

Self-Discrepancy Theory and Chronic Pain

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Abstract

The focus of this study was to assess the impact of one aspect of a person's identity, self-discrepancies, on adjustment to chronic pain. It was also the first test of the schema-enmeshment model of pain (Pincus and Morley, 2001) which proposes that distress in chronic pain results from a comprehensive overlap or enmeshment of three schemas representing pain, illness and the self.

89 chronic pain patients attending pain clinics in Leeds and Manchester were asked to describe three possible selves – actual self, hoped for self and feared self. To measure the degree of enmeshment between the self schema and pain schema they were asked whether their hoped for attributes and feared attributes were conditional on the presence or absence of pain. Levels of depression, anxiety, disability and pain acceptance were also measured. It was predicted, in line with self-discrepancy theory (Higgins, 1987), that the magnitude of the actual-hoped for discrepancy would be related to depression. The magnitude of the actual-feared discrepancy was predicted to be related to anxiety. It was hypothesised that the proportion of hopes possible with pain would be negatively related to distress.

It was found that the actual-hoped discrepancy was a significant predictor of depression and anxiety. A large actual-hoped discrepancy was associated with increased depression, anxiety and disability and reduced acceptance. The actual-feared discrepancy did not significantly predict anxiety or depression but it was negatively related to depression, anxiety and disability and positively related to acceptance. The proportion of hopes possible with pain was also a significant predictor of depression in the expected direction.

The findings are discussed in relation to self-discrepancy theory, previous findings relating to the actual-feared discrepancy and the schema-enmeshment model of pain.

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Chapter 1.

1.1 Introduction

The focus of this study is the impact of one aspect of a person's identity on adjustment to chronic pain. This chapter begins with a discussion of the wide-ranging negative effects of chronic pain. However, despite the disrupting and stressful nature of chronic pain, some individuals adapt well. Factors associated with good adjustment are also described. A model is outlined that attempts to explain these different responses to the onset of chronic pain.

The particular aspects of identity of interest in this piece of research are self-discrepancies, a disparity between an individual's current condition and a desirable or undesirable future state. These discrepancies are predicted to have particular psychological and emotional consequences. The concluding section of this chapter describes how these two areas, adjustment to chronic pain and self-discrepancies have been combined for this thesis.

1.2 Adjustment to chronic pain

1.2.1 Chronic pain as a stressor

Stress can be defined in terms of a relationship between external events and internal resources (Lazarus and Folkman, 1984). Stress occurs when an individual perceives external demands to be greater than their personal resources and believes that their well being is threatened. Chronic pain itself can be viewed as a stressor, overwhelming an individual's ability to cope. Some of the potential consequences of chronic pain, such as unemployment and marital difficulties, can undoubtedly be viewed as sources of stress (Jensen, Turner, Romano and Karoly, 1991). The experience of chronic pain can cause serious disruption to many areas of life. Pain and its related stressors can make it impossible to maintain 'productive work, normal family life and supportive social interactions' (Chapman and Gavrin, 1999).

1.2.2 Interruption and interference

The experience of acute pain can interrupt ongoing behaviour. Interruption is a temporary effect. When the pain has dissipated it is still possible to finish the task.

However, when pain continues, as is the case in chronic pain, it may be impossible to complete the task or the task is completed but performance is much poorer than before the onset of pain. The ability of pain to prevent task completion or to degrade performance in the long term is known as interference and it can have damaging consequences on an individual's sense of identity (Pincus and Morley, 2001)

1.2.3 Suffering

Chapman and Gavrin (1999) define suffering as 'perceived damage to the integrity of the self'. They propose that this threat to an individual's sense of self occurs as the result of a discrepancy between expectations and an individual's current state. The disruptive effect of chronic pain can lead to such a disparity. Chapman and Gavrin suggest that this can result in a loss of self-esteem. After the onset of pain some individuals spend time redefining themselves. Chapman and Gavrin propose that an individual's vulnerability to suffering depends on the salience of the disruptive effects of pain to that individual. It is the impact of pain on the self they currently are and who they hope to be in the future that determines the degree of suffering as a consequence of chronic pain (Chapman and Gavrin).

Chapman and Gavrin (1999) also describe the effects of chronic pain on productivity and functional capacity and the resultant impact on sense of self. With the interference caused by chronic pain the individual is aware that they can no longer meet the demands that they could before the onset of pain. It is this disparity between the individual's sense of self, based on past performance, and their performance level with chronic pain that threatens the individual's integrity of self (Chapman and Gavrin). This is also a threat to the self in the future.

1.2.4 Adjustment

In the general stress and coping literature, adjustment is an important concept. In this area adjustment tends to be defined as psychological well being. Within the specific area of chronic pain this definition is regarded as too narrow (Jensen and Karoly, 1991). Jensen and Karoly propose that adjustment to chronic pain needs to be considered along a number of dimensions. The dimensions that they consider to be of importance are activity level, psychological functioning and use of medication and services.

1.2.5 Acceptance and avoidance

McCracken (1998) defines acceptance of chronic pain as ‘acknowledging that one has pain, acting as if pain does not necessarily imply disability, and being able to commit one’s efforts toward living a satisfying life despite pain’. However many patients suffering from chronic pain are constantly striving to reduce the pain via, for example, pharmacological and surgical means. McCracken, Gross, Aitkens and Canrike (1996) describe all attempts to lessen pain as avoidance.

In a study of adults with chronic pain, McCracken (1998) found that greater acceptance of pain related to reports of lower pain intensity, less pain-related anxiety and avoidance, less depression, lower reports of physical and social disability and improved work status. There was a relatively low correlation between pain intensity and acceptance suggesting that acceptance is not merely a consequence of experiencing lower levels of pain. However, pain avoidance predicts depression and level of disability (McCracken, Zayfert and Gross, 1992).

In a recent study (McCracken, Spertus, Janeck, Sinclair and Wetzel, 1999) the researchers aimed to identify sub-types, as described by Turk and Rudy (1988), within a sample of chronic pain patients and to discover any characteristics that were associated with a particular group. Turk and Rudy identified three sub-types of pain patients: dysfunctional, interpersonally distressed and adaptive copers. According to Turk and Rudy, the dysfunctional group reports that their pain affects functioning in many areas of their lives. Interpersonally distressed patients perceive a lack of support from significant others. Adaptive copers deny that pain has a significant effect on their lives. The dysfunctional group, comprising 32% of the sample (McCracken et al., 1999), when compared with the other two categories were the most depressed, displayed the most pain-related anxiety and the lowest acceptance of their pain. It was found that pain acceptance was the strongest predictor of group status. The authors suggest that pain acceptance may involve a realisation that pain is going to continue indefinitely, not all attempts at pain management have long term benefits and that it is still possible to enjoy things without pain reduction.

1.3 Depression and chronic pain

High rates of depression are reported in chronic pain. In most studies of chronic pain samples the proportion who are depressed is reported as over 50% (Rudy, Kerns and Turk 1988). The relevance of rates of depression in chronic pain to the current study is that in the chronic pain literature, depression is widely used as an indicator of poor adjustment to pain. As such, in this piece of research, levels of depressive symptoms are going to be used as one measure of adjustment. A model will be described, the schema enmeshment model of pain (Pincus and Morley, 2001) that attempts to account for the occurrence of depression in chronic pain by emphasising the central role that an individual's identity has on the development of depression. Other models of depression in chronic pain are discussed.

1.3.1 The schema enmeshment model of pain

Pincus and Morley (2001) proposed a model to account for the pattern of results observed in studies of information-processing bias in chronic pain patients. Although the model came out of information processing, it is actually a more general model about enmeshment of self-characteristics with pain. The model incorporates three schemas: pain, illness and self. The definition of schema that they use is that of a body of stored knowledge (Segal, 1988; Williams, Watts, MacLeod and Matthews, 1997). Schemas are organised so that if one element is activated, other nearby elements within the schema are also activated. The pain schema contains information about the immediate properties of pain such as intensity and the ability of pain to interrupt current behaviour. The illness schema incorporates material relating to the consequences of illness. This can include the potential impact of the illness on goal achievement and quality of life. The self-schema holds information about general self-traits and more specific detail on particular behavioural episodes (Bradley and Matthews, 1983). It prioritises the processing of self-relevant information. Another approach to the self outlined by Chapman and Gavrin (1999) is to consider multiple levels. They describe a neurological, agent, cognitive and dynamic self. Of particular importance when considering responses to chronic pain is the agent self. This represents the self at a behavioural level as a 'goal-orientated agent' (Chapman and Gavrin). Belief regarding the effectiveness of the self as an agent is self-efficacy. Chapman and Gavrin suggest that self-efficacy beliefs are an important factor in adjustment to painful conditions.

Over time, if elements from different schemas are repeatedly activated simultaneously, elements from one schema may be merged with other schemas, a process described as enmeshment (Pincus and Morley, 2001). Pincus and Morley propose that enmeshment can occur in chronic pain patients between the pain, illness and self schemas. They describe different relationships that can exist between the three schemas and the consequences of the degree, content and context of the overlap.

In an individual not experiencing chronic pain there is a partial overlap between the three schemas. However when the individual experiences acute pain the nature of the overlap is dependent upon the context. If the pain is the result of a blood test for a serious illness there is likely to be an overlap between the pain, illness and self schemas because a positive test result could threaten hopes and goals for the future (Pincus and Morley, 2001). In contrast, if the pain experienced is very similar but has a different meaning, as in donating blood, the sense of self is unlikely to be threatened resulting in minimal overlap between the pain and self schemas.

Pincus and Morley (2001) suggest that an individual with chronic pain who is coping well will have partial enmeshment between the pain and illness schemas. Crucially, there is relatively little overlap with the self-schema. In spite of chronic pain, these individuals have managed to retain their sense of self worth by maintaining or redefining an identity that is not impinged upon to any great degree by illness and pain. This group of chronic pain patients are not depressed or chronically distressed.

A problematic relationship between the three schemas occurs when all three are enmeshed to a large degree. Consequently the pain and illness schemas are incorporated into the self-schema. When the pain schema is activated the illness schema and central aspects of the self-schema are also activated. The consequence of this is that pain is no longer experienced as just its sensory characteristics but also in terms of its behavioural and emotional implications. The ability of pain to interrupt activities is likely to result in the generation of negative emotions. The exact emotion is determined by the meaning to the individual of the plan that has been interrupted (Oatley, 1992; Oatley and Johnson-Laird, 1996).

1.3.2 Depressive symptoms in chronic pain

Studies of depression in chronic pain patients indicate that there are some differences in symptoms when compared with psychiatric samples (e.g. Pincus and Williams, 1999). Individuals with chronic pain diagnosed as depressed frequently report somatic symptoms of depression but less frequently describe symptoms of self-denigration such as feeling worthless, guilty or a failure. Pincus and Morley (2001) suggest that their schema enmeshment model can account for these differences. They propose that the type of depressive symptoms which chronic pain patients report depends upon the degree and content of the enmeshment between the illness, pain and self schemas, in particular the content of the self schema that is trapped within the chronically activated pain schema.

Pincus and Morley (2001) consider the self-schema to be particularly vulnerable to enmeshment with the pain and illness schemas if it contains ideas of dependence and distress. Individuals who have a pre-existing cognitive vulnerability to depression, some of whom will have had a depressive episode prior to the onset of pain, may have depression triggered by the development of chronic pain. Pincus and Morley (2001) suggest that this group of chronic pain patients will display depressive symptoms resulting from negative self-evaluation. In chronic pain patients without a prior vulnerability to depression the experience of pain may still impact on their identity but not to the same extent. They may be distressed by their situation, but they do not describe themselves negatively. Their distress is characterised by the merging of the self and illness schemas.

1.3.3 Other theories of depression in chronic pain

Banks and Kerns (1996) describe several theories of the nature of the relationship between depression and chronic pain. The first theory proposes that depression precedes chronic pain. Evidence taken in support of this idea comes from experimental studies that suggest an increased bodily focus when depressed mood is induced in a laboratory (e.g. Ingram and Smith, 1984). The implication of this is that depression heightens awareness of pain. Experimental studies have shown that the induction of depressed mood is associated with reduced tolerance for pain.

Another theory attempting to explain the elevated rates of depression in chronic pain is that they occur simultaneously because they both share common physiological and psychological processes. Blumer and Hellbronn (1982) suggest that chronic pain with no identifiable physical cause should be considered as a type of depressive disorder. The same neurochemicals are believed to be involved in the development of depression and the sensory experience of pain (e.g. Ward, Bloom, Dworkin, Fawcett, Narasimhachari & Friedel, 1982) and this has been taken as evidence to support the idea that chronic pain and depression are part of the same condition.

Currently, the most accepted theory is that depression is a consequence of chronic pain mediated by cognitive factors (e.g. Love, 1988), behavioural (e.g. Fordyce, 1976) or both (e.g. Rudy et al., 1988). General theories of the development of depression are applicable to the area of chronic pain. Banks and Kerns (1996) believe that the high rates of depression in chronic pain can be explained by the stressful nature of living with the condition. More specifically, Banks and Kerns propose that the development of depression in chronic pain should be considered within a diathesis-stress framework taking into account the unique stressors that are presented by chronic pain. They are not specific about vulnerabilities and instead suggest one behavioural and two cognitive models that have been used to explain the development of depression in the general population. Banks and Kerns do elaborate on the stressors that they believe are specific to chronic pain and as such can account for the elevated rates of depression in this condition. Some of the characteristics of pain that they believe are unique are that it is more stressful physically and psychologically than other long-term medical conditions because of the unpleasant sensory experience of constant pain and the resultant demands on cognitive, behavioural and emotional resources. Pain also has the ability to arouse anxiety because it signals some form of tissue damage. This is adaptive in acute pain because the response to the anxiety is to withdraw from the situation and this avoids further injury. The instinctual response to pain as a sign of danger and the accompanying anxiety is not adaptive in chronic pain. Escape-avoidance behaviour in the long-term can take the form of avoiding activities that may result in pain and medication use (McCracken et al., 1992). Banks and Kerns also propose that uncertainty about the future in chronic pain, in terms of the likely progression of the condition, the impact that pain will have on an individual's life and possible treatments, is greater than in other chronic medical conditions. The number of secondary losses that can occur as a

result of chronic pain are also deemed to be greater than in other long-term health problems.

Banks and Kerns conclude that depressogenic thoughts and behaviour generated by the experience of chronic pain develop into depression. Pincus and Morley (2001) propose that the thinking of individuals with chronic pain is distinguished by information processing biases towards illness related information, particularly information relevant to the self as a chronic pain patient. An individual who has been depressed prior to the onset of pain will selectively process depression-related information e.g. I am unlovable, as well as illness and pain-related information. In contrast, an individual with chronic pain who does not have a pre-existing vulnerability to depression will display a processing bias towards information relating only to pain and illness features of the self but not information relevant to self-denigration.

1.4 Self-discrepancies

1.4.1 Possible Selves

Markus and Nurius (1986) introduced the concept of possible selves to describe how individuals think about their future. Possible selves can be regarded as cognitive representation of aspirations and fears. They also determine how current situations are interpreted. Ideal or hoped for selves can be defined as the selves we would like to become whereas feared selves are selves that we want to avoid becoming. Markus and Nurius also proposed that possible selves determine behaviour by acting as a link between the self-concept and motivation. Possible selves are particularly important in domains that are an integral part of self-definition.

Hooker and Kaus (1994) studied hoped for and feared possible selves in a sample of adults. In this study particular areas of interest were the nature of spontaneously generated possible selves in the realm of health and what factors influenced the proposed link between a possible self and behaviour (Markus and Nurius, 1986). Hoped for selves were defined as 'positive images of self in the future'. In relation to possible selves in the domain of health, Hooker and Kaus found that a greater number of negative or feared selves were generated than positive or hoped for selves. Examples of health-related feared selves from this study were being too ill to remain independent or developing cancer. An example given of a hoped for self in the domain of health was

becoming fit and strong. One of the strongest predictors of behaviour directed towards achieving or preventing the possible self was an individual's belief that they were capable of achieving the desired outcome or perceived self-efficacy (e.g. Bandura, 1977). Hooker and Kaus found that outcome expectancy or the perceived likelihood of the possible self becoming a reality did not predict behaviour.

Using the concept of possible selves, Higgins (1987) suggested that there are three basic domains of self: the actual self, the ideal self and the ought self. The actual self describes what attributes an individual believes they actually possess, the ideal self represents the characteristics that an individual would ideally like to possess in the future and the ought self is a representation of the attributes that an individual believes they ought to or should possess. Higgins elaborated the idea of the three domains of self by proposing that there are two basic standpoints on the self: an individual's own perspective and the standpoint of a significant other. Therefore each of the self-domains can be represented by the individual's beliefs about themselves, or by how they perceive that others see them.

1.4.2 Self-discrepancy theory

Individuals are motivated to work towards a condition where the actual self, which can be considered as the self-concept (Wylie, 1979) matches the ideal self or ought self. Higgins, Klein and Strauman (1985) suggest that selves other than the actual self can be conceptualised as self-guides because they are self-directive standards. Self-discrepancy theory predicts that discrepancies between the self-concept and different self-guides represent particular negative psychological situations that are associated with specific affective and motivational problems.

Higgins (1987) restricted his focus to four self-discrepancies: actual/own versus ideal/own, actual/own versus ideal/other, actual/own versus ought/own, actual/own versus ought/other. All of these self-discrepancies represent a disparity between the self-concept and particular self-guides. Self-discrepancy theory (Higgins, 1987) predicts that a discrepancy between the actual self and the ideal self (actual/own:ideal/own) represents non-fulfilment of aspirations and an absence of positive outcomes. It is proposed that this makes an individual vulnerable to 'dejection-related emotions', e.g. disappointment and dissatisfaction. A discrepancy between the actual self and the ideal

self from the standpoint of a significant other (actual/own:ideal/other) also indicates a lack of positive outcomes leaving the individual vulnerable to 'dejection-related emotions'. In this situation, Higgins predicts that the emotions are likely to be shame and embarrassment because these emotions are associated with the belief that an individual has disappointed others. A discrepancy between the actual self and ought self (actual/own:ought/own) represents the lack of attainment of characteristics that the individual believes they ought to possess and the likelihood of self-punishment, a negative outcome. This leaves the individual vulnerable to feelings of guilt and self-contempt, examples of 'agitation-related emotions'. Finally, a discrepancy between the attributes that the individual believes they actually possess and the attributes that they believe a significant other feels they should possess (actual/own:ought/other) also represents the presence of negative outcomes, in this case the expectation of punishment. Once again the individual is vulnerable to 'agitation-related emotions', in particular fear and feeling under threat.

A further hypothesis of self-discrepancy theory is that the greater the magnitude of a self-discrepancy, the higher the intensity of the associated discomfort when that particular self-discrepancy is activated. The likelihood of activation or the accessibility of a particular self-discrepancy depends upon the recency of activation, the frequency of activation, the salience of that discrepancy to the individual and the applicability of using the discrepancy to interpret a current event.

1.4.3 Support for self-discrepancy theory

Higgins (1999) states that there are over 12 studies offering support for the unique relationships between particular self-discrepancies and specific emotions predicted by self-discrepancy theory. A number of these studies are reviewed in the following two sections.

Higgins himself conducted a number of studies (e.g. Higgins et al., 1985; Strauman and Higgins, 1987) that provided empirical support for the predictions made by self-discrepancy theory. Higgins et al. elicited possible selves from undergraduates and found that as predicted the actual/own:ideal/own discrepancy was associated with disappointment, dissatisfaction and general dejection. However, although the actual/own:ought/own discrepancy was associated with 'feelings of worthlessness' it

was negatively correlated with guilt. This was in the opposite direction to the relationship predicted by self-discrepancy theory. In a later study (Strauman and Higgins, 1987) found further support for the association of actual/own:ideal/own discrepancies with a “disappointment /dissatisfaction” emotional syndrome. In this study they did also find that the actual/own:ought/other discrepancy was positively related to a “fear/restlessness” syndrome, as predicted by self-discrepancy theory. Strauman and Higgins were also able to demonstrate that each self-discrepancy and its specific emotional syndrome were uniquely related.

1.4.4 Self-discrepancy theory applied to clinical populations

Scott and O’Hara (1993) measured self-discrepancies in a sample of students who met DSM-III-R (American Psychiatric Association, 1987) diagnostic criteria for depression, an anxiety disorder or both. All three of the clinical groups had greater actual/own:ideal/own discrepancies and actual/own:ought/other discrepancies than a control group. Scott and O’Hara found further evidence for the unique relationships between depression and the magnitude of the actual-ideal discrepancy and anxiety with the actual-ought discrepancy. A very similar study (Strauman, 1992) also using students selected on the basis of scores on a depression and anxiety measure and divided into the same groups as Scott and O’Hara obtained the same findings.

Strauman (1989) also looked at self-discrepancy theory in relation to depression and anxiety. Unlike the Scott and O’Hara (1993) study, participants were selected from patient populations and the anxious group all had a diagnosis of social phobia. The findings were supportive of the predictions made by self-discrepancy theory. Strauman proposed that a chronic self-discrepancy could be conceptualised as a vulnerability to developing a mood disorder. This self-discrepancy could be activated in certain situations and potentially result in the individual becoming depressed or anxious depending on the type of chronic self-discrepancy. Support for self-discrepancy theory has also been found in individuals with psychosis (Kinderman and Bentall, 1996).

1.4.5 Other findings

Tangeny, Niedenthal, Covert and Barlow (1998) attempted to replicate the study by Higgins et al. (1985) using a sample of students. This study failed to support the predictions made by self-discrepancy theory (Higgins, 1987). More specifically,

Tangeny et al. did not find that the actual-ideal discrepancy was uniquely related to dejection-related emotions or that the actual-ought discrepancy had a unique relationship with agitation-related emotions. They found that depression and anxiety were significantly related to actual-ideal and actual-ought discrepancies irrespective of standpoint (own or other). Tangeny et al. concluded that they had found no support for the proposal that specific self-discrepancies were related to distinct qualities of affect. They also found that the actual-ideal and actual-ought discrepancies strongly correlated with one another which lead them to question whether two distinct constructs were being measured. This lead Tangeny et al. to propose the existence of a more general discrepancy between an individual's current state and a desirable future self composed of a combination of ideals and 'oughts' and that this discrepancy was related to general distress.

Higgins' (1999) response to the conclusions drawn by Tangeny et al. was to formulate an advancement of his self-discrepancy theory (1987) that paid more attention to the four conditions that were necessary for the predicted unique relationships between self-discrepancies and distinct types of affect to occur. Higgins (1999) emphasised the importance of the magnitude of the discrepancy for detecting the relationship between a discrepancy and its associated emotion. Much of self-discrepancy research, including Tangeny et al.'s study, has used non-clinical populations, usually students. Higgins proposed that problems might arise in finding the relationships predicted by self-discrepancy theory in samples of students because they have relatively small self-discrepancies. In the study that Tangeny et al. attempted to replicate, Higgins et al. (1985) had selected their sample so that there was a higher incidence of moderate depression than would be found in an unselected sample. Higgins (1999) proposes that investigators are unlikely to find unique relationships with extreme emotions in non-clinical samples.

Higgins (1999) also states that the existence of a particular discrepancy is not sufficient for the predicted type of distress to be experienced, the discrepancy needs to be activated. One variable that influences the likelihood of activation is the accessibility of the discrepancy. Higgins suggests increasing the accessibility of a discrepancy experimentally by using priming techniques. The next condition that Higgins states influences whether a self-discrepancy is activated is the applicability of the discrepancy

in the current context. A large actual-ideal or actual-ought discrepancy represents a negative situation so self-discrepancies of this type are activated when thinking about negative events but not positive events (Higgins, 1989). Higgins (1999) questions the relevance of such discrepancies to the testing situations utilised by studies of self-discrepancy theory. The fourth moderator considered by Higgins is the importance of the self-discrepancy to the individual. Higgins concludes that due to the effect of these four moderators on whether a relationship between a specific self-discrepancy and a particular emotion will be observed, studies of self-discrepancy theory will produce mixed results.

1.4.6 The feared self

A possible self not considered by Higgins (1987) and incorporated into self-discrepancy theory is the undesired or feared self. This was first defined by Ogilvie (1987) as 'the self one would hope never to become' (Allen, Woolfolk, Gara and Apter, 1996). Ogilvie predicted that the discrepancy between the actual and the undesired self would be related to depression and reduced life satisfaction. This prediction was supported in a study where the actual-undesired discrepancy was found to be a better predictor of dysphoric affect than the difference between the actual and ideal selves (Ogilvie).

Allen et al. (1996) also explored the role of the undesired or feared self in depression. They studied discrepancies between possible selves in individuals suffering from major depression and a control group with no history of mental illness. Participants were asked to describe five possible selves: actual, ideal, feared, ought and future. The future self was elicited by asking participants to consider their long-term prospects for the future. The rationale for the inclusion of the future self was derived from Beck's cognitive theory of depression (Beck, 1967). Beck proposes that depression is characterised by negative thoughts about the self, the world and the future. Therefore Allen et al. predicted that the depressed group would have a more negative future than the controls. They found that, consistent with Higgin's (1987) predictions, the actual-ideal discrepancy was significantly related to depression whilst the actual-ought was not. Allen et al. replicated Ogilvie's (1987) finding that the similarity of the actual self to the undesired self is the best identifier for depression. None of the self-discrepancies calculated were related to a measure of anxiety. They also found that the depressed group described their actual self less positively and more negatively than the control

group and that there was a significant correlation between the negativity of the actual self and the severity of the depression. However, the ideal self and future self described by individuals within the depressed group were no less positive than those described by the controls.

Carver, Lawrence and Scheier (1999) measured actual-ideal, actual-ought and actual-feared discrepancies in a sample of undergraduates. They found that actual-ideal and actual-feared discrepancies made separate contributions to the prediction of depression. In relation to anxiety, when considering the whole sample, discrepancies from the feared self were the strongest predictor of anxiety. The actual-feared discrepancy was more strongly related to anxiety than the actual-ought discrepancy, the discrepancy which Higgins (1987) hypothesised contributed to anxiety. However this was not always the case. Carver et al. found that the distance from the feared self played a crucial role in determining whether the actual-feared discrepancy or the actual-ought discrepancy was most strongly related to anxiety. In individuals who were relatively close to their feared selves the discrepancy from the ought self was not predictive of anxiety. However, for individuals who were more distant from their feared selves, the ought discrepancy and not the feared discrepancy was predictive of anxiety. This is in agreement with self-discrepancy theory. Carver et al. conceptualised this difference in which discrepancy predicted anxiety in terms of escape versus approach. If the feared self was in relatively close proximity then Carver et al. postulated that the dominant concern was to increase the magnitude of the actual-feared discrepancy, in other words to escape from the feared self. They propose that this motive to escape generates anxiety. When the feared self is more distant and by implication less of a threat, attention is focused on approaching the ought self and the magnitude of the actual-ought discrepancy becomes predictive of anxiety. The actual-ideal discrepancy was related to anxiety but as predicted by self-discrepancy theory, when controlling for the effect of the ought discrepancy the relationship between the ideal discrepancy and anxiety was no longer significant. Carver et al. concluded that avoidance of the feared self is important in both depression and anxiety.

1.5 Conclusions

The previous sections have summarised some of the issues in adjustment and distress in chronic pain and findings relating self-discrepancies to distress. Chronic pain patients experience high levels of distress so it is important to attempt to gain an understanding of this. However, although higher rates of depression are reported in chronic pain than in the general population not all individuals with chronic pain are depressed. How does one explain these differences in responses to chronic pain?

Self-discrepancy theory attempts to explain the occurrence and type of distress in terms of a disparity between an individual's current state and a desired future state. As described in Sections 1.4.3 and 1.4.4, self-discrepancy theory has already been successfully applied to a number of clinical and non-clinical populations. Its predictions have never been tested in a sample of chronic pain patients. Strauman (1992) proposes that self-discrepancy theory could be useful in understanding, predicting and preventing emotional disorders. Is it possible that self-discrepancy theory could account for the distress experienced by chronic pain patients?

One of the central tenets of self-discrepancy theory is that the actual-ideal discrepancy represents the non-attainment of goals. This appears particularly pertinent to the field of chronic pain where interference by pain can make goals set prior to the onset of pain unachievable. Although self-discrepancy theory has never been studied in the field of chronic pain, Chapman and Gavrin's (1999) concept of suffering in chronic pain, a threat to the self that can arise from a disparity between expectations and an individual's current state, is very similar to Higgins' actual-ideal discrepancy.

Central to the schema enmeshment model of pain (Pincus and Morley, 2001) is the idea that depression in chronic pain is the result of a large degree of overlap between the pain and self schemas. Of particular importance is the content of the self-schema trapped within the pain schema.

The idea of the 'self' is a complex construct. This piece of research is attempting to link aspects of self-discrepancy theory and the schema enmeshment model. The self is an important component of both models. Within self-discrepancy theory the self is conceptualised as the person that one currently is and the person one could possibly

become. This is an attempt to include the future in the self-concept so the self becomes a dynamic entity. In the methodology that has been used to test the predictions of self-discrepancy theory, the current or actual self and future possible selves have been reduced to lists of adjectives describing these aspects of self. This over simplifies such a complex construct as the self but it enables self-discrepancies to be measured.

The definition of the self used in the schema enmeshment model places more emphasis on a possible structure for elements comprising the self rather than the content or essence of self. The self is conceptualised in this model as a body of information, or schema, relating to the self. No further elaboration is made as to what type of information may be stored. It is a very mechanical definition of the self but this is probably a legacy of the model arising from the area of information-processing. In conclusion, self-discrepancy theory and the schema enmeshment model both incorporate simplified and incomplete definitions of the self but the definitions used suggest ways that the abstract concept of the self can be made quantifiable and measurable.

Pincus and Morley, although mentioning a number of different theories of self, did not clearly define the 'self' included in their model. Pincus and Morley suggest that when there is comprehensive enmeshment between the three schemas, pain is perceived to threaten future hopes and goals. If this situation is conceptualised in terms of a self-discrepancy it represents a large actual-hoped for discrepancy. Higgins' self-discrepancy theory (1987) predicts that this type of discrepancy, a non-fulfilment of aspirations, is associated with dejection. Potentially, the larger the magnitude of the actual-hoped discrepancy, the greater the degree of enmeshment. Both theories predict that the consequence of this situation is depression.

Pincus and Morley (2001) have suggested using self-discrepancy theory in an attempt to account for distress in chronic pain. They proposed that their schema enmeshment model of pain could be seen as, 'a refinement and extension of the self-discrepancy model', in the field of chronic pain. They suggested that the extension was necessary because it was too simplistic to assume that an increase in magnitude of the actual-ideal discrepancy was an inevitable consequence of chronic pain. It is not sufficient to know what an individual is no longer able to do. It is necessary to know the significance of the

disruptive effects of the pain to the individual. In Pincus and Morley's words it is essential to determine the extent to which, 'one's repertoire of being is in a state of discrepancy'.

This piece of research aimed to take the schema enmeshment model of pain one step further by proposing that self-discrepancies are the aspect of an individual's identity that account for the distress resulting from enmeshment. Although Pincus and Morley (2001) theorised that distress in chronic pain may be the result of a discrepancy between the actual and ideal selves they did not actively test this prediction. This is the first study to investigate whether self-discrepancy theory is able to explain the high levels of distress in chronic pain. It is also the first piece of research to attempt to measure the concept of enmeshment. Previously enmeshment has only been studied within an information-processing paradigm using a retrospective method. (Pincus and Morley). This study aims to measure the degree of enmeshment by ascertaining how conditional aspects of the self are on the presence or absence of pain.

Self-discrepancy theory could also explain how some individuals successfully adapt to chronic pain. Chapman and Gavrin (1999) suggest that one way individuals with chronic pain attempt to minimise the disparity between expectations and their current state after the onset of pain, is to take time to redefine themselves. Pincus and Morley propose that individual's coping well with pain have either managed to retain the identity that they had prior to the onset of pain or have developed a new identity where 'pain and illness do not impact on sense of self worth'.

In a sample of chronic pain patients this piece of research tested the predictions made by self-discrepancy theory in relation to the type and intensity of distress associated with the actual-hoped discrepancy. It was predicted, in line with self-discrepancy theory, that individuals with chronic pain with a large discrepancy between their current state and their hopes and aspirations would have greater levels of depressive symptoms than individuals who were closer to their hopes. Participants also described a feared self and it was predicted that individuals who were currently in close proximity to this feared self would be more anxious than those who were more distant from their feared self. The hoped for self and the feared self were chosen because they are two aspects of the future that are most salient to anyone facing this health threat.

The current study aimed to measure the degree of enmeshment between the pain and self schemas by asking if future selves were conditional on pain removal. If hopes being conditional on the absence of pain were a measure of enmeshment then it was predicted that individuals who viewed their future in this way would be distressed. It was also predicted that they would show low levels of pain acceptance. As already defined in Section 1.2.5, acceptance involves a realisation that it is still possible to lead an enjoyable and satisfying life despite pain. Therefore, individuals whose hopes depend upon pain removal have not accepted their pain.

In summary the aim of this study was to measure self-discrepancies in a sample of chronic pain patients and to discover whether the predictions of relationships between particular self-discrepancies and specific types of affect apply to this population. The next chapter describes the development of the methodology for this study.

Chapter 2. Development of the study

2.1 Introduction

The purpose of this research was to see whether the predictions made by self-discrepancy theory applied to chronic pain patients, a group who had not been studied in relation to this theory. To examine the predictions made by self-discrepancy theory and therefore test the research hypotheses, it was necessary to measure psychological distress. Self-discrepancy theory makes specific predictions about the type of emotional distress that will be experienced depending upon the type of self-discrepancy (see Section 1.4.2) so it was necessary to include measures of depression and anxiety. In the next section the decisions behind the selection of some of the measures is described.

2.2 Selecting methods of measurement

2.2.1 Pain acceptance

As mentioned at the end of the previous chapter, pain acceptance was a variable of interest in the current study, in particular whether it was related in any way to a measure of enmeshment. Acceptance has not been widely investigated and has previously been measured using the Chronic Pain Acceptance Questionnaire, (Geiser, 1992) so this was also used in the current study.

2.2.2 Depression

There are a number of problems associated with measuring depression in individuals with chronic pain which have been well documented e.g. Wilson, Mikail, D'Eon and Minns (2001). The main difficulty arises because of the overlap between physical effects of chronic pain and somatic symptoms of depression. For example many people with chronic pain report problems sleeping due to physical discomfort but difficulty sleeping can also be a symptom of depression and as such it is included in diagnostic criteria for depression. A concern is that if difficulties with a physical cause are misattributed as psychological symptoms, then depression will be over-diagnosed in the chronic pain population. A number of approaches have been suggested to guard against this. These have been called the etiologic, inclusive and substitutive methods (Cohen-Cole and Stoudemire, 1987).

The etiologic approach involves making decisions about the cause of symptoms and excluding 'symptoms' that are clearly physiological in origin. However, in practice this can be a difficult distinction to make. Proponents of the inclusive method fear that the etiologic approach is overly cautious and could result in cases of depression being missed. In the inclusive method all symptoms are considered when assessing for depression even if some somatic symptoms may be a result of a medical condition. It is felt that missing cases of depression is more concerning than a number of false positives that may result from applying this approach. Finally, the substitutive approach proposed by Endicott (1984) suggests when diagnosing depression in a medical population a specialised measure should be used that replaces somatic symptoms with other depressive symptoms. Wilson et al. (2001) applied these three different approaches to diagnosing depression in a sample of chronic pain patients. Their conclusions were that the most appropriate method was the inclusive approach. The etiologic method that they applied entailed asking individuals to account for their symptoms. They found that patients tended to attribute somatic symptoms to their pain rather than depression. If these attributions were taken into account, resulting in these symptoms not being considered towards a diagnosis of depression, there was a risk of false negatives.

It was therefore decided in the current study to use a depression measure that had been devised for use with the general population. The Beck Depression Inventory (Beck, 1978) has been widely used with chronic pain patients (e.g. McCracken, 1998) and in studies of self-discrepancy theory (e.g. Allen et al., 1996; Higgins et al., 1985). The most recent revision of this questionnaire, the Beck Depression Inventory II, (Beck, 1996) was chosen.

2.2.3 Anxiety

Studies measuring levels of anxiety in chronic pain patients tend to use specialised pain-related anxiety measures, e.g. PASS. To test the predictions of self-discrepancy theory, a general measure of anxiety was required. The measure selected for this purpose was the State-Trait Anxiety Inventory (STAI) (Spielberger, 1983). It has two scales, one measuring state anxiety and the other trait anxiety. State anxiety exists at a particular moment as the result of anxiety-provoking stimuli whereas trait anxiety is a more

enduring characteristic that determines how individuals respond in stressful situations (Spielberger, 1983). The state anxiety scale was selected for this study.

2.2.4 Development of method to elicit possible selves

In developing a method for this part of the study, there were two issues that needed to be addressed: how to elicit the possible selves and how to capture the degree of enmeshment between the pain and self-schemas. The majority of self-discrepancy research calculates discrepancies between self-states by comparing lists of characteristics that have been produced to describe different possible selves. However, there are a number of methods by which these lists of attributes can be obtained. This section describes stages in the decision making process that resulted in the development of the final method. Approaches to scoring self-discrepancies are described in detail in Section 4.4.

Initially it was decided to instruct participants to generate an ideal self with pain and an ideal self without pain and then to calculate the degree of overlap as a measure of enmeshment. It was also decided to ask participants to consider a worst or feared self. This meant that participants were going to be asked to consider four possible selves: actual self, feared self, ideal/best self with pain and an ideal self without pain. This was the idea contained in the research proposal and submitted to the research panel.

The research panel approved the area of research and there was a fruitful discussion about which possible selves would provide the most useful and meaningful information on participants' hopes and fears. One issue raised was that the participants' responses might be constrained by asking them to consider an ideal self with pain and an ideal self without (freedom-from-pain ideal). It was suggested that some individuals experiencing chronic pain may not possess both these concepts, with some individuals not conceiving of a future without chronic pain whereas others may not conceive of any sort of positive future with the continued presence of chronic pain. As a result of this discussion it was decided to give participants the freedom to generate an ideal self without being directed to include pain or to consider a pain-free future.

After considering the discussion with the research panel another four possible selves were chosen for participants in the study to consider: actual self, ideal self,

‘goodenough’ self and feared self. The idea behind the ‘goodenough’ self was to encourage participants to consider a future self that would be acceptable to them but not ideal.

2.2.5 Pilot study 1

An initial method for eliciting the 4 possible selves described at the end of the previous section was a card-sorting task where each card was printed with an adjective.

Participants would be asked to consider each adjective in relation to each of the possible selves and to sort the cards into two piles, one pile of adjectives that described the possible self and another pile that did not. A novel twist that was added at this stage was to ask participants to consider the list of adjectives again and to decide whether it was possible for them to be like that if they continued to experience chronic pain. This was introduced as an alternative method of discovering how dependent future selves were on pain removal or the degree of enmeshment between the self and pain schemas. A prediction was made that if the majority of adjectives chosen to represent an ideal self or even a ‘goodenough’ self were found to be dependent on pain removal, then the individual would be at risk of psychological distress. This could be described as a conditional self where the condition is pain removal.

Three people were given 48 adjectives printed on cards and were given instructions based on an existing method for eliciting possible selves (Hooker and Kaus, 1994). This formed part of the final methodology and is described in detail in Section 3.3.3. The adjectives used were taken from a study of depression in chronic pain patients (Clyde, 2000). Half of the adjectives had been reliably shown to be positive and the remaining half had been reliably identified as negative. The participants were first asked to consider how they viewed themselves at the moment and to then sort the cards into two piles, one pile of adjectives that described them at the moment and one pile that did not describe them. They were asked to repeat this procedure three more times, each time considering a different possible self. The possible selves to be considered, as mentioned in the previous section, were an ideal self (‘consider how you would ideally like to be’), a ‘goodenough’ self (‘consider what you could be satisfied with’) and a feared self (‘consider everything you would not want to be’). The participants were asked to sort the cards one final time, imagining that they were in pain and sorting the cards according to whether they thought they would be able to feel like that if they were

experiencing pain. Obviously this was a rather artificial condition for the participants in the pilot study because they were not suffering from chronic pain but this would be salient for a sample of chronic pain patients.

A table containing the total number of adjectives endorsed by each participant for the five possible selves and the proportion of negative and positive adjectives selected can be found in Appendix 1.

The results of this pilot study revealed a problem with the method. Two out of three of the participants had endorsed all of the positive adjectives (24) when asked to consider an ideal self and had selected all (24) or nearly all (23) of the negative adjectives to describe a feared self. A concern was that the majority of individuals might show this polarisation effect when given a list comprising equal numbers of positive and negative adjectives and asked to consider an ideal self and a feared self. In an attempt to resolve this potential problem, the method was revised and tested in a second pilot study, described in the next section.

2.2.6 Pilot study 2

This study required participants to generate attributes associated with various possible selves rather than endorsing adjectives on a list. The method was based on the Selves Questionnaire (Higgins et al., 1985). Five participants were asked to list 10 attributes of each of 3 possible selves: actual self, ideal self and feared self. Participants were instructed to list attributes they thought they actually possessed (actual self), attributes they would ideally like to possess (ideal self) and attributes they hoped never to possess (feared self).

A problem that emerged with this method, in particular the wording, was that the majority of participants needed to ask whether attributes generated to describe one possible self could also be used to describe another possible self. This method for calculating self-discrepancies would be made redundant if participants thought that each list of attributes needed to be unique because discrepancies between the various possible selves are calculated by the extent to which the lists of attributes overlap.

A decision now needed to be made about the method, based on the findings from the two pilot studies. It was necessary to decide whether to use a generative or endorsement task. There were a number of advantages of using the endorsement task from the first pilot study. There are already some results using this methodology with chronic pain patients (Clyde, 2000), it is less time-consuming for the participants and it would be relatively straightforward to calculate the extent to which attributes are shared between different possible selves. However, as already mentioned in Section 2.2.6, a major potential problem with this method was that when presented with a list containing positive and negative words and asked to consider an ideal self and a feared self, the majority of participants may endorse all of the positive words to describe the ideal self and all of the negative words to represent a feared self. This would not be a particularly meaningful finding. Therefore a decision was made to adapt the generative task from the second pilot study and to use this approach to elicit possible selves. The final method is described in the next section.

2.2.7 Method to elicit possible selves

As outlined in Section 1.5, a decision was made to elicit a hoped for and feared self as these were considered the most salient future selves for this population. The term hoped for self was used instead of ideal self so that participants would describe a self that they believed was to some extent possible. A concern was that asking for an ideal self could result in some people describing an ideal that they had no expectations of ever fulfilling, e.g. becoming a millionaire. If dreams and fantasies were described that an individual was not striving to achieve, it was suspected that a discrepancy resulting from a comparison between their current state and this ideal, recognised as unrealistic, would not be associated with distress. The Selves Questionnaire (see Higgins, Klein and Strauman, 1985) was considered as a method to elicit descriptions of participants' possible selves. However, it was decided that the instructions were too brief for such an abstract task as generating attributes to describe future possible selves. A decision was made to orientate individuals to the task by introducing the concept of possible selves with wording adapted from a study by Hooker and Kaus (1994). Self-efficacy and outcome-expectancy scales were also borrowed from the Hooker and Kaus methodology. To address a problem highlighted by the second pilot study, the instructions gave participants permission to include attributes they believed that they

already possessed when describing the two future possible selves. It was decided that a way to capture the degree of enmeshment between the self and pain schemas was to ask individuals whether their hoped for attributes were conditional on pain removal. Participants were also asked whether their feared for attributes would be possible if they were no longer in pain to discover if this was related to distress. For the full interview schedule see Appendix 5.

The method selected is described fully in the next chapter

Chapter 3. Research Hypotheses and Method

3.1 Introduction

This chapter begins with the research question and the research hypotheses that were being tested by the study. This is followed by a description of the method used, detailing the measures and procedure.

3.2 Research question and hypotheses

3.2.1 Research question

How do aspects of self relate to adjustment to chronic pain?

3.2.2 Research hypotheses

Participants will describe 3 possible selves: actual self, hoped for self and feared self.

1. Individuals with a large discrepancy between their actual self and hoped for self, a situation reflecting unattained desires, will have greater depression than individuals who have a small discrepancy.
2. Individuals with a small discrepancy between their actual self and feared self, a situation representing proximity to perceived threat, will have greater anxiety than individuals who have a large discrepancy.
3. Individuals whose hoped for attributes are possible with pain will have less depression than individuals whose hopes are conditional on pain removal.

3.3 Method

3.3.1 Design

The sample size was determined by reference to Cohen and Cohen (1975). The sets of independent variables to be included in this method were demographics (age and gender), pain, disability and a measure of self-discrepancies. Cohen and Cohen state that based on a medium effect size, operationally defined as 0.15, with alpha set at 0.05, statistical power at 0.8 and with 4 sets of independent variables the required sample size is 104. This study had a cohort cross-sectional, multiple measures design.

3.3.2 Participants

Participants were recruited from 2 sites: Chapel Allerton Hospital, Leeds and Hope Hospital, Manchester. At the Leeds site, participants were recruited at a weekly pain clinic. At a typical afternoon clinic, approximately 50 out-patients were offered appointments by three consultants. After taking into account non-attenders and patients excluded due to their age, approximately 35 patients each week were eligible to participate in the research and of these 10%-25% agreed to take part.

In Manchester, patients were contacted by post whilst they were on the waiting list for their first appointment at the Manchester and Salford Pain Centre. Approximately 200 were contacted resulting in a 7% opt-in rate.

Selection criteria were as follows:

Inclusion criteria

- ◆ 18-65 years
- ◆ pain duration of at least 6 months
- ◆ English as a first language

Exclusion criteria

- ◆ psychosis
- ◆ a learning disability
- ◆ malignant pain, e.g. cancer

3.3.3 Measures

Demographic information.

This was recorded on a form produced by the researcher comprising of:

- ◆ Age
- ◆ Gender
- ◆ Pain duration
- ◆ Main diagnosis (if known)
- ◆ Previous treatments for the pain
- ◆ School leaving age
- ◆ Reading or writing difficulties at school

Controlled oral word association test (Benton and Hamsher, 1976)

The method selected to elicit possible selves, requiring the generation of adjectives, could be affected by intelligence so a measure of verbal fluency was included to assess for any interaction. The subject is asked to say as many words as they can think of in one minute beginning with the letter F, followed by the letters A and S in two further one-minute trials. Proper nouns, numbers and the same word with a different suffix are not allowed. The score is the sum of words generated across the three trials.

Pain variables

Pain rating scales

Visual analogue scales were used to measure:

- ◆ pain at its highest intensity (0-150mm)
- ◆ pain at its lowest intensity (0-150mm)
- ◆ pain at its usual intensity (0-150mm)
- ◆ level of pain-related interference (0-150mm)

A copy of these rating scales can be found in Appendix 2.

Pain Disability Index, PDI (Pollard, 1984)

A review of the literature indicated that a widely used measure of pain related disability is the Pain Disability Index (PDI). The PDI is a 7-item self-report measure of the extent of interference that chronic pain causes to different aspects of an individual's life. Tait, Chibnall and Krause (1990) give the internal reliabilities for the PDI as 0.86. The validity was tested by comparing high and low PDI scores on several measures of pain, activity and distress. As predicted the high PDI group reported the most distress, pain and disability. The PDI was selected for its brevity and reasonable reliability and validity. The 7 areas covered are family, recreation, social activities, occupation, sexual behaviour, self care and life support activities. Each item is rated on a 10-point scale where 0 indicates 'no disability' upto 10 indicating 'total disability'. The total scores range from 0 to 70. The PDI has been demonstrated to have adequate levels of reliability and validity (Pollard, 1984). For a copy of this measure see Appendix 3.

Chronic Pain Acceptance Questionnaire, CPAQ (Geiser, 1992)

The CPAQ is a 34-item self-report questionnaire designed to measure acceptance of pain. Each item is a statement selected to measure dimensions of the construct of acceptance (McCracken, 1998). The statements are rated on a 7-point scale according to the extent to which the respondent feels the statement applies to them. The scores range from 0 to 6 where 0 means 'never true' up to 6 meaning that the statement is 'always true'. The total score is derived from 24 items (Geiser, 1992). The total has been shown to correlate with standardised measures of distress and daily functioning demonstrating its validity as a measure of acceptance (Geiser, 1992; McCracken, 1998). A copy of this measure can be found in Appendix 4.

Affective measures

Emotional VAS

Visual analogue scales were used to measure emotions that had accompanied the pain over the past week. The scales measured:

- ◆ depression (0-100mm)
- ◆ anxiety (0-100mm)
- ◆ frustration (0-100mm)
- ◆ anger (0-100mm)
- ◆ fear (0-100mm)

A copy of these rating scales can be found in Appendix 2.

Beck Depression Inventory 2, BDI II (Beck, 1996).

The BDI II is a 21-item self-report measure of depressive symptomatology. Each item has four possible responses. The scores for each item range from 0 to 3, depending on the symptom's presence and severity over the preceding two weeks. The total scores range from 0 to 63.

State-Trait Anxiety Inventory (Form Y-1), STAI (Spielberger, 1983)

The STAI has separate self-report scales for measuring state and trait anxiety. In this study only the state anxiety scale (Form Y-1) was used. This is a 20-item scale and is completed according to how an individual is feeling 'at this moment'. Each item is a statement to evaluate how a respondent is feeling and the scores for each item range

from 1 ('not at all') to 4 ('very much so') according to the presence and intensity of that feeling.

Method for eliciting possible selves A structured interview was used to elicit three possible selves: actual self, hoped for self and feared for self. For a copy of the complete interview see Appendix 5. Starting with the actual self, the following instructions adapted from Hooker and Kaus (1994) were given:

This part of the study is concerned with how you view yourself at the moment. Please list up to 10 characteristics that you think you actually possess. You can include things that you don't like about yourself as well as things that you do like.

When the participant had generated 10 adjectives or they stated that they could not think of any more, the interviewer proceeded to the next section. If the participant had generated less than 10 adjectives on the actual self task, the interviewer told them not to worry because adjectives could be added to this list if any came to mind during the next two tasks.

The next possible self to be considered was the hoped for self. Participants were asked to read a set of instructions that had been adapted from those used by Hooker and Kaus (1994). They began:

This section is concerned with how you see yourself in the future. We all think about our future to some extent. When we do this we usually think about the kinds of experiences that are in store for us and the kinds of people we might possibly become. Sometimes we think about what we **hope** we will be like. Psychologists talk about this in terms of 'hoped for possible selves' – the selves we hope to become in the future. Examples of common hoped for selves are becoming a parent or grandparent.

If literacy was a problem, the instructions were given verbally. Participants were instructed to describe their hopes for the future, either writing them down or telling them to the interviewer. When this task had been completed participants were asked to generate up to 10 characteristics that they hoped they would possess in the future. They were informed that this list may include characteristics that they already possessed.

Participants were given the choice of writing their own list or responding verbally. As this task proved to be more difficult than the actual self task, verbal prompts were used when necessary. For details of the types of prompts used see Appendix 6. After 10 characteristics had been generated or the participant was unable to generate any further characteristics, they were instructed to consider whether each attribute would be possible in the future if they were still in pain. Finally, the participant was asked to rate on a 7-point scale how capable they felt of accomplishing the hoped for self, where 1 indicated 'not at all' capable and 7 indicated 'definitely' capable. On another 7-point scale they were asked to rate how likely they thought it was that the possible self would describe them in the future, where 1 indicated 'very unlikely' and 7 indicated 'very likely'.

The same procedure was used to generate the feared for self except this time participants began by thinking about their fears for the future. Again the instructions were adapted from Hooker and Kaus (1994) and were as follows:

In addition to having hoped for possible selves, we may have images of ourselves that we fear, dread or don't want to happen. Examples of common feared for selves are getting divorced or having financial problems. Some of us may have a large number of feared possible selves in mind, whereas others may have only a few.

When the participant had described some of their fears for the future they were instructed to generate up to 10 characteristics that they feared or worried about possessing in the future. Again, they were given permission to include characteristics that they believed they already possessed. Verbal prompts were used as required (see Appendix 6). Participants were then asked to consider whether each attribute would be possible in the future if they were pain-free. Finally, they were asked to rate on the 7-point scales described in the previous section how capable they felt of preventing the feared for self and how likely they thought it was that those characteristics would describe them in the future.

3.3.4 Procedure

In Leeds, recruitment was conducted at the weekly pain clinic at Chapel Allerton Hospital. From November 2001 until April 2002 all attendees within the age range for

this study were approached and offered an information sheet about the research. For a copy of the information sheet see Appendix 7. As they left the clinic, the researcher asked patients if they were interested in taking part in the study. Those that were interested were asked to leave a contact number and were informed that the researcher would contact them in one week to check if they still wanted to take part and, if so, to arrange a suitable time for an interview. Participants were given the option of being interviewed at home or in a private room at the pain clinic.

Recruitment in Manchester took place between October 2001 and January 2002 at the Manchester and Salford Pain Centre at Hope Hospital, Salford. The recruitment process was different to that used in Leeds. Potential participants were contacted, by post, as soon as they were placed on the waiting list for their first pain clinic appointment. They were sent an invitation letter and an information sheet about the study. The information sheet is included in Appendix 8. To indicate that they would like to take part in the research, they were asked to return an opt-in slip. Participants were then contacted by phone and an interview was arranged in a private room at the pain centre or, if it was more convenient, at their home.

At the start of the interview, the participant was given a consent form to read. If they were satisfied with the information it contained they were asked to sign the form. After giving consent, demographic information was collected and the participant was asked to complete the pain and emotion visual analogue scales. The possible selves interview was conducted next followed by the verbal fluency test. Finally, the PDI, BDI II, STAI (Form Y-1) and the CPAQ were administered. The participant completed the questionnaires unless literacy was a problem or pain prevented the individual from writing and then the responses were given verbally and noted by the researcher.

3.3.5 Ethical Issues

Ethical approval was obtained from Leeds Teaching Hospitals NHS Trust Research and Development Department and Salford and Trafford Local Research Ethics Committee.

Chapter 4. Results

4.1 Introduction

This chapter begins with a description of the sample in terms of demographic variables and scores on the pain and affect measures. The possible selves data is described followed by a section discussing different approaches to calculating self-discrepancy scores. This finishes with the scoring procedure that was selected for this study. The chapter concludes with tests of the three research hypotheses and one further analysis.

4.2 Description of the sample (N=89)

4.2.1 Demographic information

Table 4.1. shows basic demographic information about the sample. Of the sample, 75 (84.3%) were recruited in Leeds and 14 (15.7%) were recruited in Manchester. The average age was approximately 45 which is comparable to other samples of chronic pain patients recruited from this clinic (e.g. Harris, 2001). The range in school leaving age from 14 to 18 years was strongly related to age and reflects the gradual raising of the school leaving age from 14 to 16 over the last five decades. This information is only available for some of the sample (n=64) because the decision to ask about school leaving age was made after data collection had begun. Six participants reported that they had experienced reading problems at school. Again this information was not collected from the whole sample (n=57).

Table 4.1 Demographic Information (N=89)

	Minimum	Maximum	Mean	S.D.
Gender ratio m : f	33	56		
Age (years)	22	64	45.48	10.85
School leaving age				
age in years (n=64)	14	18	15.94	1.01
Verbal fluency test				
total score (n=53)	14	78	33.92	11.53

4.2.2 Controlled Oral Word Association Test

The total score on the verbal fluency test had a range of 14 to 78 and a mean of 33.92 (s.d. = 11.53). The decision to assess verbal fluency was made after the study had started so unfortunately this information is only available for part of the sample (n=53).

4.2.3 Previous treatments

Table 4.2 shows the number of participants who had received particular treatments for their pain. Where fewer than 11 individuals had described a type of treatment it was included in the category 'other'. Other treatments included a TENS machine, osteopathy and a spinal cord stimulator. As might be expected, most patients had or were taking analgesic preparations and the majority had experienced physiotherapy. In addition, a significant number had received the invasive procedures of injections or surgery. Information regarding the use of analgesics is not available for the whole sample because initially participants were asked an open question about treatments that they had received for their pain. However, it soon became apparent that some participants were not mentioning analgesics unless they were specifically asked about them, so only the individuals who were questioned directly about medication use have been included in the statistics (n=74).

Table 4.2 Previous treatments

Treatment	N	Frequency	Percent
Acupuncture	89	21	23.6
Analgesics	74	68	91.6
Physiotherapy	89	47	52.8
Painkilling injections	89	41	46.1
Surgery	89	36	40.4
1 other treatment	89	25	28.1
2 other treatments	89	7	7.9
>2 other treatments	89	4	4.5

4.2.4 Diagnoses

The range of diagnoses reported by patients is summarised in table 4.3. The most common diagnosis was back pain ('lower back pain' and 'back pain, region not specified'), reported by 29.3% of the sample.

Table 4.3 Diagnostic categories (N = 89)

Self-Reported Clinical Diagnosis	Frequency	Percent
lower back pain	15	16.9
back pain (not lower back or unspecified)	11	12.4
leg pain	9	10.1
post surgical pain	8	9.0
spondylosis	6	6.7
abdominal pain	4	4.5
osteo-arthritis	4	4.5
complex regional pain syndrome	3	3.4
facial pain	3	3.4
rheumatoid arthritis	3	3.4
sciatica	3	3.4
scoliosis	3	3.4
arm pain	2	2.2
groin pain	2	2.2
pancreatitis	2	2.2
thoracic pain	2	2.2
whiplash	2	2.2
diabetes	1	1.1
fibromyalgia	1	1.1
Hirschsprung's disease (visceral pain)	1	1.1
interstitial cystitis	1	1.1
joint pain	1	1.1
neck pain	1	1.1
spinal stenosis	1	1.1

4.2.5 Pain measures

Table 4.4 Pain measures

Measure	Mean	S.D.	Range	Correlations		
				age	duration	Gender
Pain duration-mths	114.22	105.78	11-468	0.126	-	0.142
VAS pain ratings						
highest* (0-150)	121.82	31.29	14-150	0.06	-0.13	-0.18
lowest (0-150)	45.74	28.59	0-128	0.07	0.01	-0.07
usual (0-150)	82.10	32.41	0-150	0.04	0.01	-0.07
interference(0-150)	110.64	31.21	5-150	0.03	0.03	-0.01
PDI	45.05	12.38	8-68	-0.04	-0.03	0.01
CPAQ	61.00	19.62	20-98	0.17	0.21	0.25**

*all n = 88 except *n=89

**significant at the 0.05 level (p<0.05)

Table 4.4 summarises the data obtained from the pain measures. The mean pain duration was 9 years 6 months (114.22 months) indicating that this was a very chronic sample. There was a good range in duration from 11 months to 468 months (39 years) with the distribution being positively skewed. The median duration was 6 years (72 months). The PDI had a mean of 45.05 which compares favourably with PDI scores reported in previous research (e.g. Tait et al., 1990). The mean total score on the CPAQ was 61 which was similar to that obtained by other studies (e.g. McCracken, 1998). None of the correlations between each of the pain variables and age, pain duration and gender were significant apart from the relationship between the CPAQ total score and gender ($r = 0.25$, $p < 0.017$) with women scoring more highly than men.

4.2.6 Affect measures

A summary of the data produced by these measures is given in Table 4.5. A mean BDI score of 21.74 indicates moderate depression with reference to a non-pain sample but this mean corresponds well with that from a very large pain sample (Morley, Williams and Black, 2002). The mean score on the STAI was 46.38 (s.d.=14.58) with a range of

20 to 74. The mean is higher than norms given for working adults (35.46) and a sample of college students (37.62) (Spielberger, 1983). None of the affect variables correlated with age, pain duration or gender.

Table 4.5 Affect measures

Measure	Mean	S.D.	Range	Correlations		
				age	duration	Gender
*VAS ratings						
depression(0-100)	38.99	30.96	0-96	-0.09	-0.16	-0.01
anxiety (0-100)	41.74	29.87	0-95	0.15	-0.10	0.02
frustration(0-100)	71.23	23.66	0-99	0.12	-0.08	0.01
anger (0-100)	49.62	33.36	0-98	-0.18	0.05	-0.10
fear (0-100)	43.09	34.96	0-100	-0.01	0.05	-0.19
B.D.I (n=89)	21.74	12.93	0-56	-0.17	-0.03	-0.01
S.T.A.I (n=88)	46.38	14.58	20-74	-0.17	-0.11	-0.17

*for VAS ratings all n = 87 except for frustration n=88

4.3 Possible selves data

Table 4.6 shows the mean number of attributes generated to describe each of the three possible selves. Approximately two more attributes were used to describe the actual self than the hoped and feared selves. A t-test was conducted to compare the number of items used to describe the hoped and feared selves and the difference was found to be non-significant ($t = 0.881, p = 0.380$). A series of correlations were conducted to discover whether there was an association between the number of items generated and age, education, verbal fluency and pain levels. These results are also given in Table 4.6. There were no relationships with fluency or pain levels but there were marginal associations with age and education. The number of items generated for the actual self correlated positively with age. The correlation between the number of items describing the feared self and age was in the opposite direction. Therefore, there was a relationship between age and the number of items generated but it was not consistent. The mean number of items describing the hoped for self and feared self both correlated positively with school leaving age. However, because multiple comparisons were made, a

Bonferroni-type correction could be made which reduced the probability value required for significance to 0.017. At this level, only the correlation between age and the number of items describing the actual self remained significant. Any effects of age were controlled for in the regression analyses later on in this chapter.

Table 4.6 Number of attributes describing each of the possible selves (N=88)

	Mean	S.D.	Range	Age	Correlations		
					Left school	VFT	Usual pain
Actual	8.89	1.39	5-10	0.257*	0.094	0.044	-0.010
Hoped	6.62	1.89	0-10	-0.199	0.296*	0.180	-0.001
Feared	6.42	1.81	2-10	-0.225*	0.256*	0.136	-0.131

* Significant at the 0.05 level ($p < 0.05$)

Table 4.7 valency of attributes describing the actual self, possibilities, self-efficacy and outcome expectancies

	Range	Mean	S.D
Actual self (n=89)			
positive	0 – 9	2.92	2.55
negative	0 – 10	5.60	2.72
neutral	0 – 3	0.37	0.61
Hoped for self (n=88)			
proportion possible with pain	0 – 1	0.56	0.31
self-efficacy	1 – 7	3.89	1.87
outcome expectancy	1 – 7	4.14	1.72
Feared self (n=86)			
proportion possible without pain	0 – 1	0.44	0.35
self-efficacy	1 – 7	3.39	1.84
outcome expectancy	1 – 7	3.73	1.73

As can be seen from Table 4.7, more negative attributes were used when describing the actual self than positive or neutral. The number of negative attributes correlated significantly with depression as measured by the BDI II ($r = 0.518$, $p < 0.001$) and total anxiety scores on the STAI ($r = 0.426$, $p < 0.001$). It was not necessary to calculate the valency of the attributes describing the hoped for and feared selves because by their very nature the hoped for characteristics were positive and the feared were negative.

A significantly greater proportion of hopes was thought to be possible with pain than the proportion of fears possible if pain-free ($t = 2.662$, $p = 0.009$). In terms of self-efficacy, the hoped for self was seen as more achievable than the feared self was preventable but although approaching significance the difference was non-significant ($t = 1.962$, $p = 0.053$). The difference between the outcome-expectancy ratings was non-significant ($t = 1.398$, $p = 0.166$) with the hoped for self perceived as an equally likely outcome as the feared self.

4.3.1 Magnitude of self-discrepancies

A negative self-discrepancy score indicates an overlap between the actual self and the possible self that it is being compared with. If the actual self is in some aspects opposite to the possible self that it is compared with then the self-discrepancy score will be positive. A score of 0 represents a situation where the actual self is mid-way between the possible self and its opposite. For a thorough explanation of approaches to scoring self-discrepancies see Section 4.4. The mean actual-hoped discrepancy was -0.025 (standard error = 0.031) and the mean actual-feared discrepancy was -0.1315 (standard error = 0.022). The mean magnitude of the two self-discrepancies were significantly different from one another ($t = 2.497$, $p = 0.014$). Two one sample t-tests were conducted and the actual-hoped discrepancy was found not to significantly differ from 0 ($t = -0.802$, $p = 0.424$). The mean actual-feared discrepancy was found to be significantly less than 0, ($t = -5.995$, $p < 0.001$). Therefore on average the sample were closer to their feared self than their hoped for self.

The next section describes methods for calculating self-discrepancies. Results continue with hypothesis tests on page 60.

4.4 Measuring discrepancies: comparison of different computations

4.4.1 Introduction

There is an existing method (Higgins et al., 1985) that can be used to calculate self-discrepancy scores. The attributes describing one self-state (e.g. actual self) are compared with the attributes used to describe one of the other self-states (e.g. hoped for self). The number of matches (identical and synonyms) and mismatches (opposites and antonyms) are identified and a self-discrepancy score is calculated by subtracting the total number of matches from the number of mismatches. It is assumed that 10 attributes will have been generated to describe each self-state. This gives a potential discrepancy score ranging from +10 to -10.

Attempting to use this method to score the possible selves data collected in the current study highlighted a number of difficulties. The next section describes the problems encountered and outlines possible ways of tackling them.

4.4.2 Synonyms within lists

Higgins et al. (1985) in their method for calculating self-discrepancy scores do not mention how to deal with synonyms within the same list. This situation occurred frequently in the current study. The following example highlights this issue. The characteristics were not generated in this order but they are presented in this way to more clearly illustrate the situation.

actual self	feared self
1. useless	1. useless
2. a burden	2. a burden
3. reliant (on others)	3. reliant (on somebody all of the time)
4. unfit	4. worthless
5. fat	5. not independent
6. short-tempered	6. unfit mother
	7. a failure

Comparing the two lists, the first three words on each list are identical and there are no opposites or antonyms. Using Higgins et al.'s (1985) method to calculate the self-

discrepancy score the number of matches (identical and synonyms) are subtracted from the number of mismatches (opposites and antonyms). This gives a discrepancy score of -3.

However returning to the example, also included in this individual's description of their feared self is the word 'worthless'. Higgins et al. (1985) decided if words were antonymous or synonymous by using a thesaurus. In the current study Collins thesaurus (1998) was used and it identifies 'worthless' as a synonym of 'useless'. As Higgins et al.'s scoring protocol did not mention the possibility of a word in one list matching more than one word in the comparison list, presumably if this situation arose only the closest match was scored. In the above example that would mean that 'useless' appearing in both lists would be scored as a match but the fact that 'useless' in the actual self is synonymous with 'worthless' in the feared self would be ignored. Having a cluster of synonymous words describing a possible self could indicate that an individual has a relatively restricted view of what types of attributes are desirable or must be avoided. It seems a shame to overlook this potentially important information.

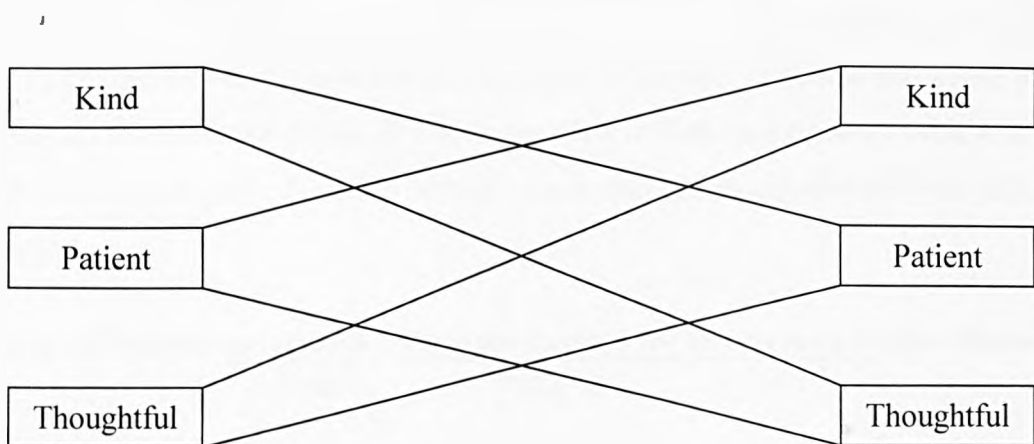
An alternative way of calculating the self-discrepancy score in the example would be to score all of the matches even if one of the words had already been paired with a word on the comparison list. This scoring procedure will be referred to as one-to-many mapping. If this approach is used with the example, the first three words on each list would be recognised as matches, as in Higgins et al.'s approach, but 'useless' and 'worthless' would also be scored as synonyms even though 'useless' in the actual list had already been matched with 'useless' in the feared list. An additional match can be made between the synonyms 'reliant' and 'not independent'. This results in five matches which when subtracted from the number of antonyms (0) gives a self-discrepancy score of -5.

The example just discussed illustrated single words describing the actual self mapping onto two words within the feared self. This relationship did occur in the other direction, i.e. one word describing the hoped for or feared self mapping onto two words defining the actual self. There were also instances in the data of an attribute in one list having two or more antonyms in the comparison list and even occasions when a descriptor had a synonym and an antonym in the list that it was being compared with.

Less commonly a more complex relationship between two lists of attributes occurred. The following example illustrates this situation.

actual self	hoped for self
1. good listener	1. good listener
2. patient	2. patient
3. kind	3. kind
4. thoughtful	4. thoughtful
5. considerate	5. considerate
6. frustrated	6. wise
7. not very active	7. polite
8. difficulty accepting situation	8. hard-working
9. thoughtful	
10. considerate	

Comparing the attributes describing the actual self and the hoped for self according to Higgins et al.'s (1985) method would mean that 5 matches would be identified because the first 5 attributes on each list are identical. However, kind, thoughtful and considerate are all synonyms. This will be described as an instance of many-to-many mapping.



As can be seen from the diagram, each word maps onto its two synonyms on the other list. Calculating the self-discrepancy score in this way gives a possible 11 matches (5 identical matches and 6 synonyms from the many-to-many mapping). There are no antonyms so the discrepancy score is -11. Using the Higgins et al. (1985) scoring

method the self-discrepancy would be -5 . The example just given is a complex demonstration of many-to-many mapping with three words that are synonymous with each other appearing on both lists but it provides a good illustration of this scoring approach. For the remainder of this section, the term mapping is used to refer to a scoring procedure that utilises one-to-many mapping and when possible, many-to-many mapping.

Two approaches have now been described for calculating the number of antonyms and synonyms when making comparisons between two self-states: the original approach described by Higgins et al. (1985) and a new approach devised during this study that takes account of all synonymous and antonymous pairings. A final scoring approach that was considered was to calculate the average number of matches or mismatches from the two approaches. In the previous example the average number of matches is 8 ($5+11=16$, $16/2=8$). Using this score to calculate the discrepancy between the actual and hoped for self results in a self-discrepancy score of -8 .

All three approaches were used to calculate the number of matches and mismatches between the attributes describing the actual self and hoped for self, and the actual self and feared self. These totals were then used to compute an actual-hoped for discrepancy and an actual-feared discrepancy. The actual-hoped discrepancies were correlated with one another to determine how similar they were. The results are shown in Table 4.8 and it can be seen that the three methods are highly correlated. The same procedure was followed for the actual-feared discrepancies. The findings are given in Table 4.9. Again, there is a high degree of overlap between the discrepancies calculated by the different methods.

Table 4.8 Pearson correlations (r) between methods for scoring actual-hoped discrepancies

method	mapping	Higgins'
Higgins'	0.801	-
average	0.985	0.893

Table 4.9 Pearson correlations (r) between methods for scoring actual-feared discrepancies

method	mapping	Higgins'
Higgins'	0.941	-
average	0.995	0.970

In this section, three different methods have been described for calculating the number of matches and mismatches between two self states: the method used by Higgins et al. (1985), the mapping approach that allows an attribute to be paired more than once and an average of these two approaches.

4.4.3 Attribute lists of different lengths

Although participants were asked to generate up to 10 attributes to describe each possible self, most participants were unable to think of 10. As described in Section 3.3.3 in the method, this was after a priming task (being asked to describe specific hopes and fears for the future) and additional verbal prompts. The number of attributes generated for each possible self can be found in Table 4.6.

Most studies (e.g. Scott and O'Hara, 1993; Tangen et al., 1998) using this approach to study self-discrepancies, like Higgins et al. (1985) ask participants to generate 10 characteristics per list and do not report any difficulties in achieving this.

There now follow a number of suggestions, with their advantages and disadvantages, for addressing the difficulty of comparing lists containing different numbers of attributes. Sets of data will be used to illustrate these approaches.

actual self

1. useless
2. a burden
3. reliant (on others)
4. unfit
5. fat
6. short-tempered

feared self

1. useless
2. a burden
3. reliant (on somebody all of the time)
4. worthless
5. not independent
6. unfit mother
7. a failure

Attributes generated by subject A.

In the above example, already used in the previous section, the individual generated six attributes to describe their actual self and seven attributes to describe their feared self. For simplicity, I will use Higgins et al.'s (1985) scoring method. As described in the previous section this resulted in a discrepancy score of -3.

Now consider the following data. Again the characteristics within each list were not generated in this order.

actual self

1. very frustrated
2. restricted
3. very unhappy
4. out-of-shape
5. not fit
6. lost confidence
7. bitter
8. annoyed
9. wrecked

feared self

1. frustrated
2. restricted
3. miserable
4. in pain
5. wanting to die
6. angry
7. terrified

Attributes generated by subject B.

As in the previous example, the first three words on each list are matches (2 identical and 1 synonymous). Again there are no antonyms so the actual-feared discrepancy score is -3.

If no adjustment were made for the lists being of different lengths in these two examples, both individuals would have the same actual-feared discrepancy score of -3. This does not represent important differences between these two individuals. Both individuals have three attributes in their actual self that overlap with three attributes in their feared self but they have generated different numbers of characteristics to describe their actual selves. Subject A only has three attributes that are not incorporated into their feared self whereas subject B has six. Expressed another way, subject A has a 50% overlap between their actual and feared selves whereas subject B's overlap is 33%. Subject A's greater overlap means that their actual self is closer to their feared self than is the case for subject B. Taken to its extreme, an individual who had only generated a small number of negative attributes to describe their actual self could be in a situation where these attributes were also part of a more elaborated feared self. The consequence would be that their actual self would be completely submerged within their feared self. The reverse of this situation would be an individual who only had a small number of attributes defining their feared self which were also incorporated into their actual self. This would be a less problematic situation because there would still be a large part of their current state that did not match their fears.

In summary, when lists of attributes are of different lengths it can have important consequences. The next section describes a number of possible ways that different list lengths can be taken into account.

4.4.4 Expressing the discrepancy score as a proportion of the actual self

One possible way of denoting this difference would be to divide the actual-feared discrepancy by the total number of attributes describing the actual self thus expressing the discrepancy as a proportion of the actual self. For subject A and subject B the calculation would be as follows:

Subject A: total attributes in actual self = 6

self-discrepancy score = -3

self-discrepancy score as proportion of actual self = $-3/6 = -0.5$

Subject B: total attributes in actual self = 9

self-discrepancy score = -3

self-discrepancy score as proportion of actual self = $-3/9 = -0.33$

In Higgins' (1987) original paper on calculating self-discrepancy scores he stated that if the score was negative, the greater the magnitude of the score the more similar the self-states are, in this case the actual and feared selves. By dividing the self-discrepancy score by the number of attributes comprising the actual self this relationship is maintained. In the example, when the self-discrepancy is calculated in this way subject A now has a greater self-discrepancy score than subject B which indicates that subject A's actual and feared selves are more similar than subject B's. Dividing the actual-hoped and actual-feared discrepancies by the number of items in the actual self makes the discrepancy scores comparable because they are expressed as proportions of the same self-state.

Expressing the discrepancy score as a proportion of the shortest list This was considered as a possibility because using Higgins et al.'s (1985) method for comparing two sets of attributes the number of attributes in the shortest list would be the maximum number of possible matches or mismatches. In the Higgins et al. study both lists contained 10 attributes so the maximum number of matches or mismatches was also 10. In the current study, dividing the discrepancy score by the length of the shortest list would make statistical sense for the reason just given. However, it would not make psychological sense. Returning to the two sets of data, following this procedure would mean that the actual-feared discrepancy score for subject A would be expressed as a

proportion of the number of attributes describing their feared self, whereas for subject B the actual-feared discrepancy score would be expressed as a proportion of their actual self. This would not make them comparable. Another reason for not using this method is that the conclusion of the previous section was to adopt a new approach for calculating the number of synonymous and antonymous attributes when comparing two self states and not to use Higgins et al.'s method. This means that the maximum number of possible matches and mismatches could potentially be greater than the length of either list.

Tables 4.10 and 4.11 show the correlations between the self-discrepancies calculated by the three methods described in Section 4.4.2 and the same three discrepancy scores expressed as proportions of the total number of attributes in the actual self. It can be seen that the mean self-discrepancy scores computed by the different methods are highly correlated.

Table 4.10 Pearson correlations (r) between methods for scoring actual-hoped discrepancies

Method Method	mapping	mapping/ actual	Higgins'	Higgins' / actual	average
Mapping/ Actual	0.987	-	-	-	-
Higgins'	0.801	0.800	-	-	-
Higgins' / Actual	0.776	0.799	0.983	-	-
Average	0.985	0.975	0.893	0.869	-
average / actual	0.967	0.984	0.890	0.894	0.986

Table 4.11 Pearson correlations (r) between methods for scoring actual-feared discrepancies

Method	mapping	mapping/ actual	Higgins'	Higgins'/ actual	average
mapping / actual	0.972	-	-	-	-
Higgins'	0.941	0.927	-	-	-
Higgins' / actual	0.905	0.946	0.970	-	-
average	0.995	0.971	0.970	0.936	-
average / actual	0.964	0.995	0.950	0.973	0.972

Tables 4.10 and 4.11 illustrate that the discrepancy scores calculated by the different methods are highly correlated with one another. However, another important question was whether the particular discrepancy score chosen affected the relationship between self-discrepancies and other variables. This was tested by calculating the correlations between the six actual-hoped discrepancy scores and six actual-feared discrepancies and depression and anxiety scores. The results are summarised in table 4.12. Significant correlations existed between the actual-hoped and actual-feared discrepancies and the depression and anxiety measures. As can be seen in Table 4.12 these relationships existed irrespective of which method had been used to calculate the self-discrepancies. The relationships between the discrepancies and depression and anxiety will be discussed in section 4.5.

Table 4.12 Pearson Correlations (r) for self-discrepancies and mood questionnaires *

Self-discrepancy	B.D.I. (n=89)	S.T.A.I. (n=88)
Higgins'		
Actual-feared	-0.376	-0.278
Actual-hoped	0.350	0.360
Higgins' / actual		
Actual-feared	-0.375	-0.269
Actual-hoped	0.344	0.379
Mapping		
Actual-feared	-0.355	-0.302
Actual-hoped	0.408	0.412
Mapping / actual		
Actual-feared	-0.363	-0.300
Actual-hoped	0.412	0.440
Mean of Higgins'/mapping		
Actual-feared	-0.365	-0.299
Actual-hoped	0.415	0.422
Mean / actual		
Actual-feared	-0.371	-0.294
Actual-hoped	0.417	0.448

* all are significant at the 0.01 level ($p < 0.01$)

A decision was made to adopt the mapping method for calculating the number of matches and mismatches and to take account of lists being different lengths by expressing the discrepancy score as a proportion of the number of attributes defining the actual self. This resulted in all but one of the discrepancy scores falling between +1 and -1. It is possible for a score to fall outside this range because the number of matches or mismatches can be greater than the number of words generated to describe the actual self. In Table 4.12 the correlations between the self-discrepancies calculated in this way and the affect measures appear in the shaded area.

4.4.5 Different intensities of the same attribute

Another interesting occurrence in the data that is worthy of note is the grading of the same attribute between two lists. Examples of this can be found in the lists generated by subject A and subject B to describe their actual and feared selves. Subject A describes themselves as currently being reliant on others but in the future fears being reliant on somebody *all of the time*. Subject B describes themselves as being very frustrated at the moment but still fears being frustrated in the future. Here are a few other examples from the data of the inclusion of different intensities of the same attribute to describe different possible selves:

actual self	hoped for self	feared self
patient	very patient	-
sociable	more sociable	-
house-bound	-	more house-bound
frustrated	less frustrated	-
wheelchair-bound	-	completely wheelchair-bound

It is unlikely that this is something that other researchers calculating self-discrepancy scores have not encountered. In the current study, 50% of the participants used this method to denote different intensities of the same attribute at least once.

Strauman and Higgins (1987), in a refinement to the method used in their earlier study (Higgins et al., 1985), asked participants to rate the extent to which they believed they actually, ideally or ought to possess the attribute. A four-point scale was used with 1 meaning 'a little' to 4 meaning 'extremely'. When identical or synonymous items were identified during the comparison of two self-states, the rating was taken into account. If the rating differed by more than one, the pairing was considered to be a mismatch of extent and was given a score of 1. If attributes were opposites or antonyms Strauman and Higgins termed them true mismatches and gave them a weighted score of 2. Matches continued to be given a score of 1.

The situation just described is different from the spontaneous grading of attributes that occurred in the current study. It was decided that when such a pairing occurred it would

be treated as synonymous. This was irrespective of direction, i.e. whether the prefix denoted an increase in, or lessening of, that attribute.

4.4.6 Scoring Procedure

Finally, a brief summary of the scoring method that was decided upon and used in this study. All of the attributes describing the actual self were compared to all of the attributes describing the hoped for self and the feared self. A novel scoring approach was devised, referred to in this paper as ‘many-to-many mapping’. Unlike Higgins et al.’s (1985) scoring method, this allowed an attribute to be matched more than once if the comparison list contained more than one word that was synonymous or antonymous to it. A discrepancy score was calculated by subtracting the total number of matches from the number of mismatches. This score was then divided by the number of attributes used to describe the actual self. All but one of the self-discrepancy scores was within the range +1 to -1.

4.5 Hypothesis Tests

The first two rows of Table 4.13 show the correlations between the four questionnaire measures and the actual-feared and actual-hoped discrepancies. The size of the actual-feared discrepancy correlated negatively with the BDI II, the STAI and the PDI and positively with the CPAQ. The correlations between the actual-hoped discrepancy and the four measures were all in the opposite direction. All of the correlations were significant ($p < 0.01$). The correlations between the four measures and the proportion of hopes possible with pain and the proportion of fears possible without pain are given in the bottom two rows of Table 4.13. The proportion of hopes possible with pain correlated positively with the CPAQ and negatively with the BDI II, the STAI and the PDI. Again, all of these relationships were significant ($p < 0.01$). The proportion of fears possible without pain correlated most strongly with the PDI ($p < 0.01$). It also correlated negatively with the STAI and the BDI II but at a less significant level ($p < 0.05$). The relationship between the proportion of fears possible without pain and the CPAQ was non-significant.

Table 4.13 Pearson correlations (r) for self-discrepancies and conditionality ratings with affect and pain questionnaires

Measure	B.D.I. II	S.T.A.I.	C.P.A.Q.	P.D.I
Self-discrepancy				
actual-feared	-0.363**	-0.300**	0.310**	-0.301**
actual-hoped	0.412**	0.440**	-0.344**	0.387**
Conditionality				
hopes with pain	-0.607**	-0.398**	0.406**	-0.494**
fears without pain	-0.267*	-0.230*	0.115	-0.305**

*significant at the 0.05 level (p<0.05)
 **significant at the 0.01 level (p<0.01)

Table 4.14 Pearson correlations (r) for self-discrepancies and VAS ratings of affect and interference

VAS	depression	anxiety	frustration	anger	fear	interference
Discrepancy						
Actual-feared	-0.256*	-0.186	-0.159	-0.143	-0.271*	-0.235*
Actual-hoped	0.193	0.266*	-0.031	-0.049	0.131	0.274**

*significant at the 0.05 level (p<0.05)
 **significant at the 0.01 level (p<0.01)

Table 4.14 shows the correlations between the actual-feared and actual-hoped discrepancies and the VAS ratings of affect and interference. The actual-feared discrepancy correlated negatively with depression, fear and interference (p<0.05). A significant positive correlation existed between the actual-hoped discrepancy and interference (p<0.01). The actual-hoped discrepancy was also positively correlated with anxiety (p<0.05).

4.5.1 Hypothesis 1

- Individuals with a large discrepancy between their actual self and hoped for self, a situation reflecting unattained desires, will have greater depression than individuals who have a small discrepancy.

Preliminary support for this hypothesis can be seen in table 4.13. The actual-hoped discrepancy correlated significantly with the total BDI II score so, as predicted, a large discrepancy between the actual and hoped for self was associated with increased levels of depression as measured by the BDI II. The actual-hoped discrepancy also correlated

positively with the total score on the STAI. As the distance between the actual and hoped for self increased, levels of anxiety increased. The actual-hoped discrepancy was negatively correlated with the total score on the CPAQ and positively correlated with the total score on the PDI. Therefore, a large actual-hoped discrepancy was associated with increased reported disability and lower levels of pain acceptance. A less robust measure of the amount of disruption that pain causes to everyday activities was the VAS rating of interference and, like the PDI, this was positively correlated with the actual-hoped discrepancy (see Table 4.14). The relationship between the magnitude of the actual-hoped discrepancy and anxiety, as measured by the STAI, also remained when anxiety was measured on the VAS suggesting that this relationship was a robust finding. However, the relationship between the actual-hoped discrepancy and depression, although in the expected direction, was no longer significant when depression is measured on the VAS.

To provide a more robust test of hypothesis 1, a multiple regression to predict depression was conducted. To test the relationship between the actual-hoped discrepancy and depression as measured by the BDI II when the influence of other factors was removed, four sets of variables were entered into a hierarchical regression analysis. The demographic variables gender and age were entered as the first stage. As mentioned in section 4.3, some associations between age and the number of attributes generated were detected so it was important to control for any effects of age. In stage two usual pain intensity was entered as a pain variable. From previous research (e.g. Tait et al., 1990) disability has been found to be related to depression levels so the PDI total score was entered as a measure of disability. Finally, the actual-hoped discrepancy was entered to discover how much of the variance of depression scores this accounted for. The data were checked for multicollinearity, normality, linearity and homoscedasticity and one outlier was identified. This was removed from the subsequent analysis and cases that had missing data were deleted listwise leaving $n=85$. This procedure was followed for all subsequent analyses. The decision to delete cases listwise was taken because this produces the most conservative estimate. The results from this regression analysis are summarised in Table 4.15.

Table 4.15 Regression summary table for the prediction of the BDI II (N=85)

Model stages	Adjusted R ²	R ² Change	F Change	df	Sig. F Change	standardised coefficients
1. Demographics						
age, gender	0.001	0.025	1.042	2, 82	0.357	
2. Pain						
usual intensity	0.086	0.094	8.649	1, 81	0.004	
3. Disability						
PDI	0.454	0.361	55.487	1, 80	0.001	

4a Self-discrepancy						
actual-hoped	0.480	0.031	5.014	1, 79	0.028	0.195
4b Self-discrepancy						
actual-feared	0.463	0.015	2.408	1, 79	0.125	-0.132
4c proportion of hopes						
possible with pain	0.507	0.129	22.001	1, 79	0.001	-0.416

The regression model accounted for 48 % of the variance of the total BDI II score (adjusted $R^2 = 0.480$) and the actual-hoped discrepancy alone explained 3.1 % (R^2 Change = 0.031). This was a significant contribution to the variance ($p < 0.05$). The demographic variables of age and gender did not predict a significant amount of the variance of the BDII. Usual pain intensity predicted 9.4% of the variance and the PDI accounted for 36.1%. Both of these contributions were significant. Therefore the actual-hoped discrepancy was a better predictor of BDI II score than age and gender but pain intensity and disability made more significant contributions to the variance of depression levels.

A further two regression analyses were conducted to discover if other variables predicted a significant portion of the variance of BDI II scores. The same predictor variables were entered as the first three stages. In the first model, the actual-feared discrepancy was entered as the final stage. Due to the size of the correlation between the proportion of hopes possible with pain and the BDI II, the regression analysis was repeated but the proportion of hopes possible with pain was entered as the final stage. The amount of variance in total BDI II scores accounted for by the actual-feared discrepancy and the proportion of hopes possible with pain are shown in the bottom two

rows of Table 4.15. The model including the actual-feared discrepancy accounted for 46.3% of the total variance of BDI II scores. However, the contribution made by the actual-feared discrepancy was non-significant. The model that included the proportion of hopes possible with pain explained a slightly greater portion of the total variance of the BDI II (50.7%). The relationship between the proportion of hopes possible with pain and depression was negative. The proportion of hopes possible with the continuation of pain accounted for 12.9% of the variance. This was significant ($p < 0.001$).

In summary, the actual-hoped discrepancy was related to depression in the predicted direction. After controlling for the effects of age, gender, pain intensity and disability, the actual-hoped discrepancy and the proportion of hopes possible with pain predicted a significant amount of the variance in depression levels. The actual-feared discrepancy did not make a significant contribution to depression variance when the same variables were controlled for.

4.5.2 Hypothesis 2

- Individuals with a small discrepancy between their actual self and feared for self, a situation representing proximity to perceived threat, will have greater anxiety than individuals who have a large discrepancy.

The actual-feared discrepancy was positively correlated with anxiety as measured by the STAI. Therefore, as proposed in hypothesis 2, as the actual-feared discrepancy decreased levels of anxiety increased. The actual-feared discrepancy also correlated significantly with depression scores on the BDI II. It was correlated with the total scores on the PDI and CPAQ and these relationships were in the opposite direction to the correlations of the actual-hoped discrepancy with these two measures. As the actual-feared discrepancy decreased, reported pain-related disability increased whilst acceptance of pain decreased.

The relationships between the actual-feared discrepancy and depression and interference still existed when measured by VAS rather than multi-item measures. However the relationship predicted by hypothesis 2, between the actual-feared discrepancy and anxiety was not significant when anxiety was measured using the VAS. There was a

significant negative correlation between the actual-feared discrepancy and the VAS rating of fear.

A multiple regression was carried out to determine if the actual-feared discrepancy was a significant predictor of anxiety after the influence of other variables had been controlled for. The magnitude of the actual-feared discrepancy was negatively related to anxiety. Four sets of variables were entered into the analysis. Age and gender were entered as the first stage, followed by usual pain intensity, disability as measured by the PDI and, as the final stage, the actual-feared discrepancy. The results from this regression analysis are given in Table 4.16.

Table 4.16 Regression summary table for the prediction of the STAI (N=86)

Model stages	Adjusted R ²	R ² Change	F Change	df	Sig. F Change	standardised coefficients
1. Demographics						
age, gender	0.015	0.039	1.659	2. 82	0.197	
2. Pain						
usual intensity	0.030	0.026	2.227	1. 81	0.140	
3. Disability						
PDI	0.265	0.236	26.946	1. 80	0.001	

4a Self-discrepancy						
actual-feared	0.278	0.020	2.360	1. 79	0.128	-0.15
4b Self-discrepancy						
actual-hoped	0.332	0.071	8.980	1. 79	0.004	0.295

The regression model accounted for 27.8 % of the variance of the total STAI score (adjusted R² = 0.278). The actual-feared discrepancy alone explained 2 % of the variance (R² Change = 0.020) which was not significant. Age and gender and usual pain intensity did not predict a significant amount of the variance of the STAI either. The only significant predictor of STAI total score in this model was the PDI which accounted for 23.6% of the variance (R² Change = 0.236).

The regression analysis was repeated with the same predictor variables but the actual-hoped discrepancy was entered as the final stage to discover if this discrepancy made a significant contribution in predicting STAI scores. Overall the model accounted for 33.2% (adjusted $R^2 = 0.332$) of the variance with the actual-hoped discrepancy accounting for 7.1% (R^2 Change = 0.071). This was significant ($p = 0.004$).

In conclusion, a small actual-feared discrepancy was associated with increased levels of anxiety. However, the actual-feared discrepancy was not predictive of anxiety when the effects of age and gender, pain intensity and disability were removed. The actual-hoped discrepancy was able to predict a significant amount of the variance of STAI scores when the same variables were controlled for.

4.5.3 Hypothesis 3

- Individuals whose hoped for attributes are possible with pain will have less depression than individuals whose hopes are conditional on pain removal.

As shown in Table 4.13, significant relationships existed between the proportion of hopes possible with pain and all four measures. The proportion of hopes possible with pain correlated negatively with depression and anxiety. As the proportion of hopes that were still possible with pain increased, levels of depression and anxiety decreased. Relationships also existed with the measures of disability and pain acceptance. The proportion of hopes possible with pain correlated positively with the CPAQ therefore as the proportion of hopes that are possible without pain removal increased the level of pain acceptance also increased. The relationship with disability was in the opposite direction.

No predictions were made in respect of the proportion of fears possible without pain because it is a concept that had never been examined before. This proportion also correlated negatively with depression and anxiety but at a less significant level than the correlations between the proportion of hopes possible with pain and the two measures of distress. The proportion of fears possible without pain also correlated negatively with pain-related disability. This relationship was more significant than the correlations with depression and anxiety. There was no significant relationship with pain acceptance.

4.6 Further analysis

4.6.1 Predicting pain acceptance

A multiple regression was conducted to explore which factors may be important in contributing to pain acceptance. A model with three stages was decided upon. Age and gender were entered as the first stage. Usual pain intensity was selected as a measure of pain and was entered as the second stage and as the final stage the proportion of hopes possible with pain was entered. This variable was selected as a possible predictor of total score on the CPAQ because it appeared that it might measure an aspect of the construct of acceptance (McCracken, 1998). The results of this regression analysis are shown in Table 4.17.

Table 4.17 Regression summary table for the prediction of the CPAQ (N=85)

Model stages	Adjusted R ²	R ² Change	F Change	df	Sig. F Change
1. Demographics					
age, gender	0.064	0.086	3.862	2, 82	0.025
2. Pain					
usual intensity	0.053	0.001	0.040	1, 81	0.842
3. proportion of hopes					
possible with pain	0.224	0.174	18.852	1, 80	0.001

The model explained 22.4% of the total variance of the CPAQ. Usual pain intensity made very little contribution (0.1%) to the overall variance. The demographic block accounted for 8.6% of the variance but the proportion of hopes possible with pain explained the largest portion of the variance (17.4%). This was significant ($p=0.001$).

Chapter 5. Discussion

5.1 Introduction

This section begins with a summary of the findings that relate to each of the three research hypotheses. The validity of the findings is then discussed. The theoretical and clinical implications of the results are considered and the thesis concludes with some directions for future research.

5.2 Research hypotheses

5.2.1 Summary of findings in relation to the hypotheses

After controlling for the influence of age and gender, usual pain intensity and disability, the actual-hoped discrepancy was a significant predictor of depression and anxiety. The actual-feared discrepancy did not significantly predict anxiety or depression when these variables were controlled for. The proportion of hopes possible with pain was also a significant predictor of depression.

5.2.2 Hypothesis 1

The first hypothesis considered the relationship between the actual-hoped discrepancy and depression. This hypothesis was supported by the significant positive correlation between the size of the actual-hoped discrepancy and the BDI II. As the size of the discrepancy increased the level of depression also increased. The magnitude of the actual-hoped discrepancy was found to predict depression even after controlling for demographic variables, pain intensity and pain-related disability. This study provides further support for the prediction of self-discrepancy theory that the actual-hoped discrepancy is related to depression and that the greater the magnitude of the discrepancy, the higher the intensity of the associated discomfort, in this case depression.

In this study, the actual-hoped discrepancy was also significantly related to anxiety, pain-related disability and pain acceptance. As the discrepancy between the actual and hoped for selves increased, levels of anxiety and reported disability also increased whilst acceptance of pain decreased. The actual-hoped discrepancy was predictive of anxiety even after controlling for the effects of age and gender, pain intensity and disability.

5.2.3 Hypothesis 2

The second research hypothesis was concerned with the relationship between the actual-feared discrepancy and anxiety. Preliminary support for this hypothesis can be derived from the significant relationship between the actual-feared discrepancy and anxiety, as measured by the STAI. As the magnitude of the discrepancy decreased levels of anxiety increased. However, although the actual-feared discrepancy significantly correlated with anxiety, it was not a significant predictor of anxiety when the effects of age and gender, pain intensity and disability were controlled for. Within this regression model, only disability was found to be significant in predicting anxiety.

The actual-feared discrepancy was also significantly related to depression, pain acceptance and disability. These relationships were in the opposite directions to those exhibited by the actual-hoped discrepancy. As the distance between the actual self and the feared self became smaller, levels of depression and disability increased whilst pain acceptance decreased. The actual-feared discrepancy was not predictive of depression after the effects of age and gender, pain intensity and disability had been controlled for.

5.2.4 Hypothesis 3

The third hypothesis was concerned with the relationship between the proportion of hopes considered possible with continued pain and depression. A larger proportion of hopes perceived as possible with pain was related to increased acceptance and lower reported depression, anxiety and disability. The proportion of hopes possible with pain showed the strongest correlation with depression out of all of the variables tested. Therefore, this association was stronger than the relationships between the actual-hoped and actual-feared discrepancies with depression. The proportion of hopes possible with pain was also a significant predictor of BDI II scores after controlling for the influence of age and gender, usual pain intensity and disability.

The proportion of hopes possible with pain was also found to be a significant predictor of pain acceptance even after the effects of age and gender and usual pain intensity had been removed.

No predictions were made about possible relationships between the proportion of fears perceived as possible without pain and any of the measures because this was a concept that had not previously been explored so there was no literature on which to base such predictions. It was found that the proportion of fears possible without pain correlated negatively with depression, anxiety and disability. No relationship was found with pain acceptance.

5.2.5 Possible problems with research

The next section is looking at problems that can affect research findings. It is possible that the validity of these findings is constrained by features of the experiment itself. However there is evidence in many respects that the sample is similar not only to samples drawn from the same pain clinic but other more general samples.

5.2.6 Demographics

In terms of gender balance and age the sample was similar to others described in the literature (e.g. Morley and Pallin, 1995). Back pain was the most common diagnosis, which is in agreement with other reported samples (e.g. Morley and Wilkinson, 1995). The final sample size was 89. This was lower than the sample size calculated to have adequate power to be able to detect the types of relationships being looked for in this study (see Section 3.3.1). However, this did not prevent significant relationships being found in support of the research hypotheses. It is possible that the effect size was underestimated in the original calculation to determine sample size.

5.2.7 Pain variables

The sample in the current study had a mean duration of pain of nine and a half years. This is a longer duration than that of other samples reported in the literature. For example, McCracken (1998) found a median pain duration of three years in a sample drawn from a university pain management centre and Tait et al. (1990) report an average pain duration of almost five years in a large sample attending a pain centre. At least two studies from the literature were based on samples of a similar chronicity. Harris (2001) recruited at the same pain clinic that the majority of the current sample was drawn from. The mean pain duration reported by Harris (2001) was approximately 7 years but this was after excluding individuals who had been experiencing pain for over 20 years. A study by Schmitz, Saile and Nilges et al. (1996) reported a mean pain

duration for their sample of 11 years. However, this sample differs from the current study because it was selected from pain patients who were receiving in-patient treatment.

The mean duration in the current study was inflated by 4 participants who had been experiencing pain for over 30 years. The median duration was 6 years which is closer to the average pain duration reported in other studies.

There are a number of possible explanations for this lengthy average pain duration. All of the participants had been referred to a specialist pain clinic and it is likely that a number of other treatment options had been attempted and found not to have much impact on the pain before the referral to the pain clinic was made. Patients were then placed on a waiting list of up to a year increasing the time since the onset of the pain still further.

Pain duration was not significantly related to any of the pain or affect measures, or to the magnitude of either self-discrepancy. Although other studies have tended to focus on samples earlier on in their experience of chronic pain, the longer pain duration does not appear to have exerted an effect in this study.

The VAS ratings of pain intensity and interference compared favourably with those found in other studies (e.g. Harris, 2000; Riley, Robinson, Wade, Myers & Price, 2001). Pain-related disability, as measured by the PDI, was at similar levels as reported elsewhere (e.g. Tait et al., 1990). Levels of pain acceptance in the current study were similar to those found by other studies that have used the CPAQ as a measure (e.g. McCracken, 1998). Acceptance of pain was related to gender with women showing greater acceptance than men. Associations between gender and scores on the CPAQ have not been reported elsewhere (e.g. McCracken, 1998) but the CPAQ has not been used widely in the research literature. At the moment therefore it is not possible to know whether there is a real effect of gender on pain acceptance but any possible effects of gender were controlled for in the regression analyses.

5.2.8 Affect variables

Of the five VAS ratings of negative feelings associated with pain, frustration was rated as the most intense. A number of other studies using the same VAS ratings have also found that pain patients report greater levels of frustration than other negative emotions (e.g. Wade, et al., 1990; Harris 2001). Anger had the next highest mean rating, ahead of fear, anxiety and depression. As already stated in section 4.2.6, the mean BDI II score appears high with reference to the general population but is similar to that reported in a large pain sample (Morley et al., 2002). The mean score on the STAI is higher than norms given by Spielberger (1983) for working adults and students and is closer to the norms reported for a sample in a stressful situation. None of the affect variables correlated with age, pain duration or gender.

5.2.9 Conclusions regarding the sample

This section has compared characteristics of the sample with other samples of chronic pain patients described in the research literature. In most respects, this sample is very similar to other groups that have been studied. Where there are differences it has been demonstrated that these have not influenced the results or they have been controlled for in the analyses. The size of the sample being slightly below the number aimed for does not appear to have been a problem. In summary it seems unlikely that the findings from this study result from a biased sample.

5.2.10 Is method for eliciting possible selves valid?

A novel method has been used in this study to encourage individuals to make explicit internal representations that they hold of themselves and their future. As already described in section 2.2.7, the approach used to elicit possible selves was developed from two existing methods (Hooker and Kaus, 1994; Higgins et al., 1985). As this approach had never been used before is it possible that the findings are an artefact of the method? In the following section this issue will be addressed.

A generative task provides richer data but is more challenging for the participant than endorsing a list of adjectives that they have not needed to produce themselves. Considerable thought and concentration are required, both of which can be interrupted

by the experience of chronic pain. This did not appear to be a factor in the current study because the number of attributes generated was not influenced by pain intensity. Due to the nature of the task it might be expected that the ability to generate adjectives to describe each possible self would be influenced by intelligence. However, there was no relationship between the number of attributes generated and verbal fluency, a proxy measure of intelligence.

There were some relationships between the number of items generated and age and education, measured by school leaving age. As already explained in Section 4.2.1, there was a clear association between age and school leaving age in this sample. It could be argued that individuals who have remained in education for longer will have developed larger vocabularies and therefore will find it easier to generate words. The relationship was in this direction for the hoped for self and feared self, with more attributes being generated as school leaving age increased. The significant relationships between age and number of items generated were more puzzling. The average number of attributes used to describe the feared self decreased with age. This would correspond with a lower average school leaving age. However, the average number of items describing the actual self increased with age although on average these older individuals would have left school earlier. Education as measured by school leaving age is not a sufficient explanation for these age differences. It could be that as people age they develop a more elaborated concept of the sort of person they are and therefore find it easier to generate adjectives to describe themselves. In the case of the feared self, older individuals might generate fewer items because they have had greater opportunity to experience negative events and may have learnt that when they encountered some of the fears that they held when they were younger they were not as bad as anticipated. In conclusion, there is a relationship between age and the number of items generated but it is not consistent. In addition, any effects of age were controlled for when the hypotheses were being tested in regression analyses.

Participants, on average, generated more attributes to describe their actual selves than they did to describe their hoped for and feared selves. The most likely explanation for this would be the relative difficulty of generating descriptions to describe each of the selves. Some observations from using this method will be used to illustrate this suggestion.

The vast majority of participants had no difficulty following the instructions for describing the actual self (see Appendix 5) and were able to complete the task within a few minutes. Asking individuals to describe future attributes, as was necessary to elicit their hoped for and feared selves, is a more abstract task and as such participants spent longer and, on average, generated fewer characteristics than they had when describing attributes that they possessed currently. When the method was being devised it was realised that it would be difficult for individuals to describe future possible selves in terms of attributes. This was the reason for including aspects of the Hooker and Kaus (1994) methodology. It was felt that asking participants to describe their hopes and fears for the future were relatively straightforward tasks and would start them thinking about future possibilities before they attempted to generate hoped for and feared characteristics. Although this undoubtedly did assist participants, it remains the case that significantly fewer attributes were generated to describe the hoped for and feared for selves than the actual self. This is not a situation that is reported elsewhere in the self-discrepancy literature. However, these studies have been almost exclusively conducted with students rather than clinical samples. Although this study did not find a strong relationship between the number of attributes generated and school leaving age, or a measure of intelligence, it is still possible that a sample of students will possess other features that may assist them in the completion of the task such as familiarity with cognitive tasks or specialised demand characteristics. There was no difference between the number of hoped for and feared attributes generated. This adds support to the suggestion that the lower number of items elicited was a consequence of the increased difficulty of both tasks rather than being indicative of a psychological phenomenon. As already described in the previous chapter, a new scoring method was developed to adjust for the lists of adjectives being different lengths.

Defining possible selves in this way is demanding for the participant and the researcher but in the current study no participant ended the session because they were finding the task too difficult or did not understand it. Two participants stated that they were unable to generate any hopes but both were experiencing very high levels of pain and stated that they were unable to envisage anything improving in the future. One of these participants was unable to complete the study because they were also unable to generate any fears. They reported that they no longer thought about the future because as the pain

had continued they had been disappointed so many times when their expectations had not been fulfilled.

When the method was being devised there was a concern that participants may have difficulty understanding the conditionality questions, in particular the question asking whether their feared attributes would be possible if they were pain-free. There was some concern whether this question was nonsensical because in general all of the fears would still be possible even if the pain had been removed. In practice this question revealed an interesting split. Participants who were aware that negative things could still happen even if they were pain-free were sometimes confused by the question because they thought that the answer was obvious, all the fears were still possible. However, other participants who believed that all or most of their fears were pain-related and that if the pain were removed they would not have any problems tended to find that the question made sense to them without any further elaboration.

5.3 Other findings

5.3.1 Valency of attributes

On average, descriptions of the actual self contained more negative items than positive or neutral. The more negative the description of the actual self, the greater the levels of depression and anxiety. This replicates a finding from Allen et al.'s (1996) study of possible selves in depression. It would be tempting to make judgements about the direction of the relationship or causality but correlations do not enable such conclusions to be drawn. Do participants hold a negative view of themselves because they are currently depressed or are they depressed because of the unfavourable comparison between their actual and hoped-for selves?

5.3.2 Self-efficacy and outcome expectancy

In terms of self-efficacy, the sample saw themselves as equally capable of achieving their hoped for self as they were at preventing their feared self. They also perceived the hoped for self and feared self as equally likely outcomes. This latter finding is somewhat surprising given the high mean score on the BDI II. As already reported, this mean score compared well with other samples of pain patients (e.g. Morley et al., 2002) but it indicates a moderate level of depression. According to Beck (1967), depression is characterised by negative patterns of thinking in three broad areas. This concept is

referred to as the cognitive triad and includes negative thoughts about the self, the world and the future. In the current study where the majority of the sample would be categorised as moderately depressed, the view of the future is not predominately negative as a positive future is perceived to be just as likely as a negative future. Allen et al. (1996) did not find a negative view of the future in their sample of people with a diagnosis of depression. They speculated that their sample may have held a more positive view of the future because they had just started treatment for depression so may have felt optimistic about recovery.

5.3.3 Relative magnitudes of self-discrepancies

In this study, on average the sample were closer to their feared selves than their hoped for selves. In fact the average actual-hoped discrepancy was not significantly different from zero. This represents a situation where the actual self is mid-way between the hoped for self and its opposite. It is not particularly surprising when self-discrepancies are measured in a sample of chronic pain patients to discover that on balance they are closer to their feared self than their hoped for self. Obviously, within the sample there are individuals who are nearer to their hoped for selves but the experience of chronic pain could never be described as a desirable state.

5.4 Theoretical connections and considerations

Self-discrepancy theory (Higgins, 1987) only makes predictions about the type of affect associated with the disparity between the actual and ideal self and the actual and ought self. The current study only measured one of these discrepancies, the actual-ideal, referred to as the actual-hoped for discrepancy (the decision to call it the hoped for self rather than the ideal self has already been explained in Section 2.2.7) This section begins by comparing the findings in relation to the actual-hoped for discrepancy with the predictions made by self-discrepancy theory and other findings in the literature. The other discrepancy measured in this study, the actual-feared discrepancy, is not considered within self-discrepancy theory so the current findings will be compared with other reports in the literature.

5.4.1 Actual-hoped for discrepancy

In the current study, the actual-hoped for discrepancy was predictive of both depression and anxiety. This is not what is predicted by self-discrepancy theory, which states that the actual-ideal discrepancy is uniquely related to depression and unrelated to anxiety. One possible explanation for this finding that would not challenge self-discrepancy theory is that because participants were only asked to describe a hoped for self rather than a separate ideal and ought self, ideals and oughts may have both been included in the hoped for self. Therefore one would expect this future self combining ideals and oughts to be predictive of both depression and anxiety. At present this is just a potential explanation but it is one that could be tested in future research. The current methodology could be repeated but participants would be directed to generate separate ideal and ought selves. If this produced unique relationships between the actual-ideal discrepancy and depression and the actual-ought discrepancy and anxiety it could be assumed that the current findings resulted from a confounding of ideals and oughts within the hoped for self. It is also possible that the hoped for and ideal selves are not identical and, depending upon the individual, the hoped for self may be made up of varying compositions of ideals and oughts.

However, these are not the only potential explanations for the actual-hoped for discrepancy being predictive of both depression and anxiety. As described in Section 1.4.5 Tangen et al. (1998) questioned the validity of viewing the ideal and ought selves as two separate entities. From their study they considered the high correlation between the actual-ideal and actual-ought discrepancies and the finding that both of these discrepancies were related to anxiety and depression as evidence for the existence of a more general discrepancy between an individual's actual self and a desirable future self. They suggested that this general discrepancy, or 'optimal self', was composed of ideals and 'oughts' and was associated with general distress. The actual-hoped for discrepancy measured in this study could be an example of such a general discrepancy.

Higgins (1999), in defence of self-discrepancy theory, suggested that rather than Tangen et al.'s results challenging self-discrepancy theory, they could be explained by the four conditions necessary to observe the predicted relationships of self-discrepancy theory not being met. These four proposed mediators, magnitude, activation, applicability and importance, have already have been outlined in Section 1.4.5 and will

now been considered in relation to this study. The magnitude of self-discrepancies should have been adequate to observe the predicted relationships because, unlike the majority of self-discrepancy research, the sample was drawn from a clinical population rather than a group of students. Although the participants were selected on the basis of a physical health problem rather than a mental health problem, a proportion of the sample did score highly on the BDI II indicating that they were currently depressed. Therefore Higgins' criticism that many studies of self-discrepancy theory utilising non-clinical samples will not be measuring self-discrepancies that are large enough to be associated with the extreme emotions of depression and anxiety, cannot be levelled at this study. In relation to activation of self-discrepancies, Higgins makes a distinction between the properties of availability and accessibility. An accessible discrepancy is more likely to be activated than an available discrepancy and activation is necessary for the associated affect to be experienced. The more accessible a self-discrepancy is, the greater the associated affect therefore Higgins states in research it is important to measure accessible discrepancies. The way to achieve this is by using a generative task rather than an endorsement task (Higgins, 1999). The methodology utilised in this piece of research as it was adapted from the Selves Questionnaire would have measured accessible discrepancies. Priming activates self-discrepancies and Higgins suggests that some findings that are contradictory to self-discrepancy theory may be the result of priming because mood questionnaires have been completed prior to the Selves Questionnaire. This was not a possibility in the current study because the possible selves task was completed before the mood questionnaires. The final two conditions Higgins considers necessary to observe the predicted relationships between a discrepancy and affect are the applicability of the discrepancy to the current context and the importance of that discrepancy to the individual. In the current study both of these conditions would have been met. For this clinical sample, discrepancies between their current self and hoped for and feared future states would probably have altered since the onset of pain, making these discrepancies both applicable to a research interview relating to their pain and very salient. To conclude, it seems unlikely that the current findings in relation to the actual-hoped discrepancy were obtained because the four conditions proposed to mediate the relationship between self-discrepancies and affect were not present.

5.4.2 The actual-feared discrepancy

The magnitude of the actual-feared discrepancy was related negatively to anxiety and depression. As the distance between the actual and feared selves decreased, levels of anxiety and depression increased. However, the actual-feared discrepancy did not predict either type of distress. There has been far less written about the actual-feared discrepancy and even fewer studies attempting to relate it to types of distress. Ogilvie (1987) and Allen et al. (1996) found that the actual-feared discrepancy predicted depression and in fact found that it was a better predictor of depression than the actual-ideal discrepancy. In the Allen et al. study the actual-feared discrepancy was not related to anxiety. Carver et al. (1999) found that the actual-ideal and actual-feared discrepancies both predicted depression. They also found that distance from the feared self was crucial in determining which discrepancy was the strongest predictor of anxiety. When the feared self was in close proximity the actual-feared discrepancy was the strongest predictor of anxiety but when the feared self was more distant anxiety was predicted by the actual-ought discrepancy. In the current study, on average, participants were closer to their feared selves than their hoped for selves so at first glance it is surprising that the actual-feared discrepancy was not predictive of anxiety. Carver et al. were testing a hypothesis that predicted distance from the feared self would be crucial in determining which discrepancy was most strongly related to anxiety so conducted an analysis to detect any interaction between the actual-feared and actual-ought discrepancies. In the current study, the data was not analysed for within group differences so it is possible that when the actual-feared discrepancy was small, this discrepancy may have predicted anxiety in this portion of the sample.

Another difference from the Carver et al. study is that an ought self was not considered so it is impossible to comment on any influence of the actual-ought discrepancy on anxiety. To conceptualise the current findings within Carver et al.'s approach-avoidance model, approach of the hoped for self was associated with anxiety. Again oughts could be included in the hoped for self. This would be another reason for future research with this population to include an ought self as well as a hoped for self to control for this possibility.

Carver et al. concluded from their study that avoidance of the feared self was important in depression and anxiety. In the current study it appears that approaching the hoped for

self is more important in depression and anxiety even though, on average, the sample are closer to their feared than their hoped for self.

To conclude this section, as predicted by self-discrepancy theory (Higgins, 1987) the magnitude of self-discrepancies was related to distress. More specifically, it was the size of the actual-hoped discrepancy that appeared to be exerting the greatest influence in this sample as it was predictive of both depression and anxiety. The actual-feared discrepancy was related to depression and anxiety but did not predict either. A potential explanation for this finding is the nature of the sample. In general people expect their hopes for the future to be possible. However, for the current sample the onset of chronic pain has acted as a barrier to their hopes. This could be the reason that for individuals with chronic pain the distance between their current state and their hopes is a greater source of distress than the proximity to their fears. This could also explain the finding that if hopes for the future are perceived as possible with pain, less distress is experienced. This relationship is explored more thoroughly in the next section.

5.4.3 Conditional nature of hopes

In this sample there were greater levels of depression related to hopes not being possible with pain than distance from hopes or proximity to fears. Asking participants what proportion of their hopes were possible with continued pain was included as a measure of the degree of enmeshment between the self and pain schemas. This was the first test of the schema enmeshment model of pain (Pincus and Morley, 2001) in particular the proposal that depression in chronic pain is the result of the degree of enmeshment between the pain and self schemas. The findings that the proportion of hopes possible with pain was more strongly related to depression than either of the self-discrepancies and that this proportion was able to predict depression offers support to the idea that increased levels of depression in chronic pain are associated with a greater degree of enmeshment.

As predicted in Section 1.5, a large proportion of hopes being conditional on pain removal or a greater degree of enmeshment between the self and pain was associated with low levels of pain acceptance. This offers support to the idea that enmeshment is the opposite of acceptance. Further evidence for the relationship between acceptance and enmeshment can be derived from the finding that the proportion of hopes possible

with pain, the reciprocal of the proportion of hopes conditional on pain removal, predicted acceptance after controlling for demographics and pain intensity. Hopes being possible with pain is very similar in meaning to a realisation that it is still possible to enjoy things without reducing pain, part of McCracken et al.'s (1999) definition of acceptance. McCracken (1998) has found that acceptance is related to lower levels of depression and disability and in the current study an increased proportion of hopes possible with pain as well as acceptance were both related to lower levels of these two variables. The proportion of hopes being possible with pain appears to measure an aspect of acceptance rather than encapsulating the whole concept.

An individual with chronic pain who believes that none of their hoped for attributes are attainable whilst they have pain is in a distressing position. At this point in time, the only way that they can see of achieving their hopes is by becoming pain-free, an outcome that is outside their control and as pain persists, increasingly unlikely. Considering the opposite position, a person who believes that some if not all of their hoped for attributes are possible with pain can see a positive future with the continuation of pain.

The proportion of fears perceived as still possible if pain-free was considered as a potential indicator of low levels of enmeshment. However, unlike the proportion of hopes possible with pain it was not significantly related to acceptance. If an individual believes that none of their fears would be possible if they were no longer in pain then they could be blaming all of their problems on pain. What appears to be problematic is the belief that all or most aspects of a feared self are enmeshed with the experience of pain. As the individual is currently experiencing pain this may mean that their feared self is perceived as being closer to their actual self and therefore a way of avoiding the feared self would be to remove the pain which again is outside their control. The relationship between the actual-feared discrepancy and the proportion of fears conditional on the presence of pain could be explored in future research.

5.5 Clinical implications

The finding from this study that self-discrepancies are associated with distress in individuals with chronic pain suggests a focus for working clinically with depression and anxiety. As already discussed in section 1.3.2, some features of depression within a

proportion of chronic pain patients are different from depression in a psychiatric population. It therefore seems important to develop treatments for depression specifically for this client group rather than using generic treatments for depression. Furthermore it could be possible to individualise therapy depending on the individual's areas of concern.

The method adopted to elicit possible selves in this study could be used clinically. In fact some of the prompts (see Appendix 6) used to enable individuals to describe themselves currently and in the future in terms of attributes were very similar to downward arrow techniques used in cognitive therapy. For example, if a participant in the study was tending to describe future events as opposed to describing himself or herself they would be asked, "If that did happen, how would you describe yourself?" If required, an additional question would be, "What would that mean?" Within cognitive therapy these types of questions are used to elicit dysfunctional assumptions and core beliefs, two types of cognition that are difficult to access. Examples of negative core beliefs are "I am a failure" and "I am worthless" and when activated they generate negative affect. Identifying and modifying these core beliefs can be the focus of a cognitive intervention for depression. During the research interviews, a number of participants did generate core beliefs of the type just described so clinically this approach could be used to gain rapid access to core beliefs. However, due to the intensity of affect that this can generate it is necessary to use clinical judgement to assess if the individual is able to tolerate this level of distress so early in therapy.

Another aspect of the possible selves methodology that could be useful clinically is asking individuals with chronic pain whether it is possible for them to realise their hopes with the continuation of pain. Assisting people in discovering that not everything is contingent on pain removal could form the basis of a therapeutic approach aimed at increasing levels of pain acceptance. This could also result in lower levels of distress. With some participants in the study, asking if their hopes were possible with pain clearly revealed what they perceived the limitations of pain to be. Common themes could be identified from the types of hoped-for attributes that they believed were only possible if they were pain-free. Similarly, with some participants there were clear semantic relationships between the negative feared characteristics that they believed could only happen if they continued to experience pain. A very clear example of this

from the data was an individual who indicated that most of their hoped for characteristics were possible with pain apart from physical attributes such as fit and active. When describing their feared self, the negative characteristics that they perceived only possible if they remained in pain all related to ideas of physical restriction. If this individual was experiencing symptoms of depression or anxiety an intervention could focus on challenging their current belief that chronic pain prevents any form of physical activity or independence. If this enabled them to realise that pain was not a total barrier to being fit and active to some degree then potentially this could reduce their actual-hoped discrepancy and consequently reduce their distress. This is purely speculative at the moment because although this study has demonstrated a link between the actual-hoped discrepancy and anxiety and depression, the direction of causality cannot be assumed.

Clinically, it could be useful to detect themes within the descriptions of particular possible selves irrespective of whether the attributes were conditional on the presence or absence of pain. This could highlight individuals' main concerns in the present and in the future and suggest a focus for therapy.

The task of asking chronic pain patients to describe the characteristics that they dread possessing in the future could in itself be therapeutic. It may reveal that some of the fears relating to the progression of their pain or deterioration in their health are unrealistic. Making their fears explicit rather than avoiding these thoughts because they are too terrible to contemplate may result in individuals realising that even their most feared consequences are not as frightening as they imagined.

5.6 Future research

A large quantity of information was collected by the possible selves interview used in this study and there are additional analyses that could be conducted on the existing data. It would be particularly interesting to extract qualitative information from the attributes that participants generated to describe their possible selves. Just looking through the lists of adjectives participants used to describe their current and future selves it was clear that some people produced clusters of words to describe a particular self state that had very similar meanings. It would also be of interest to extract the ratio of pain-related to pain-unrelated words that this sample used to describe themselves currently and in

the future. The proportion of pain-related words used in describing possible selves could be another way of measuring enmeshment.

A further additional analysis of the current data that would be of interest would be to split the BDI II into the three factors identified by Morley, Williams and Black (2002). These three factors are affect, negative view of self and physical symptoms. As described in Section 1.3.2 there is a sub-set of chronic pain patients who although scoring highly overall on the BDI do not hold a negative view of themselves. By only using the total score on the BDI II it is possible that differences between individuals have been obscured. Pincus and Morley (2001) have theorised that the differences between the types of depressive symptoms that chronic pain patients describe can be accounted for by the degree of enmeshment between the three schemas in their model. This could be tested if the proportion of hopes possible with pain is used as an inverse measure of enmeshment, i.e. a reduced proportion of hopes possible with pain indicating increased enmeshment. Pincus and Morley would predict that chronic pain patients who were high scorers on the BDI II but had not endorsed items comprising the negative view of self factor would exhibit only low levels of enmeshment between the pain and self-schemas. Therefore fewer of their hopes would be conditional on pain removal than individuals with similar total scores on the BDI II who had endorsed items from all three factors.

Another finding that would be interesting to investigate further is the observation that approximately half of the participants used different intensities of the same attribute to describe more than one possible self, e.g. currently 'patient' but hopes to be 'very patient'. This situation has been described in more detail in Section 4.4.5. This grading of attributes does not appear to be described elsewhere in the self-discrepancy literature. It is possible that this feature is peculiar to chronic pain patients but this seems unlikely given that it was so prevalent within this sample. What is interesting about this strategy is that the individual does not choose the polar opposite of an attribute describing the actual self to indicate that they want to change from their current state. Instead, they retain the same attribute but indicate that they hope to change by using the prefix 'less' or 'more' in front of that attribute. If an individual states that they hope to be 'very patient' in the future and currently describes themselves as 'patient', this same contrast could have been conveyed if the individual had stated that they were currently

'impatient' and hoped to become 'patient'. This could serve a useful psychological function. It may provide continuity between their current state and their hoped for future self and therefore their hoped for self may be experienced as more achievable. It would be less threatening for an individual to conceive that they only need to change by degree to reach their desired state rather than hoping to become the polar opposite of what they are currently. However in the other direction, as for an individual who describes themselves as currently being 'wheelchair-bound' and fears becoming 'completely wheelchair-bound', it may have a negative impact. This component of their feared self may be perceived as being in close proximity to their current state.

Another interesting question that could be answered by further analysis of the current data is whether hopes being possible with pain mediate the relationship between self-discrepancy and distress. More specifically would it be possible for an individual to have a large actual-hoped discrepancy but to be protected from depression if they perceived their hopes to be possible with pain? The opposite situation would be an individual with a small actual-hoped discrepancy but whose hopes were conditional on pain removal. This potentially could make them more vulnerable to distress.

7. References

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7.APPENDICES

7.1 Appendix 1

Table of results from Pilot Study 1

	actual self	ideal self	good enough self	feared self	self with pain
participant 1	24	24	20	24	27
	+23	+24	+19	0	+21
	-1	0	-1	-24	-6
participant 2	14	24	11	23	23
	+8	+24	+11	0	+8
	-6	0	0	-23	-15
participant 3	16	21	18	13	19
	+15	+21	+17	0	0
	-1	0	-1	-13	-19

Table 7.1: Total number of adjectives and number of positive and negative endorsed for each possible self.

7.2 Appendix 2

Date

ID number

Pain Rating Scales

Indicate along the scale below the intensity of the painful sensation at its highest intensity.



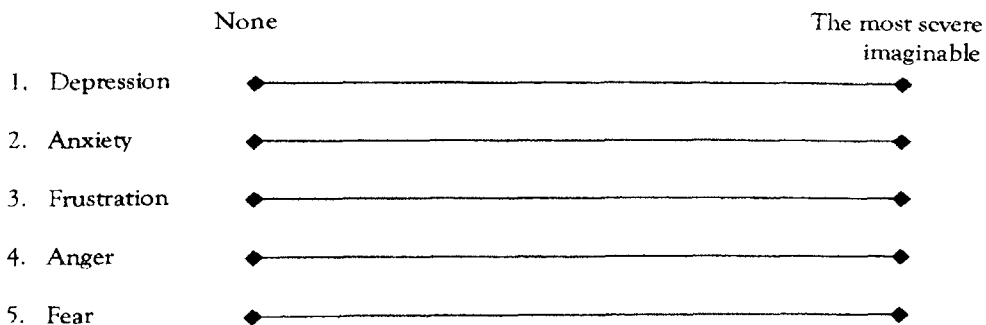
Indicate along the scale below the intensity of the painful sensation at its lowest intensity.



Indicate along the scale below the intensity of the painful sensation at its usual intensity.



What kind of negative feelings accompany your pain? Make a cross on each scale below to show the intensity of each feeling as it has related to your pain over the past week.



How much does your pain prevent you from doing what you want to do?



Thank you

7.3 Appendix 3

Pain Disability Index

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

For each of the 7 categories of life activity listed, please circle the number on the scale which describes the level of disability you typically experience. A score of 0 means no disability at all, and a score of 10 signifies that all of the activities in which you would normally be involved have been totally disrupted or prevented by your pain.

(1) Family / home responsibilities

This category refers to activities related to the home or family. It includes chores or duties performed around the house and errands or favours for other family members (e.g., driving the children to school).

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

(2) Recreation

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

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

(3) Social activity

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

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

(4) Occupation

This category refers to activities that are a part of or directly related to one's job. This includes non-paying jobs as well, such as that of a house-wife or volunteer worker.

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

(5) Sexual behaviour

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

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

(6) Self-care

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

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

(7) Life-support activity

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

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

7.4 Appendix 4

CPAQ

DIRECTIONS: Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following rating scale to make your choices. For instance, if you believe a statement is "Always True," you would write a 6 in the blank 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 _____
2. My life is going well, even though I have chronic pain _____
3. It's O.K. to experience pain _____
4. I don't think it is possible to decrease my basic pain level _____
5. I would gladly sacrifice important things in my life to control this pain better _____
6. It's not necessary for me to control my pain in order to handle my life well _____
7. I've decided the hassle of trying to get rid of this pain just isn't worth it; I'll live with it _____
8. I can get more control over my pain by decreasing my negative and irrational thinking _____
9. Although things have changed, I am living a normal life despite my chronic pain _____
10. I need to concentrate on getting rid of my pain _____
11. I've done my best to try to control my chronic pain, and it looks like it won't change _____
12. The thoughts and feelings I have about pain are just my reactions, not real facts _____
13. Before I take action, I must be sure in my own mind that the course of action I'm taking is best _____
14. There are many activities I do when I feel pain _____
15. I lead a full life even though I have chronic pain _____
16. Controlling pain is less important than any other goals in my life _____
17. I can live with the idea that I will probably have pain for the rest of my life _____
18. It's important to keep on fighting this pain _____
19. My thoughts and feelings about pain must change before I can take important steps in my life _____

20. Despite the pain, I am now sticking to a certain course in my life _____
21. There is really nothing anyone can do to keep from having disturbing thoughts and feelings about pain _____
22. Keeping my pain level under control takes first priority whenever I'm doing something _____
23. Before I can make any serious plans, I have to get some control over my pain _____
24. When my pain increases, I can still take care of my responsibilities _____
25. I will have better control over my life if I can control my negative thoughts about pain _____
26. I can control my feelings associated with pain by how I think and what I do _____
27. In order for me to accept something, I have to feel good about it _____
28. I accept the fact that my basic pain level is not going to change in any lasting way _____
29. Being able to live with chronic pain is largely a matter of having the right beliefs about it _____
30. I avoid putting myself in situations where my pain might increase _____
31. My worries and fears about what pain will do to me are true _____
32. It's a relief to realize that I don't have to change my pain to get on with my life _____
33. I can gain control over my pain by being happy and thinking more positively _____
34. I have to struggle to do things when I have pain _____

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7.5 Appendix 5

Possible Selves – **ACTUAL**

This part of the study is concerned with how you view yourself at the moment. Please list up to 10 characteristics that you think you actually possess. You can include things that you don't like about yourself as well as things that you do like.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Possible Selves – **HOPED FOR**

This section is concerned with how you see yourself in the future. We all think about our future to some extent. When we do this we usually think about the kinds of experiences that are in store for us and the kinds of people we might possibly become. Sometimes we think about what we **hope** we will be like. Psychologists talk about this in terms of ‘hoped for possible selves’ – the selves we hope to become in the future. Examples of common hoped for selves are becoming a parent or grandparent.

Please take a little time to think about all of your hoped for possible selves – you may have just a few or many. Some questions that may help you to think are:

- Is there anything I haven’t already become that I would like to become?
- What are my hopes for the future?
- Are there any hobbies that I would like to be better at?

List them here

Now that you have listed some of your hopes for the future, consider the attributes of the type of person you hope to become.

Over the page, please list up to 10 characteristics you hope you will possess in the future. Some of these may be characteristics that you already possess.

When you have your list of characteristics, for each one please decide if you could be like this in the future if you were still in pain. Circle ‘Yes’ or ‘No’ alongside each word

Next, think ‘Can I make this description become true?’ How capable do you feel of achieving this description in the future? Please rate on a 7-point scale, where 1 means that you don’t believe you’re capable of making it happen and 7 means that you believe that you’re definitely capable of making it happen.

Finally consider, ‘How likely is it that these characteristics will describe me in the future? Again please rate on a 7-point scale where 1=very unlikely, 7=very likely.

HOPED FOR

Please list up to 10 characteristics you hope you will possess in the future. Some of these may be characteristics you already possess	Is it possible to be like this with pain? (yes/no)
1)	YES NO
2)	YES NO
3)	YES NO
4)	YES NO
5)	YES NO
6)	YES NO
7)	YES NO
8)	YES NO
9)	YES NO
10)	YES NO

Can I make this happen?

1 2 3 4 5 6 7
not at all definitely

How likely is it that this will describe me?

1 2 3 4 5 6 7
very unlikely very likely

Possible Selves – **FEARED FOR**

In addition to having hoped for possible selves, we may have images of ourselves that we fear, dread, or don't want to happen. Examples of common feared for selves are getting divorced or having financial problems. Some of us may have a large number of feared possible selves in mind, whereas others may have only a few.

Please take a little time to think about all of your feared possible selves. List as many as you can think of.

List them here

Now that you have listed some of your fears for the future, think about the attributes of the type of person you fear becoming.

Over the page, please list up to 10 characteristics you fear or worry about possessing in the future. Some of these may be characteristics that you already possess.

When you have your list of characteristics, for each one please decide if you could be like that if you were no longer in pain. Circle 'Yes' or 'No' alongside each word.

Next, think 'Can I stop this description becoming true?' How capable do you feel of preventing this description in the future? Please rate on a 7-point scale, where 1 means that you don't believe you're capable of stopping it happen and 7 means that you believe that you're definitely capable of stopping it happen.

Finally consider, 'How likely is it that these characteristics will describe me in the future?' Again please rate on a 7-point scale where 1=very unlikely, 7=very likely.

FEARED FOR

Please list up to 10 characteristics you fear possessing in the future. Some of these may be characteristics you already possess	Is it possible to be like this without pain? (yes/no)
1)	YES NO
2)	YES NO
3)	YES NO
4)	YES NO
5)	YES NO
6)	YES NO
7)	YES NO
8)	YES NO
9)	YES NO
10)	YES NO

Can I stop this happening?

1
2
3
4
5
6
7
 not at all definitely

How likely is it that this will describe me?

1
2
3
4
5
6
7
 very unlikely very likely

7.6 Appendix 6

PROMPTS FOR ELICITING ATTRIBUTES

If the participant was having difficulty generating characteristics, the interviewer returned to the concrete hopes/fears that had been listed. The exact prompt used depended upon the nature of the response given by the participant. Below are examples of prompts used during the course of this study.

If that did happen (e.g. returned to work / ended up in wheelchair) how would you describe yourself / what would you be like?

What would be the worst aspects of that?

What would you dread being like?

What do you hope you'll be like?

response: I'd like to get back to my 'old self'. I'd like to be a 'good mother'

prompt: How would you describe your 'old self', a 'good mother'?

If unable to manage, what would that mean?

If dependent, what would that mean?

Can keep going with this line of questioning (downward arrow)

response: I dread 'getting worse'

prompt: What do you mean by 'getting worse'?

7.7 Appendix 7

Patient Information Sheet

A study of how chronic pain affects peoples' hopes and fears for the future

Introduction

You are being invited to take part in a research study about chronic pain. This piece of research is being conducted by Miss Caitlin Jones, a Trainee Clinical Psychologist, as part of her research degree at Leeds University.

To conduct this research, I need volunteers who are attending the pain clinic at Chapel Allerton. It is important that you read the following information before making your decision. Discuss it with others if you wish.

What is the purpose of this study?

The study aims to investigate how chronic pain affects how people think about their future. I am interested in how people experiencing chronic pain feel in general and, in particular, how they feel about the pain itself.

Why have I been chosen?

You are attending the pain clinic at Chapel Allerton Hospital. I am asking **all** people who attend the pain clinic if they would like to take part.

What will happen if I decide to take part?

If you decide to take part an interview will be arranged, possibly in your own home. You will be asked to think about some of your hopes and fears for the future. Then you will be asked to consider how you hope to be in the future and also what you worry you will be like. The session will also involve filling in a number of widely used questionnaires that ask you about your current mood and your attitude towards your pain. All of this should take approximately one hour.

If English is not your first language and you do not feel that you can converse fluently in English then it may not be possible to participate in this study. Please contact me if you wish to discuss this further.

Do I have to take part?

No. It is entirely up to you whether you decide to take part in this study. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you choose not to, this will not have any effect on your future treatment. Also, if you agree to take part but then change your mind, you can pull out of the study at any point and again this will not affect your future treatment.

Who will know about my taking part and what happens to the information?

Any information obtained will be collected in a private room by the researcher. All the information that you provide will be treated with the strictest confidence. Your responses will not be shown to any of the other staff at the pain clinic. None of the information will have your name on it and it will be stored in a locked cabinet at the University.

Can I get further information?

If you would like any more information before making your decision, please contact Caitlin Jones on Leeds (0113) 233 2732. You will be asked to leave your name and a contact number, and I will return your call.

Thank you

7.8 Appendix 8

Patient Information Sheet

A study of how chronic pain affects peoples' hopes and fears for the future

Introduction

You are being invited to take part in a research study about chronic pain. This piece of research is being conducted by Miss Caitlin Jones, a Trainee Clinical Psychologist, as part of her research degree at Leeds University.

To conduct this research, I need volunteers who will be attending the pain clinic at Hope Hospital. Although I am interviewing people at the clinic, I am not a member of the pain clinic team. This research is completely separate from any treatment you may receive at the clinic.

It is important that you read the following information before making your decision. Discuss it with others if you wish.

What is the purpose of this study?

The study aims to investigate how chronic pain affects how people think about their future. I am interested in how people experiencing chronic pain feel in general and, in particular, how they feel about the pain itself.

Why have I been chosen?

You are due to attend the pain clinic at Hope Hospital. I am asking all people with back pain who have returned their completed questionnaires to the pain clinic if they would like to take part.

What will I have to do if I take part?

An interview will be arranged at the pain clinic at Hope Hospital. This is for the purposes of this research and is *not* your first assessment appointment at the pain clinic. You will be asked to think about some of your hopes and fears for the future. Then you will be asked to consider how you hope to be in the future and also what you worry you will be like. The session will also involve filling in a number of widely used questionnaires that ask you about your current mood and your attitude towards your pain. All of this should take approximately one hour. Your travel expenses for this extra visit, by car or public transport from within Greater Manchester, will be refunded.

If English is not your first language and you do not feel that you can converse fluently in English then it may not be possible to participate in this study. Please contact me if you wish to discuss this further.

Do I have to take part?

No. It is entirely up to you whether you decide to take part in this study. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you choose not to, this will not have any effect on your future treatment. Also, if you agree to take part but then change your mind, you can pull out of the study at any point and again this will not affect your future treatment.

What happens to the information?

Any information obtained will be collected in a private room by the researcher. All the information that you provide will be treated with the strictest confidence. Your responses will not be shown to any of the other staff at the pain clinic. None of the information that you provide will have your name written on it.

What do I do now?

If you would like any more information before making your decision, please contact **Caitlin Jones** on **Leeds (0113) 233 2732**. **Do not contact the pain centre directly.** You will be asked to leave your name and a contact number, and I will return your call.

If you would like to take part, please complete the opt-in slip at the bottom of the accompanying letter and return it in the envelope provided. I will then contact you by phone or post to arrange an interview.

Thank you

Caitlin Jones

Leeds (0113) 233 2732