numerical rating scale (NRS), and the verbal rating scale (VRS) (Jensen & Karoly, 2001). Using the same core outcome measure criterion, as described for the BDI (section 6.3), IMMPACT state that, as a measure of pain intensity/severity, there is nothing to choose between the VAS, the NRS, and the VRS. They state all measures are reliable and valid, and that no one scale consistently demonstrates greater responsiveness in detecting perceived pain intensity. Further, the use of the VAS, as a measure of pain severity, have been supported in many studies (e.g. Price & Harkins, 1987; Turner, 1982). Indeed, the VAS has been extensively validated as an independent scale (Jensen & Karoly, 2001) with test-retest reliability for experimental pain rated as moderate to high (r=0.90), and for pain affect ratings for clinical pain rated as moderate to high (r-0.70-0.90). Therefore, given that McCracken (1998) employed the VAS, it was decided to do likewise.

The VAS is a 10cm line, anchored at one end with a label 'no pain', and anchored at the other end with a label 'pain as bad as it can be'. Participants were required to mark the line at the point that best indicated their pain experience over the previous week.

10 Statistical Analysis

10.1 Descriptive analyses of the sample

Descriptive statistics for the current study are shown in table 1.

Various descriptive parameters were computed using the CPAQ scores. A mean score of 60.83 (range: 10-115) emerged, corresponding roughly with McCracken's (1998) mean of 66.53, albeit a little lower. The standard deviation was 23.92, marginally higher than McCracken's (1998) value of 20.77. An analysis of the score distribution suggested a mild but negligible 'pile-up' of scores on the left of the distribution (skewness = 0.02) and a slightly 'flattened' distribution (kurtosis=-0.74) (see Field, 2000, pp.40-41). A Pearson's correlational test was performed to assess bivariate correlations between the CPAQ scores and patient adjustment to pain. This analysis revealed a plethora of significant associations. Greater acceptance of pain (CPAQ, total scores) was associated with less pain intensity (VAS 100-mm) (r=-0.62, p<0.01), fewer depressive symptoms (BDI, r=-0.57, p<0.01), less use of escape/avoidance strategies (PASS – avoidance scale, r=-0.73, p<0.01), fewer fearful thoughts about pain (PASS – fearful-thinking scale, r=-

0.59, p<0.01), less pain-related cognitive anxiety (PASS cognitive-anxiety scale, r=-0.73, p<0.01), fewer pain-related physiological responses (PASS physiological, r=-0.40, p<0.01), less overall pain-related anxiety (PASS total-scores, r=-0.74, p<0.01), greater pain acceptance, specifically in terms of 'activities engagement' (r=0.94, p<0.01) and 'willingness' (r=0.87, p<0.01), less physical disability (SIP-physical, r=-0.45, p<0.01), less psychosocial disability (SIP-psychosocial, r=-0.53, p<0.01), and lower overall disability (SIP-total, r=-0.56, p<0.01). Furthermore, CPAQ total scores were associated with shorter pain duration (r=-0.25, p<0.01), and less time spent active each day (r=-0.73, p<0.01). However pain acceptance showed no relationship with educational level, employment status, marital status, age, and gender.

Insert table 1 about here

10.2 Multiple Regression Analysis

Consistent with McCracken (1998), a hierarchical multiple regression analysis (Field, 2000) was carried out to assess the association of acceptance of pain with patient functioning, after partialing out variance attributable to pain severity (as measured by the VAS) and various demographic characteristics. The analysis was carried out in the following sequence: age, gender, educational level, and duration of pain were entered in Step 1, followed by pain intensity in Step 2, and finally pain acceptance in Step 3. The analysis generated both standardised and unstandardised regression (B, beta) coefficients, together with any change in the percentage of variance explained following entry of a variable. Variables that satisfied the significance criteria ($p<0.05$) were retained. Collinearity diagnostics were also computed to monitor any potential complications caused by multicollinearity (Tabachnick & Fidell, 1996). The dependent variables, were pain-related anxiety and avoidance (both measured by the PASS), depression (BDI), physical and psychosocial disability (SIP), uptime, and work status.

Results for the hierarchical regression analysis are presented in Table 2. Significant predictors of *pain-related anxiety* emerged at each of the three steps. The length of time chronic pain was experienced was a significant predictor in Step 1: the greater the duration of pain the greater the degree of pain-related anxiety. None of the other variables in this initial block were significant. When pain intensity was entered in Step 2 there was a significant improvement in the percentage of variance explained. The more intense the pain experienced the greater the level of pain anxiety. Finally pain acceptance emerged as a significant predictor in Step 3 with greater acceptance of pain predicting less pain-related anxiety.

None of the variables in the first block predicted *escape/avoidance* efforts. However, intensity was significantly predictive in Step 2, with stronger pain intensity being associated with more escape/avoidance responses. Acceptance of pain was significant in Step 3, notwithstanding the contribution of pain intensity. Greater acceptance was associated with less use of escape/avoidance strategies.

No demographic variables predicted *depression* scores in Step 1. However, pain intensity was significant in Step 2, predicting greater levels of depression. Acceptance of pain still emerged as a significant predictor despite controlling for variance attributable to pain intensity. More pain acceptance was predicted lower levels of depression.

No variables in the first block significantly predicted *physical disability*. However, adding pain intensity in the second step produced a significant improvement in the r^2: greater pain intensity was associated with greater physical disability. Acceptance had a negligible impact on the proceedings in the final step, perhaps suggesting that the impact of this variable was attenuated somewhat by the powerful effect of pain intensity.

No variables predicted *psychosocial disability* in the Step 1. However, pain intensity was significant in Step 2, predicting greater levels of psychosocial maladjustment. However, adding acceptance of pain in Step 3 did produce a significant change in the percentage of variance explained, with greater acceptance predicting less psychosocial disability.

The amount of *'uptime'* (time spent active per day) was not predicted by any variables in the first step. Pain intensity did emerge as significant in Step 2, being associated with more 'uptime'. Pain acceptance was significant in Step 3, and was related with less time spent active each day.

No variables predicted *work status* (all *p*'s >0.05) at any of the steps in the hierarchical model.

Insert table 2 about here

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11. Discussion

The aim of the current study was to replicate McCracken's (1998) study but with a different sample. Whereas McCracken (1998) studied individuals who were on a waiting list for pain treatment, and hence who may experience a certain degree of pain unacceptance – a potentially confounding factor – this study was based on individuals who had already been treated for pain and discharged from care. The present findings largely confirm McCracken's findings, albeit with a few important exceptions. As previously found, both pain intensity (as measured by the VAS 100-mm) and acceptance (gauged using the CPAQ) proved to be consistent predictors. More specifically, acceptance of pain played an important role despite controlling for the effect of pain intensity. However, this pattern was not applicable to all areas of patient adjustment: neither pain intensity nor acceptance (or indeed any other variable) predicted employment status (working/not working, due to pain). This contrasts with McCracken's study in which work status was predicted by age, pain intensity and acceptance. Furthermore, neither age nor gender emerged as significant here, whereas McCracken (1998) found that these variables predicted work status and psychosocial disability, respectively. A further difference with the findings of the current study and McCracken's (1998) was that pain acceptance was inversely related to daily 'uptime', whereas previous research has found otherwise (McCracken, 1998; Viane et. al, 2004). The duration of pain emerged as a significant determinant of at least one aspect of patient adjustment – pain anxiety – whereas McCracken found this variable to be of no consequence. However, perhaps the most intriguing discrepancy was that pain acceptance failed to predict physical disability, as measured by the SIP.

How can these discrepancies be explained? There are several methodological and analytic factors worth addressing. However, before discussing the discrepant findings, the consistencies, and their implications will be considered. It appears that when patients find their pain unacceptable, they are more likely to display signs of maladjustment (e.g. becoming depressed, experiencing physical and psychosocial problems with function, due to the pain/illness), regardless of whether they have yet to receive medical/psychological treatment for their pain, or have already been treated and discharged (it must be noted that the participants in the current study received no 'acceptance' component as part of their treatment). Thus, it seems even after medical intervention it is important for patients to continue to acknowledge/accept their pain, in order to improve long-term functioning. Perhaps the most curious thing about this finding is the presumption that people who have already been treated and discharged should be experiencing comparatively less (if any) pain compared to patients seeking treatment, and hence perhaps should be more able to function normally on a day-to-day basis, whether or not they readily accept any residual pain being experienced. Consider for example a patient who has been treated for a severe migraine. Once the pain has subsided, it is reasonable to assume that they would be less need for this individual to acknowledge physical discomfort: thus, pain acceptance should have little or no interference with daily activity or functioning. However, the present evidence suggests otherwise: acceptance continues to play a vital role, even if the intensity of pain has subsided considerably. One inference that may be gleaned from the current findings is that most pharmacological, surgical, cognitive-behavioural treatments, and other remedies for pain, rarely produce substantial and long-term reductions in pain, with most pain sufferers continuing to experiencing considerable discomfort (Waddell, 1987; Crook et al, 1989). Thus, the fact that patients in this study had already received treatment may in practice make little difference – they are probably still in considerable pain, as indicated by VAS scores, and therefore accepting or acknowledging their discomfort may facilitate adjustment.

Explanations for the discrepant findings are rather more intriguing. Consider first, the significant role of 'pain duration' in pain-related anxiety. Why was this variable not relevant in McCracken's (1998) study and what are the implications for current understanding of the role of pain acceptance in adjustment? One explanation for the anomaly is that since McCracken's (1998) subjects were presenting for treatment, it is possible that they had only begun to experience pain more recently. Indeed, the current sample reported having experienced chronic pain for a median of 120 months (range 24-480 months) compared to McCracken's (1998) sample, who reported having experienced chronic pain for a median of 36 months (range 3-372 months). By comparison, patients who have already been through treatment are likely to have been living with their pain for much longer – long enough to have already completed treatment. Thus, pain duration may be more salient in the latter group.

In contrast to McCracken's (1998) findings, the current study found that no variable predicted work status. Since participants in both studies were adults eligible to work, it seemed reasonable to assume that a technical constraint was to blame for the discrepancy. Work status is a categorical variable, therefore it made sense to start by inspecting the cell frequencies – low frequencies in a category can nullify valid statistical analysis (Howitt & Cramer, 2005). As expected, close scrutiny of the frequencies revealed a significant imbalance in the data: more than 90% (59 individuals) of the sample were classified as 'not working', meaning that only an extremely small minority, less than 10%, were categorised as 'working'. This type of mathematical imbalance distorts regression analysis, negating significant associations, and increasing the likelihood of a type II error (Tabachnick & Fidell, 1996). It is very likely that had there been a more equitable distribution of subjects across both categories, both pain duration and acceptance would have predicted employment status reliably.

A further curious finding is that age and gender were not significant predictors in this study, whereas McCracken (1998) found that these factors predicted work status and psychosocial disability. The findings concerning employment status have already been explained, but what about physical psychosocial adjustment? Again, close inspection of the frequencies for gender revealed a significant imbalance – there were twice as many females as males (70.8% of participants were female, compared to 66.3% in McCracken's study). Thus, it is entirely plausible that the small number of men attenuated any association gender had with the criterion measures. However, it is important to also consider the precise relationship between gender and psychosocial functioning reported by McCracken (1998): women indicated greater disability than men, and this was in a sample that was still waiting to receive treatment. Thus, it could be argued that once women have received treatment they regain some measure of psychosocial function, perhaps enough to nullify any differences with men. Since the present sample had already attended a psychological pain management programme any gender differences may have effectively disappeared. However, this is speculation, and further research in this area is required.

Previous research has demonstrated a *positive* relationship between pain acceptance and daily 'uptime' (McCracken, 1998; Viane et al, 2004; McCracken & Eccleston, 2005). Yet, this was not the case in the present study; acceptance negatively predicted 'uptime'. The reason for this finding is unclear. Viane et al (2004) note "patients who accept chronic pain are not passive, but are engaged in daily activities, feel efficacious, and are motivated to complete their activities" (p.287), going on to explain that, once people have accepted pain, they have in effect abandoned any efforts to control their discomfort, and tacitly decided to get on with their daily activities, as normal. Indeed, there seems to be some credence to this argument. After all, acceptance implies that pain is no longer an issue, and hence there is no reason to curtail daily routines. However, 'daily uptime' is an ambiguous concept, and may include a range of activities, ranging from normal domestic chores, to long-established efforts to alleviate pain! Previous researchers seem to assume that acceptance is the *causal* rather than outcome variable. Yet, the reverse may be just as plausible. People, who insist on living their lives as normal, may have a strong sense of control, and hence be less willing to accept the disruption caused by chronic pain. To them, getting rid of their discomfort may be a high priority, translating into repeated clinic/hospital visits to deal with the problem, rather than just sit back and 'take it'. Thus, there is a very distinct possibility that relations between acceptance and 'uptime' may be positive or negative, depending on the prevailing circumstances, which would beg the question as to what those circumstances may be. It is possible that pain sufferers who have already received treatment expect to be able to continue with their normal lives *without* pain. The more determined they are to carry on with their daily activities the less willingly they might be to accept a disruptive condition they are supposed to have been treated for. So, an individual's pre- or post-treatment status may play an important moderating role in the relationship between daily 'uptime' and acceptance of pain. Despite these arguments there is reason to believe that it is acceptance which in fact affects uptime, rather than the other way around. In which case, the relationship between both variables should really be *positive*, as reported in previous studies (McCracken, 1998; Viane et al, 2004). McCracken and Eccleston (2005) demonstrated such a positive relationship using a prospective design. A group of patients referred to a pain management unit for treatment of severe, disabling, and chronic pain, were assessed at two different points in time, separated by almost four months. During each assessment participants completed various questionnaires including the CPAQ. They also indicated the amount of time spent standing or walking about, in other words, 'uptime'. The researchers found that CPAQ scores at Time 1 significantly predicted 'uptime' data at Time 2. This association was significant over and beyond the effect of pain intensity, suggesting a rather robust effect. The relationship was positive, but only with respect to one CPAQ scale, *Activity engagement*. So, what are the implications of such findings for the current study? Is a negative relationship between acceptance and uptime some kind of anomaly? Perhaps, but it is important to bear in mind that previous studies have generally used subjects currently undergoing treatment, or waiting to be treated, in contrast with this study which involved adults who had already completed treatment. Thus, there is a potential moderating effect here that needs to be investigated in future research.

Finally, let's consider perhaps the most intriguing observation of this investigation – the failure of pain acceptance to predict physical disability. Previous studies have reported a significant relationship between these variables, with notable consistency (McCracken, 1998; McCracken & Eccleston, 2005; Nicholas & Asghari, 2006), thereby rendering the present finding anomalous. What explanations can be offered? First, it is important to consider the characteristics of the sample recruited as well as the qualitative distinction between physical and psychosocial adjustment. Since participants had attended a *psychological* pain management programme, it is conceivable that they were primarily concerned with the debilitating effects of pain on their *mental* rather than physical health (perhaps their pain entailed minimal physical impairment). This means that for this group the benefits of accepting their pain will be largely psychosocial rather than physical.

Another explanation pertains to the conceptualisation of acceptance. The CPAQ measures two separate dimensions of acceptance – *Pain willingness* (e.g. 'I would gladly sacrifice important things in my life to control this pain better') and *Activity engagement* (e.g. 'Despite the pain I am now sticking to a certain course in my life'). A study by Nicholas and Asghari (2006) suggested that the predictive value of these subscales was rather inconsistent. In particular, they found that including additional cognitive variables in multiple regression analysis seemed to attenuate relations between the two CPAQ subscales and adjustment variables, including physical disability. In particular, they suggested that *Pain willingness* was a particularly unreliable predictor, causing Nicholas and Asghari (2006) to question its content validity. When subjected to factor analysis *Pain willingness* yielded three separate subscales, rather than just one factor, as originally conceptualised by McCracken (1998). Furthermore, these subscales demonstrated weak internal consistency, and only one predicted physical disability. Additionally, Nicholas and Asghari (2006) note, "In their 2004 study, *Activity engagement* was not significantly predictive of physical disability, but in the 2005 study it was, albeit marginally" (p.276). The studies referred to here are McCracken et al (2004) and McCracken and Eccleston (2005).

If, as has been argued, the construct validity of the CPAQ and it subscales is problematic, leading to inconsistencies in the predictive value of acceptance across adjustment subscales, the failure of acceptance to predict physical disability in the present study may merely be symptomatic of these psychometric problems. Using CPAQ total scores as a predictor variable may simply compound matters. It can be suspected the problem may be largely *analytical.* When considered separately *Activity engagement* and *Pain willingness* relate significantly with both physical and psychosocial disability, as demonstrated by the Pearson's correlational analysis conducted here. If these two dimensions are highly unique – and they appear to be – then treating them as one construct will invariably reduce internal consistency, and hence attenuate potential relationships with other variables.

However, Nicholas and Asghari (2006) accept that their arguments are purely theoretical and, only one possible interpretation of the results obtained. Indeed, they go on to state that the results obtained from their study could actually be interpreted as being supportive of McCracken, and the validity of the two sub-scales and, hence the validity and reliability of the CPAQ total score as a measure of acceptance. Further, they accept that their study had several limitations when compared to McCracken's, and that this, again, means their results need to be viewed with caution. In conclusion, they acknowledge that the CPAQ is the only questionnaire designed to measure acceptance in chronic pain patients, and that further research is required, either to develop a combinational assessment tool, or to address what they consider could be the possible shortcomings of the CPAQ.

Given that Nicholas and Asghari themselves acknowledge that their results can be interpreted as either supportive of the CPAQ, or as non-supportive, and that they accept further research is required before conclusions can be reached, coupled with the fact that there is far more evidence in support of the validity of the CPAQ total score as a measure of acceptance, it was felt that there was nothing to be gained by analysing the data in terms of the two sub-scales. Indeed, analysing the data in terms of the two sub-scales would fail to address the research questions posed by the current study. Further, it was felt that using the total CPAQ score would negate the need for a larger number of statistical tests and, thus, reduce the chances of a type 1 error. Further, given the limited sample size, it was felt that it was necessary to limit the number of predictors. Finally, notwithstanding the issues already addressed, as raised by Nicholas and Asghari, at the time of the current study potential issues with the CPAQ had not been raised and, further, to date the CPAQ is the only questionnaire designed specifically to measure the concept of acceptance in a chronic pain population.

There are other analytic issues to consider. As stated earlier Nicholas and Asghari's (2006) research showed that including additional variables in multiple regression analysis may negate relations between CPAQ scales and adjustment variables. It is possible that acceptance failed to predict physical disability in this study due to the dominant effect of pain intensity (VAS 100-mm) which had been entered at an earlier step. In other words, intense pain may be so debilitating to a person's physical daily activities (e.g. climbing upstairs, lifting heavy objects, getting up/sitting down, trying to drive a car) that accepting or acknowledging this pain may have little or no value. By the same token, while severe pain may be physically debilitating, its impact on mental health may be much less devastating, meaning that acceptance can have a more noticeable impact in this arena.

11.1 Methodological Issues

Hierarchical multiple regression analysis generates results that are heavily influenced by the sequence of entry for predictor variables. Essentially, variables accorded priority of entry normally account for both unique variance (i.e. variation solely attributable to that variable) and shared variance (i.e. variation shared with other variables, yet to be entered in to the analysis). Thus, variables entered in later steps – the final step in particular – invariably account for just unique variance, hence appearing to be less important than they actually are (Tabachnick & Fidell, 1996). However, this argument becomes especially pertinent if late entries fail to predict the criterion, leading to suspicions about sequence of entry. However, in this study, pain acceptance still emerged as a significant predictor despite consistently being entered in the final step. This suggests that any unique variance attributable to acceptance must be substantial. Furthermore, the contribution of this variable would be much more potent if it had been entered at an earlier step.

A further potential issue with the current study is that participants were not randomly selected, raising concerns about the generality of these findings to the wider population (Coolican, 1994). The composition of the sample, suggests a predominantly female, married, poorly/modestly educated (only 7.7% had been to university) and middle-aged group, some of whom were on the verge of retirement age. Thus, questions arise as to whether the findings would generalise to a group of predominantly single, well-educated and young adult males. Males may be more indifferent to or accepting of pain, consistent with their need to maintain a 'tough' or 'masculine' image. Also, along similar lines, it has been demonstrated that the role of spouses can exert significant influence upon how an individual reacts to their pain, and the maintenance of pain behaviours. For example, an overly solicitous response from a spouse may confirm individuals' belief with regards to their pain-induced disability (Block, Kremer, & Gaylor, 1980; Flor, Kerns, & Turk, 1987). Therefore, given the majority of the participants were married, this may have also affected results. Thus, there is a possibility for example that pain acceptance may be so uniformly high in such a sample it fails to distinguish between those who are well or poorly adjusted. Furthermore, response bias is typically a problem in questionnaire based studies (Coolican, 1994). Respondents often tend to try to portray themselves in a socially favourable light, or try to provide responses to support the researchers hypotheses (e.g. trying to respond in a way that shows a relationship between acceptance and adjustment), and it can be quite difficult to accurately gauge the extent of such distortions. Thus, questionnaire evidence needs to be regarded with caution. Finally, significant regression coefficients do not demonstrate causality. As is often the case in correlational/questionnaire designs, a significant relationship between two variables does not imply that one causes the other. The only way to conclusively demonstrate a causal relationship is by conducting a randomised controlled trial in which acceptance levels are manipulated under controlled conditions.

11.2 Implications

What are the implications of these findings for clinical practice? Well, two issues seem particularly salient. The first is that accepting or acknowledging pain should be an integral part of any psychological (or even pharmacological or surgical) therapy to allow for individuals to lead a more fulfilling life, despite their chronic pain. The second is that pain acceptance may play a crucial role regardless of the intensity or even duration of pain being experienced by the patient. Let's consider the first point. Clearly, pain acceptance seems to bear favourably on multiple aspects of a person's adjustment. The present findings merely verify seemingly robust findings about the therapeutic value of accepting pain (McCracken, 1998; McCracken, 1999; McCracken & Eccleston, 2003; Viane et al, 2004). Since the majority of patients attending pain clinics continue to suffer pain for years afterwards it makes sense to incorporate pain acceptance in whatever treatment is dispensed, to maximise its efficacy.

Regarding the second point, it appears individuals will benefit from 'acceptance' component in treatment whether they are experiencing mild pain, such as minor headaches, or are in utter agony, for example from serious injury caused by a road traffic accident. This is an important revelation, as there is often a sense that if a person is experiencing too much pain, whether or not they accept their pain may be immaterial. However, the present evidence suggests that acceptance should be encouraged even in patients experiencing severe, chronic and debilitating pain. Pain duration does not appear to negate the importance of acceptance. Thus, even patients who have been enduring pain for years, and hence probably have an established repertoire of coping measures, may nonetheless experience fewer adjustment problems in their daily lives, by learning to acknowledge their discomfort. McCracken and Eccleston (2003) present some evidence that supports this analysis. Patients seeking treatment at pain management centre, with a median pain duration of 32.5 months, completed various questionnaires, including the CPAQ and the CSQ, an instrument that measures six coping strategies for managing pain (e.g. diverting attention, ignoring pain symptoms, praying, using coping self-statements) (Rosenstiel & Keefe, 1983). Regression analysis showed that pain acceptance significantly predicted various adjustment parameters – pain-related anxiety, physical and psychosocial disability, uptime, work status, and depression – notwithstanding the contribution of coping strategies.

11.3 Future Research

Several key avenues for future research have become apparent. Perhaps the most prominent concerns the inconsistent impact of acceptance across different adjustment variables. The failure of acceptance to predict physical disability needs further investigation. It raises the spectre of convoluted third-variable effects, notably moderation and mediation, as described by Baron and Kenny (1986). Hitherto, researchers on pain acceptance have assumed that the impact of acceptance on adjustment is *independent* and *direct*. This may be far from the case. Consider the notion of independence. It is quite possible that acceptance only predicts certain adjustment parameters given certain conditions (i.e. levels of another variable). The distinction between pre- and post-treatment pain sufferers has already been mentioned as a potential moderating variable. Interactions between this factor and acceptance may help explain some of the inconsistencies between the current findings and McCracken's (1998) study.

Potential moderating effects of other key variables, notably pain intensity, and pain duration also need to be explored. It is entirely plausible for example that acceptance better predicts adjustment given less intense pain, or longer pain duration. Then there is the issue of direct effects. There is a need for research that explores potential indirect pathways, demonstrating mediator effects. For example, accepting pain may reduce its perceived intensity, which in turn improves adjustment. Similarly, acceptance can alleviate depression, which then reduces psychosocial disability.

Another avenue for further research concerns the construct validity of the CPAQ. Are there just two dimensions of acceptance, as suggested by McCracken (1998), or more, as argued by Nicholas & Asghari (2006)? There is a need for more factor analysis using much larger samples, and attempting to control for potential confounding factors. It would appear that acceptance, as a psychological concept, is extremely broad and, therefore, the use of a brief questionnaire to gain a measure of such a concept may not be the most appropriate way to proceed. Indeed, McCracken and Eccleston (2005) acknowledge that, to date, the finding with regards to acceptance and chronic pain are reliant on the use of a short self-report measure (the CPAQ), and that to further understanding, it will be necessary to examine and assess all psychological processes that make up acceptance, which, in turn, will require the development of further psychometric measures. One possible solution to this potential problem in the measurement of acceptance is to employ a combination of measures. For example, Nicholas and Asghari (2006) suggest that using the a combination of the CPAQ, the Pain Self-Efficacy Questionnaire (PSEQ), a catastrophising scale, and a fear avoidance scale would provide a more robust measure of acceptance. However, as already noted, the CPAQ remains the only validated instrument available to measure acceptance in a chronic pain population and, therefore, until further research is conducted, and measures developed, it will remain the measure of choice.

Finally, future research should take the form of randomised controlled trials, in order to conclusively demonstrate the causal value of acceptance, beyond mere longitudinal evidence (see McCracken & Eccleston, 2005).

11.4 Conclusions

The current study aimed to replicate McCracken's (1998) paper on pain acceptance. The investigation extends current understanding in several ways. Firstly, it demonstrates that pain acceptance is associated with better adjustment even amongst pain suffers who have already completed treatment. Hitherto research has tended to focus on people waiting for or currently undergoing treatment. Thus, the fact that a sufferer has received treatment for their pain does not negate the value of accepting that pain. Secondly, this project has shown that value of acceptance in adjustment is by no means consistent. Acceptance failed to predict physical adjustment, echoing previous inconsistencies in the literature, and raising questions about construct validity. Thirdly, the study highlights uncertainties about the direction of relations between acceptance and 'uptime'. This study revealed a negative association, in contrast to the positive relationships reported previously. Overall, the findings have notable implications for pain management. Pain treatments need to incorporate acceptance training as an integral component. Furthermore, patients may need to continue to acknowledge their pain even after undergoing treatment.

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Table 1.
Mean scores achieved for each scale by the 65 participants

Questionnaire/Scale	Range	Mean	Std. Deviation
Visual Analogue Scale (mm)	81	64.38	22.67
Beck Depression Inventory	54	17.71	9.95
Pain Anxiety Symptoms Scale-Avoidance	25	12.49	6.77
Pain anxiety Symptoms Scale-Fearful Thinking	24	8.02	5.34
Pain Anxiety Symptoms Scale-Cognitive Anxiety	25	14.71	5.83
Pain Anxiety Symptoms Scale-Physiological Responses	25	10.3	6.05
Pain Anxiety Symptoms Scale-Total Score	98	45.57	19.78
Chronic Pain Anxiety Questionnaire-Activities Engagement	62	36.86	15.31
Chronic Pain Anxiety Questionnaire-Pain Willingness	47	23.82	10.65
Chronic Pain Anxiety Questionnaire-Total Score	105	60.83	23.92
Sickness Impact Profile-Physical	58.3	19.60	15.05
Sickness Impact Profile-Psychosocial	74.7	22.51	17.89
Sickness Impact Profile-Total	63.1	24.12	14.19
Length of time had chronic pain (years)	38	12.09	7.99
Time active per day (%)	60.00	74.08	17.56

Table 2

Results of hierarchical multiple regression analysis of acceptance and patient adjustment

Criterion Variable	Step	Predictor	β at entry	Δr^2	P	Adjusted r^2
Pain anxiety	1	Duration	0.69	0.10	0.028	0.04
	2	Pain	0.44	0.25	0.000	0.29
	3	Acceptance	-0.53	0.23	0.000	0.54
Avoidance	2	Pain	0.17	0.31	0.000	0.34
	3	Acceptance	-0.16	0.18	0.000	0.52
Depression	2	Pain	0.17	0.14	0.002	0.10
	3	Acceptance	-0.24	0.18	0.000	0.29
Physical	2	Pain	0.36	0.28	0.000	0.23
Psychosocial	2	Pain	0.33	0.16	0.001	0.12
	3	Acceptance	-0.35	0.13	0.002	0.25
Uptime	2	Pain	0.26	0.11	0.009	0.08
	3	Acceptance	-0.62	0.41	0.000	0.51
Work status	n/a	n/a	n/a	n/a	n/a	n/a

Notes: As in McCracken's (1998) study, age, education, gender, and duration of pain were entered in Step 1, followed by pain *intensity* (as measured by VAS, 100-mm) in Step 2, and finally *acceptance* of pain in Step 3. Pain related anxiety was measured with the PASS. Avoidance was assessed with the PASS escape/avoidance scale. The Beck Depression Inventory was used to evaluate depression. Finally, physical and psychosocial disabilities were assessed with the SIP. Furthermore, please note that the unstandardised (beta) coefficients reported for each variable is the value obtained at the point of entry, rather than in the final equation. Thus, these values don't reflected adjustments caused by subsequent entries. There were no significant predictors for work status at any of the steps.

Table 2

Results of hierarchical multiple regression analysis of acceptance and patient adjustment

Criterion Variable	Step	Predictor	β at entry	Δr^2	**P**	Adjusted r^2

Appendix 1

Participant Information

- Letter from Consultant Clinical Psychologist
- Consent form
- Participant letter
- Participant information sheet

Portsmouth Hospitals NHS
NHS Trust

Dr Anne Waters
D Clin Psychol. C Psychol
Consultant Clinical Psychologist

Department of Pain Medicine
St Mary's Hospital
Portsmouth, P03 6AD
Tel: (023) 92286000 ext. 2543

Our Ref: AJW/JMC/

Dear

Re: Research Project Looking at the Relationship Between Acceptance and Adjustment Issues in Chronic Pain

In conjunction with the University of Southampton, we are currently conducting a research project and would like to ask for your help. The purpose of the project is to look at the role of acceptance and adjustment in patients living with chronic pain. The researcher on this study would like to ask you to take part and his letter of invitation is attached. This explains the purpose of the project and what would be involved if you decide to take part. It is entirely your choice whether you would like to take part or not and your decision will not affect any ongoing or future treatment in any way.

If you have any questions about the project please contact the researcher, Mr Ian Colpitts on 0777 972 8731.

Yours sincerely

Anne Waters

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CONSENT FORM

Are there relationships between acceptance and adjustment to chronic pain?

Name: ____

I have read the information sheet provided about the above study. I know that I can discuss this further with the researcher, Ian Colpitts, should I wish to do so.

I also understand that any information I give will be treated as strictly confidential.

I understand that I am free to withdraw from this study at any time, without giving a reason, and without this affecting my medical care or legal rights in any way.

Please tick:

☐ I *agree* to participate in this study.

☐ I wish to receive a copy of the summary report of the research.

Signed: ____

Date: ____________________

Please return this form to the receptionist in the envelope provided.

Thank you.

Ian Colpitts
Trainee Clinical Psychologist

Supervised by: Dr. Anne Waters, Consultant Clinical Psychologist.

University of Southampton

Department of Psychology

Doctoral Programme in Clinical Psychology

University of Southampton
Highfield
Southampton
SO17 1BJ
United Kingdom

Dear Patient,

Re: Are there relationships between acceptance and adjustment to chronic pain? (Ethics No 05/Q1701/14)

I would like to ask you for your help in the above research study. The study has been reviewed by the Isle of Wight, Portsmouth and South East Hampshire Research Ethics Committee.

The purpose of the research is to find out about the feelings and experiences of people, like you, who have chronic pain. The study will look at whether there are differences in how people are feeling, or what they are experiencing, and how they are coping with chronic pain.

The study will take approximately one hour of your time and will involve you meeting with me, either at your home or at the pain clinic, and completing five questionnaires. If you are interested in taking part in this research I would be grateful if you could complete and return the enclosed consent form, using the pre-paid envelope, by 4th August. Please ensure you include your telephone number on the consent form so as I can contact you to arrange a time to meet.

All the information gathered in this study will be made anonymous and individuals will not be identifiable from the summarised results. Your involvement in the research may not have a direct benefit on your care but it may influence the care given to future patients.

You are under no obligation to take part in the research and you are free to withdraw from the research at any time without needing to give an explanation. If you decide not to take part, or to withdraw from the project, your health care would not be affected in any way.

Please contact me on the above number if you have any questions.

Thank you for taking the time to read this letter.

Yours sincerely,

Ian Colpitts
Trainee Clinical Psychologist

Supervised by Dr Anne Waters, Consultant Clinical Psychologist, Pain Clinic, St Mary's Hospital.

Study number: 001

PARTICIPANT INFORMATION SHEET

You are being asked to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please contact Ian Colpitts at the number at the end of this information sheet if there is anything that is not clear or if you would like more information. Thank you for reading this.

What is the purpose of the study?

This study is trying to find out about the experiences of people, like you, who have chronic pain. The study will look at how people cope with their chronic pain and the impact it has upon their life with the hope of providing evidence for new psychological treatment options.

Why have I been chosen?

In order to gain a cross-section of opinions a number of individuals have been asked to take part. In this way, we hope to gather information from a representative sample of people.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect the standard of any future care you receive.

What will happen if I take part?

You will be asked to fill five questionnaires in the presence of a researcher. The results of the questionnaires will be looked at to find out the impact of chronic pain and to try and establish future psychological treatment directions.

How do I consent to take part?

You give consent by completing the enclosed consent form. If you consent you will receive a telephone call offering you an appointment at a venue convenient to you i.e. the pain clinic or your home.

Your participation is voluntary and you are free to withdraw from this study at any time, without giving any reason, without your medical care or legal rights being affected. To do this just contact the number at the end of this information sheet and ask for your answers to the questionnaires to be removed from the computer. You must quote the study number at the top, right hand corner of this information sheet so that I know what information to delete.

Will my taking part in the study be kept confidential?

All information will be kept strictly confidential. The information used in the study will only have the study code number on. Nobody will be able to identify you from this code number.

What will happen to the results of the study?

A report of the study will be written. A summary of the results will be made available on request.

Who is organising and funding the research?

I am a third year clinical trainee at the University of Southampton, Doctoral Programme in Clinical Psychology. This research is being conducted as part of my training.

Who has reviewed the study?

The Department of Psychology Research Ethics Committee, University of Southampton has reviewed the study.

If you have any questions about your rights as a participant in this research or you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Department of Psychology, University of Southampton, Southampton SO17 1BJ. Tel: 023 8059 3995

Contact for further information

If you have any questions, or you wish to request a summary please contact:
Ian Colpitts, Department of Clinical Psychology, University of Southampton, SO17 1PN.
Tel: 023 8059 5321. Email: iancolpitts@yahoo.com

Thank you.

Appendix 2

Measures

- Demographic Data
- Visual Analogue Scale
- Beck Depression Inventory
- Chronic Pain Assessment Questionnaire
- Sickness Impact Profile
- Pain Anxiety Symptoms Scale

Demographic Data

1). Marital status (Please circle).

Single Married Divorced Widowed

2). Level of Education (Please circle).

High School College University

3). Occupation: could you please indicate your occupation. If you are currently out of work as a result of your chronic pain, please indicate your occupation prior to you being unable to work.

…………………………………………………………………………………

4). How long have you suffered with chronic pain?

…………………………………………………………………………………

5). What is your diagnosis (if you have one)?

…………………………………………………………………………………

6). Where do you suffer chronic pain i.e. lower back, arm, neck?

…………………………………………………………………………………

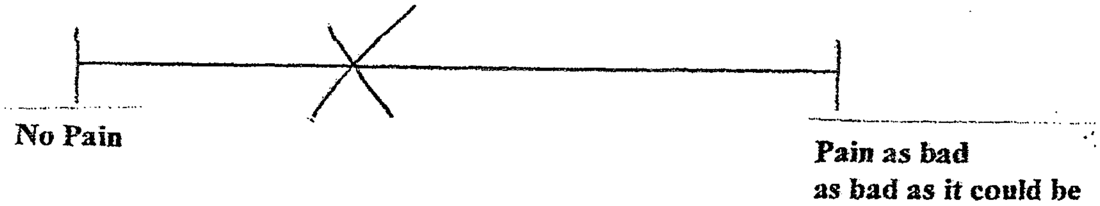
7). What medication do you take for your chronic pain?

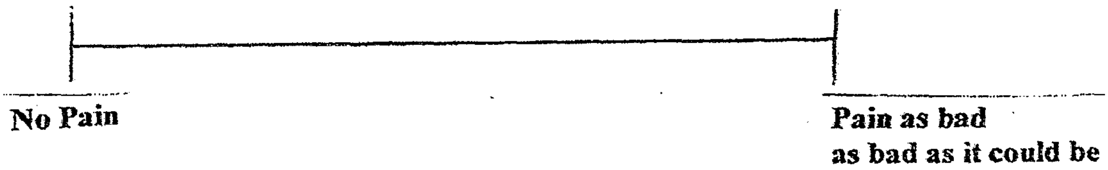
…………………………………………………………………………………

VISUAL ANALOUGE SCALE

Please indicate on the line below, at what point you would describe your pain over the last two weeks.

Example





BDI™

Date: ______________

Name: ______________ Marital Status: __________ Age: ________ Sex: ________

Occupation: ______________ Education: ______________

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2 or 3) next to the one statement in each group which **best** describes the way you have been feeling the **past week, including today.** If several statements within a group seem to apply equally well, circle each one. **Be sure to read all the statements in each group before making your choice.**

1
0 I do not feel sad.
1 I feel sad.
2 I am sad all the time and I can't snap out of it.
3 I am so sad or unhappy that I can't stand it.

2
0 I am not particularly discouraged about the future.
1 I feel discouraged about the future.
2 I feel I have nothing to look forward to.
3 I feel that the future is hopeless and that things cannot improve.

3
0 I do not feel like a failure.
1 I feel I have failed more than the average person.
2 As I look back on my life, all I can see is a lot of failures.
3 I feel I am a complete failure as a person.

4
0 I get as much satisfaction out of things as I used to.
1 I don't enjoy things the way I used to.
2 I don't get real satisfaction out of anything anymore.
3 I am dissatisfied or bored with everything.

5
0 I don't feel particularly guilty.
1 I feel guilty a good part of the time.
2 I feel quite guilty most of the time.
3 I feel guilty all of the time.

6
0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

7
0 I don't feel disappointed in myself.
1 I am disappointed in myself.
2 I am disgusted with myself.
3 I hate myself.

8
0 I don't feel I am any worse than anybody else.
1 I am critical of myself for my weaknesses or mistakes.
2 I blame myself all the time for my faults.
3 I blame myself for everything bad that happens.

9
0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

10
0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I cry all the time now.
3 I used to be able to cry, but now I can't cry even though I want to.

11
0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time now.
3 I don't get irritated at all by the things that used to irritate me.

12
0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

13
0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions than before.
3 I can't make decisions at all anymore.

______ Subtotal Page 1

CONTINUED ON BACK

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HARCOURT BRACE JOVANOVICH, INC.

14
0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.

15
0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

16
0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

17
0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.

18
0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

19
0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less. Yes _______ No _______

20
0 I am no more worried about my health than usual.
1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems that I cannot think about anything else.

21
0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

_______ Subtotal Page 2
_______ Subtotal Page 1

_______ Total Score

CPAQ

Directions: Below you will find a list of statements. Please rate the truth of each statement as it applies to you by circling a number. Use the following rating scale to make your choices. For instance, if you believe a statement is "Always True", you would circle the 6 next to that statement.

0	1	2	3	4	5	6
Never True	Very Rarely True	Seldom True	Sometimes True	Often True	Almost Always True	Always True

1. I am getting on with the business of living no matter what my level of pain is	0	1	2	3	4	5	6
2. My life is going well, even though I have chronic pain	0	1	2	3	4	5	6
3. It's O.K. to experience pain	0	1	2	3	4	5	6
4. I would gladly sacrifice important things in my life to control this pain better	0	1	2	3	4	5	6
5. It's not necessary for me to control my pain in order to handle my life well	0	1	2	3	4	5	6
6. Although things have changed, I am living a normal life despite my chronic pain	0	1	2	3	4	5	6
7. I need to concentrate on getting rid of my pain	0	1	2	3	4	5	6
8. There are many activities I do when I feel pain	0	1	2	3	4	5	6
9. I lead a full life even though I have chronic pain	0	1	2	3	4	5	6
10. Controlling pain is less important than other goals in my life	0	1	2	3	4	5	6

0 Never True	1 Very Rarely True	2 Seldom True	3 Sometimes True	4 Often True	5 Almost Always True	6 Always True

11. My thoughts and feelings about pain must change before I *can take important steps in my life*	0	1	2	3	4	5	6
12. Despite the pain, I am now sticking to a certain course in my life	0	1	2	3	4	5	6
13. Keeping my pain level under control takes first priority whenever I am doing something	0	1	2	3	4	5	6
14. Before I can make any serious plans, I have to get some control over my pain	0	1	2	3	4	5	6
15. When my pain increases, I can still take care of my responsibilities	0	1	2	3	4	5	6
16. I will have better control over my life if I can control *my negative thoughts about pain*	0	1	2	3	4	5	6
17. I avoid putting myself in situations where pain might increase	0	1	2	3	4	5	6
18. My worries and fears about what pain will do to me are true	0	1	2	3	4	5	6
19. It's a relief to realize that I don't have to change my pain to get on with my life	0	1	2	3	4	5	6
20. I have to struggle to do things when I have pain	0	1	2	3	4	5	6

Sickness

Impact

Profile^{tm}

SIP - 10030
SD I - 03564
SD II - 03657

THE FOLLOWING INSTRUCTIONS ARE FOR THE INTERVIEWER-ADMINISTERED QUESTIONNAIRE

INSTRUCTIONS TO BE READ TO THE RESPONDENT

Before beginning the questionnaire, I am going to read you the instructions.

You have certain activities that you do in carrying on your life. Sometimes you do all of these activities. Other times, because of your state of health, you don't do these activities in the usual way: you may cut some out; you may do some for shorter lengths of time; you may do some in different ways. These changes in your activities might be recent or longstanding. We are interested in learning about <u>any</u> changes that describe you today and are related to your state of health.

I will be reading statements that people have told us describe them when they are not completely well. Whether or not you consider yourself sick, there may be some statements that will stand out because they describe <u>you</u> today and are related to your state of health. As I read the questionnaire, think of <u>yourself today</u>. I will pause briefly after each statement. When you hear one that does describe you and <u>is</u> related to health please tell me and I will check it.

Let me give you an example. I might read the statement "I am not driving my car." If this statement is related to your health and describes you today, you should tell me. Also, if you have not been driving for some time because of your health, and are still not driving today, you should respond to this statement.

If you are in the hospital today, you are here because of your state of health, and you are not doing a number of the things you usually do. For instance, if driving is usual for you, then you are <u>not</u> driving today because you are in the hospital, and you should respond to this statement.

On the other hand, if you never drive or are not driving today because your car is being repaired, the statement, "I am not driving my car" is not related to your health and you should not respond to it. If you simply are driving less, or are driving shorter distances, and feel that the statement only partially describes you, please do not respond to it.

I am now going to begin the questionnaire. Please tell me if you want me to slow down, repeat a statement, or stop so that you can think about one. Also let me know any time you would like to review the instructions. Remember we are interested in the recent or longstanding changes in your activities that are related to your health.

THE FOLLOWING INSTRUCTIONS ARE FOR THE SELF-ADMINISTERED QUESTIONNAIRE

PLEASE READ THE ENTIRE INTRODUCTION BEFORE YOU READ THE QUESTIONNAIRE. IT IS VERY IMPORTANT THAT EVERYONE TAKING THE QUESTIONNAIRE FOLLOWS THE SAME INSTRUCTIONS.

You have certain activities that you do in carrying on your life. Sometimes you do all of these activities. Other times, because of your state of health, you don't do these activities in the usual way: you may cut some out; you may do some for shorter lengths of time; you may do some in different ways. These changes in your activities might be recent or longstanding. We are interested in learning about any changes that describe you today and are related to your state of health.

The questionnaire booklet lists statements that people have told us describe them when they are not completely well. Whether or not you consider yourself sick, there may be some statements that will stand out because they describe you today and are related to your state of health. As you read the questionnaire, think of yourself today. When you read a statement that you are sure describes you and is related to your health, place a check on the line to the right of the statement. For example:

I am not driving my car ✓ (031)

If you have not been driving for some time because of your health, and are still not driving today, you should respond to this statement.

On the other hand, if you never drive or are not driving today because your car is being repaired, the statement, "I am not driving my car" is not related to your health and you should not check it. If you simply are driving less, or are driving shorter distances, and feel that the statement only partially describes you, do not check it. In all of these cases you would leave the line to the right of the statement blank. For example:

I am not driving my car _____ (031)

Remember that we want you to check this statement only if you are sure it describes you today and is related to your state of health.

Read the introduction to each group of statements and then consider the statements in the order listed. While some of the statements may not apply to you, we ask that you please read all of them. Check those that describe you as you go along. Some of the statements will differ only in a few words, so please read each one carefully. While you may go back and change a response, your first answer is usually the best. Please do not read ahead in the booklet

Once you have started the questionnaire, it is very important that you complete it within one day (24 hours).

If you find it hard to keep your mind on the statements, take a short break and then continue. When you have read all of the statements on a page, put a check in the BOX in the lower right-hand corner. If you have any questions, please refer back to these instructions.

Please do not discuss the statements with anyone, including family members, while doing the questionnaire.

Now turn to the questionnaire booklet and read the statements. Remember we are interested in the recent or longstanding changes in your activities that are related to your health.

(SR-0499)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I spend much of the day lying down in order to rest ______ (083)
2. I sit during much of the day ______ (049)
3. I am sleeping or dozing most of the time - day and night ______ (104)
4. I lie down more often during the day in order to rest ______ (058)
5. I sit around half-asleep ______ (084)
6. I sleep less at night, for example, wake up too early, don't fall asleep for a long time, awaken frequently ______ (061)
7. I sleep or nap more during the day ______ (060)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I say how bad or useless I am, for example, that I am a burden on others ______ (087)

2. I laugh or cry suddenly ______ (068)

3. I often moan and groan in pain or discomfort ______ (069)

4. I have attempted suicide ______ (132)

5. I act nervous or restless ______ (046)

6. I keep rubbing or holding areas of my body that hurt or are uncomfortable ______ (062)

7. I act irritable and impatient with myself, for example, talk badly about myself, swear at myself, blame myself for things that happen ______ (078)

8. I talk about the future in a hopeless way ______ (089)

9. I get sudden frights ______ (074)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I make difficult moves with help, for example, getting into or out of cars, bathtubs ______ (084)
2. I do not move into or out of bed or chair by myself but am moved by a person or mechanical aid ______ (121)
3. I stand only for short periods of time ______ (072)
4. I do not maintain balance ______ (098)
5. I move my hands or fingers with some limitation or difficulty ______ (064)
6. I stand up only with someone's help ______ (100)
7. I kneel, stoop, or bend down only by holding on to something ______ (064)
8. I am in a restricted position all the time ______ (125)
9. I am very clumsy in body movements ______ (058)
10. I get in and out of bed or chairs by grasping something for support or using a cane or walker ______ (082)
11. I stay lying down most of the time ______ (113)
12. I change position frequently ______ (030)
13. I hold on to something to move myself around in bed ______ (086)

(Continued on next page)

(Continued from previous page)

14. I do not bathe myself completely, for example, require assistance with bathing ______ (089)
15. I do not bathe myself at all, but am bathed by someone else ______ (115)
16. I use bedpan with assistance ______ (114)
17. I have trouble getting shoes, socks, or stockings on ______ (057)
18. I do not have control of my bladder ______ (124)
19. I do not fasten my clothing, for example, require assistance with buttons, zippers, shoelaces ______ (074)
20. I spend most of the time partly undressed or in pajamas ______ (074)
21. I do not have control of my bowels ______ (128)
22. I dress myself, but do so very slowly ______ (043)
23. I get dressed only with someone's help ______ (088)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(HM-0668)

THIS GROUP OF STATEMENTS HAS TO DO WITH ANY WORK YOU USUALLY DO IN CARING FOR YOUR HOME OR YARD. CONSIDERING JUST THOSE THINGS THAT YOU DO, PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH

---

1. I do work around the house only for short periods of time or rest often _____ (054)
2. I am doing less of the regular daily work around the house than I would usually do _____ (044)
3. I am not doing any of the regular daily work around the house that I would usually do _____ (086)
4. I am not doing any of the maintenance or repair work that I would usually do in my home or yard _____ (062)
5. I am not doing any of the shopping that I would usually do _____ (071)
6. I am not doing any of the house cleaning that I would usually do _____ (077)
7. I have difficulty doing handwork, for example, turning faucets, using kitchen gadgets, sewing, carpentry _____ (069)
8. I am not doing any of the clothes washing that I would usually do _____ (077)
9. I am not doing heavy work around the house _____ (044)
10. I have given up taking care of personal or household business affairs, for example, paying bills, banking, working on budget _____ (084)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(M-0719)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I am getting around only within one building _____ (086)

2. I stay within one room _____ (106)

3. I am staying in bed more _____ (081)

4. I am staying in bed most of the time _____ (109)

5. I am not now using public transportation _____ (041)

6. I stay home most of the time _____ (066)

7. I am only going to places with restrooms nearby _____ (056)

8. I am not going into town _____ (048)

9. I stay away from home only for brief periods of time _____ (054)

10. I do not get around in the dark or in unlit places without someone's help _____ (072)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(SI-1450)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I am going out less to visit people ______ (044)
2. I am not going out to visit people at all ______ (101)
3. I show less interest in other people's problems, for example, don't listen when they tell me about their problems, don't offer to help ______ (067)
4. I often act irritable toward those around me, for example, snap at people, give sharp answers, criticize easily ______ (084)
5. I show less affection ______ (052)
6. I am doing fewer social activities with groups of people ______ (036)
7. I am cutting down the length of visits with friends ______ (043)
8. I am avoiding social visits from others ______ (080)
9. My sexual activity is decreased ______ (051)
10. I often express concern over what might be happening to my health ______ (052)
11. I talk less with those around me ______ (056)
12. I make many demands, for example, insist that people do things for me, tell them how to do things ______ (088)
13. I stay alone much of the time ______ (086)

(Continued on next page)

(Continued from previous page)

14. I act disagreeable to family members, for example, I act spiteful, I am stubborn _____ (088)

15. I have frequent outbursts of anger at family members, for example, strike at them, scream, throw things at them _____ (119)

16. I isolate myself as much as I can from the rest of the family _____ (102)

17. I am paying less attention to the children _____ (064)

18. I refuse contact with family members, for example, turn away from them _____ (115)

19. I am not doing the things I usually do to take care of my children or family _____ (079)

20. I am not joking with family members as I usually do _____ (043)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(A-0842)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I walk shorter distances or stop to rest often _____ (048)
2. I do not walk up or down hills _____ (056)
3. I use stairs only with mechanical support, for example, handrail, cane, crutches _____ (067)
4. I walk up or down stairs only with assistance from someone else _____ (076)
5. I get around in a wheelchair _____ (096)
6. I do not walk at all _____ (105)
7. I walk by myself but with some difficulty, for example, limp, wobble, stumble, have stiff leg _____ (055)
8. I walk only with help from someone _____ (088)
9. I go up and down stairs more slowly, for example, one step at a time, stop often _____ (054)
10. I do not use stairs at all _____ (083)
11. I get around only by using a walker, crutches, cane, walls, or furniture _____ (079)
12. I walk more slowly _____ (035)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(AB-0777)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I am confused and start several actions at a time ______ (090)
2. I have more minor accidents, for example, drop things, trip and fall, bump into things ______ (075)
3. I react slowly to things that are said or done ______ (059)
4. I do not finish things I start ______ (067)
5. I have difficulty reasoning and solving problems, for example, making plans, making decisions, learning new things ______ (084)
6. I sometimes behave as if I were confused or disoriented in place or time, for example, where I am, who is around, directions, what day it is ______ (113)
7. I forget a lot, for example, things that happened recently, where I put things, appointments ______ (078)
8. I do not keep my attention on any activity for long ______ (067)
9. I make more mistakes than usual ______ (064)
10. I have difficulty doing activities involving concentration and thinking ______ (080)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(C-0725)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

---

1. I am having trouble writing or typing ______ (070)

2. I communicate mostly by gestures, for example, moving head, pointing, sign language ______ (102)

3. My speech is understood only by a few people who know me well ______ (093)

4. I often lose control of my voice when I talk, for example, my voice gets louder or softer, trembles, changes unexpectedly ______ (083)

5. I don't write except to sign my name ______ (083)

6. I carry on a conversation only when very close to the other person or looking at him ______ (067)

7. I have difficulty speaking, for example, get stuck, stutter, stammer, slur my words ______ (076)

8. I am understood with difficulty ______ (087)

9. I do not speak clearly when I am under stress ______ (064)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

THE NEXT GROUP OF STATEMENTS HAS TO DO WITH ANY WORK YOU USUALLY DO OTHER THAN MANAGING YOUR HOME. BY THIS WE MEAN ANYTHING THAT YOU REGARD AS WORK THAT YOU DO ON A REGULAR BASIS.

DO YOU USUALLY DO WORK OTHER THAN MANAGING YOUR HOME?

______ YES ______ NO

IF YOU ANSWERED YES, GO ON TO THE NEXT PAGE.

IF YOU ANSWERED NO:

ARE YOU RETIRED?

______ YES ______ NO

IF YOU ARE RETIRED, WAS YOUR RETIREMENT RELATED TO YOUR HEALTH?

______ YES ______ NO

IF YOU ARE NOT RETIRED, BUT ARE NOT WORKING, IS THIS RELATED TO YOUR HEALTH?

______ YES ______ NO

NOW SKIP THE NEXT PAGE.

(W-0515)

IF YOU ARE NOT WORKING AND IT IS NOT BECAUSE OF YOUR HEALTH, PLEASE SKIP THIS PAGE.

NOW CONSIDER THE WORK YOU DO AND RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH. (IF TODAY IS A SATURDAY OR SUNDAY OR SOME OTHER DAY THAT YOU WOULD USUALLY HAVE OFF, PLEASE RESPOND AS IF TODAY WERE A WORKING DAY.)

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1. I am not working at all _____ (361)
   (IF YOU CHECKED THIS STATEMENT, SKIP TO THE NEXT PAGE.)

2. I am doing part of my job at home _____ (037)
3. I am not accomplishing as much as usual at work _____ (055)
4. I often act irritable toward my work associates, for example, snap at them, give sharp answers, criticize easily _____ (080)
5. I am working shorter hours _____ (043)
6. I am doing only light work _____ (050)
7. I work only for short periods of time or take frequent rests _____ (061)
8. I am working at my usual job but with some changes, for example, using different tools or special aids, trading some tasks with other workers _____ (034)
9. I do not do my job as carefully and accurately as usual _____ (062)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(RP-0422)

THIS GROUP OF STATEMENTS HAS TO DO WITH ACTIVITIES YOU USUALLY DO IN YOUR FREE TIME. THESE ACTIVITIES ARE THINGS THAT YOU MIGHT DO FOR RELAXATION, TO PASS THE TIME, OR FOR ENTERTAINMENT. PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

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1. I do my hobbies and recreation for shorter periods of time _____ (039)
2. I am going out for entertainment less often _____ (036)
3. I am cutting down on some of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading _____ (059)
4. I am not doing any of my usual inactive recreation and pastimes, for example, watching TV, playing cards, reading _____ (084)
5. I am doing more inactive pastimes in place of my other usual activities _____ (051)
6. I am doing fewer community activities _____ (033)
7. I am cutting down on some of my usual physical recreation or activities _____ (043)
8. I am not doing any of my usual physical recreation or activities _____ (077)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐

(E-0705)

PLEASE RESPOND TO (CHECK) ONLY THOSE STATEMENTS THAT YOU ARE SURE DESCRIBE YOU TODAY AND ARE RELATED TO YOUR STATE OF HEALTH.

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1. I am eating much less than usual ______ (037)

2. I feed myself but only by using specially prepared food or utensils ______ (077)

3. I am eating special or different food, for example, soft food, bland diet, low-salt, low-fat, low-sugar ______ (043)

4. I eat no food at all but am taking fluids ______ (104)

5. I just pick or nibble at my food ______ (059)

6. I am drinking less fluids ______ (036)

7. I feed myself with help from someone else ______ (099)

8. I do not feed myself at all, but must be fed ______ (117)

9. I am eating no food at all, nutrition is taken through tubes or intravenous fluids ______ (133)

CHECK HERE WHEN YOU HAVE READ ALL STATEMENTS ON THIS PAGE ☐