SELF-COMPASSION, SOCIAL FUNCTIONING

AND CHRONIC PAIN

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The candidate confirms that the work submitted is her own and that appropriate

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ABSTRACT

Background: Chronic pain can have significant negative consequences for many areas of life, including social functioning and participation. Self-compassion is becoming established as a factor which can promote psychological wellbeing, resilience and coping in the face of difficulties such as those presented by chronic pain. The available evidence suggests that higher levels of self-compassion are associated with increased acceptance of pain, lower levels of negative affect, pain catastrophising and pain disability. Self-compassion may, therefore, play a role in attenuating the impact of pain-relevant events. However, there have been no studies to date which examine the role of self-compassion on social functioning and participation in a chronic pain population. **Method:** An experimental vignette design was used to assess the influence of self-compassion on affective, cognitive and behavioural responses to unpleasant self-relevant events, which were manipulated across social context and pain relevance, in a chronic pain population (n=62). **Results:** Higher levels of self-compassion were associated with lower intensities of negative affect (sadness, anxiety, anger and embarrassment), and a lower reported likelihood of avoidance, catastrophising and rumination in response to unpleasant pain- and self- relevant events. Individuals with higher levels of self-compassion also reported higher levels of satisfaction with their social participation in general. **Conclusions:** Self-compassion may be an important factor in developing resilience and promoting social engagement in a chronic pain population. Further research is indicated to better establish the process by which self-compassion may maintain positive social functioning, whether self-compassion can be increased in chronic pain patients, and if so whether these results can be replicated in real life circumstances.

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1. INTRODUCTION

1.1.　Overview

In many cases, chronic pain has a profoundly detrimental impact on social functioning and participation, as well as personal identity and sense of self.　The negative secondary consequences of chronic pain have attracted much research interest and the following review will consider this in detail, including the mechanisms by which decreased social functioning and participation may occur. To date, however, little consideration has been given to a factor which could potentially play a role in fostering resilience to the difficulties and losses that chronic pain patients experience, self-compassion. The limited evidence which is available indicates that self-compassion is associated with greater pain adjustment, and improved psychological wellbeing in chronic pain patients (Carson *et al.*, 2005; Costa & Pinto-Gouveia, 2011; Wren *et al.*, 2012). Therefore the review will latterly explore the concept of self-compassion, examine this in the context of chronic pain, and consider the evidence for its influence on resilience and coping. Finally, the research aims and hypotheses will be outlined.

1.2.　Chronic pain

Chronic pain can be defined as *"pain that persists for longer than the expected time frame for healing or pain associated with progressive, non-malignant disease"* (Ashburn & Staats, 1999, p.1865). This is distinct from acute pain, which is recognised as a normal response to tissue damage and is typically a result of trauma or surgery. Acute pain serves a biological purpose by signalling injury or disease, and resolves in response to the healing of the causal injury. In contrast in chronic pain, the pain persists much beyond that which would be expected based

on the antecedent damage or injury (Ashburn & Staats, 1999). This is further complicated by the learning that is associated with the neurobiological, psychological, and social changes that can occur in response to chronic pain, which can serve as maintaining factors (Lumley *et al.*, 2011). The term 'chronic pain' encompasses a range of syndromes, however, irrespective of aetiology, all manifestations of chronic pain cause significant suffering and disability for patients (Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006; Chapman & Gavrin, 1999; Pincus & Morley, 2001). Understandably, patients often exert significant effort into attempts to resolve or reduce pain. However, in instances of chronic pain, attempts to reduce pain are often maladaptive and as a result, people with persistent pain are much more likely to receive psychological treatment than those experiencing acute pain (Nesse & Ellsworth, 2009). Research and intervention needs to focus not only the physical experience of pain but also on the manifold psychological and social consequences which can result from chronic pain (Woolf & Mannion, 1999).

1.3.   The Consequences of Chronic Pain

The impact of chronic pain on quality of life has been extensively documented (Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006; Chapman & Gavrin, 1999; Pincus & Morley, 2001). In addition to the persistent experience of pain, patients also commonly experience physical changes including sleep difficulties, fatigue, and diminished physical and cognitive functioning (Ashburn & Staats, 1999). Secondary to these physical changes patients frequently report a reduction in their capacity to work, help others, spend time pursuing enjoyable activities, and an increase in the need to rely on others, especially health professionals (Mäkelä *et al.*, 1991).

Thus, pain can profoundly impact upon social relationships. Decreased social interaction is well documented as a common secondary cost of chronic pain (Parent *et al.*, 2012), including restrictions in relationships with other people, and an impaired ability to engage in social, occupational and leisure activities (Kappesser & Williams, 2008). Living with pain can also have significant emotional consequences, including increased fear, frustration, uncertainty, and guilt (Cowan, 2011) as well as concomitant depression (Banks and Kerns, 1996). These emotional consequences are likely to come not only because of the unpleasant physical experience of pain, but also as a result of the reduction in meaningful and affiliative experiences readily available to people (Cudney *et al.*, 2002; Hallberg & Carlsson, 2000; Geuskens, Burdorf, & Hazes, 2007; Katz, 1995; Katz & Yelin, 2001; Lewinsohn, 1975; Liedberg & Henriksson, 2002; Mengshoel & Heggen, 2004; Mustafa, Looper, Zelkowitz, Purden, & Baron, 2012; Ozgül *et al.*, 2006; Söderberg & Lundman, 2001; Ward, Reveille, Learch, Davis, & Weisman, 2008).

1.4. Social Functioning and Chronic Pain

The social isolation and withdrawal which so frequently accompanies chronic pain can have a profoundly negative impact since it "*removes a primary psychological buffer against pain—social support*" (Zhou & Gao, 2008; p.127). However, the influence of the social environment in which pain is experienced is complex, as, often, is the social environment itself. When pain is experienced it not only serves as an intrapersonal signal of threat (Eccleston & Crombez, 1999) but also as an interpersonal one, through that person's behavioural reactions and responses.

Since pain cannot be observed directly, the way in which pain is communicated has a significant impact on social interaction (Hadjistavropoulos *et*

al., 2011). This is influenced both by the pain itself and by the social context in which the pain occurs (Cano, Barterian and Heller, 2008; Craig, 2009). The manner in which others respond to these behavioural manifestations in turn influence the pain experience and overall wellbeing of the person in pain (Chambers, Craig & Bennett, 2002).

Pain can have significant implications for social relationships and can transform the social roles individuals hold (Harris, Morley & Barton, 2003) and, as noted earlier, the range of valued roles people are able to successfully maintain is often diminished (e.g. Mustafa *et al*., 2012). Hadjistavropoulos and colleagues (2011) assert that the *"extent of such deterioration or lack thereof would, of course, be dependent on the social context and sometimes on difficulties with accurate decoding and interpreting pain messages"* (p.916). They suggest that the way in which pain is communicated is not simply a representation of the internal experience of pain (e.g. pain unpleasantness or intensity) but is modulated by social context (Hadjistavropoulos *et al*., 2011; Larochette, Chambers, & Craig, 2006; Lyons, Langille, & Duck, 2006). In this way the nature and quality of social interaction and support are key aspects in the maintenance of meaningful social participation.

When social interactions are appropriately supportive they are associated with improved adaptation and adjustment to chronic pain (Kerns, Rosenberg, & Otis, 2002; López-Martínez, Esteve-Zarazaga, & Ramírez-Maestre, 2008), enhanced psychological well-being (Burckhardt, 1985; Faucett & Levine, 1991; Murphy, Creed, & Jayson, 1988; Turner & Noh, 1988), more adaptive pain coping (Holzmann, Newth & Delongis, 2004) and resilience (Löfgren *et al*., 2006). Social

support has also been found to be protective against the depression and distress commonly associated with chronic pain (Goldberg, Kerns, & Rosenberg, 1993; Cohen & Wills, 1985; Kerns & Turk, 1984). In addition, there is some evidence to suggest that social support may be associated with a lower number of pain sites and decreased pain intensity as well as lower pain-related interference (Jamison & Virts, 1990).

Whilst social support is likely to provide many psychological benefits, there are also indications that pain behaviours can be reinforced through some social mechanisms such as when social support becomes "*excessive to the point that it becomes solicitous*" (Hadjistavropoulos *et al.*, 2011, p. 933; see also Fordyce, 1976). This type of social interaction is associated with more observed pain-related behaviours such as facial display, altered gait and posture and avoidance of tasks (Romano *et al.*, 1995; Boothby, Thorn, Overduin, & Ward, 2004; McCracken, 2005; Paulsen & Altmaier, 1995) as well as increased self-reported pain and pain behaviours (Kerns, Haythornthwaite, Southwick & Giller, 1990). In addition, difficult or turbulent social relationships have been found to be associated with increased somatic and psychological distress (Hadjistavropoulos *et al.*, 2004).

These findings indicate that while social contact is not a panacea for improving a person's lived experience of pain and in some cases can worsen pain experience, constructive, appropriate social support can have a significant positive impact on the pain experience. However, despite these potential benefits, difficulties in attaining beneficial social participation appear common and range across social contexts including at home and in the workplace (Ullrich, Farin & Jäckel, 2012).

1.4.1 *Mechanisms by which chronic pain inhibits social functioning and participation.*

There are multiple factors at work in terms of how chronic pain impacts on meaningful social participation. Sim & Madden (2008) noted that the need to prioritise activities in the face of increasingly limited capacity led to the loss of paid work or social relationships leading to feelings of isolation, loneliness, and grief.

There is also evidence to suggest that the struggle to maintain pre-existing social roles may further strain family relationships (Cudney *et al.*, 2002). In addition, chronic pain patients commonly report a loss of intimacy with those closest to them, including romantic partners (Arnold *et al.*, 2009).

A further difficulty ensues from the unpredictable nature of chronic pain symptoms, which make it difficult for people to take part in regular social activities or keep to social plans, thus impeding peoples' ability to form new, or maintain existing, friendships (Arnold *et al.*, 2009; Cunningham & Jillings, 2006). It also appears that the intensity of the current pain episode may moderate the impact on social interaction (Paulson *et al* 2002; Söderberg *et al.*, 1999).

In addition to the physical constraints, there also appear to be a number of psychological aspects of the pain experience which precipitate decreased social interaction. Pain has an interruptive function, whereby attention is captured by pain and this leads to the suspension of non-pain-related activities to make way for protective action (Eccleston & Crombez, 1999; Gatzounis, Schrooten, Crombez, & Vlaeyen, 2014). The repeated and persistent suspension of meaningful non-pain activity then contributes significantly to pain-related disability, including decreased social functioning and participation (Huijnen, Verbunt, Roelofs, Goossens, & Peters, 2009). Consistent with this, many patients report feeling

unable to contribute in the same way as before (Charmaz, 1983) and it has been noted that the compromised cognitive abilities known to accompany some chronic pain conditions, including difficulties with attention as well as memory, create embarrassment and, consequently, social withdrawal (Arnold *et al.*, 2009).

In addition, chronic pain can lead to more negative, and consequently distressing, interpretation of social situations (Zhou & Gao, 2008), and these interpretations may have negative consequences for subsequent social interaction (Forgeron *et al.*, 2011). Social situations can become a source of fear and anxiety for many people with chronic pain, and this can lead to avoidance (Asmundson, Norton, & Jacobson, 1996).

The debilitating impact of avoidance is emphasised in biopsychosocial models of pain such as the fear-avoidance model (Crombez *et al* 2012; Vlaeyen *et al.*, 2000). This model describes a misinterpretation of 'pain as catastrophe' in which pain is mistakenly interpreted as a "*serious injury or pathology over which one has little or no control*" (Crombez *et al.*, 2012, p. 476). This misinterpretation generates a disproportionate fear of pain, which eventually leads to a fear of physical movements, and this in turn leads to avoidance of physical activities which are predicted to worsen the pain experience. Because avoidance precludes the possibility of corrective experiences this leads to further misinterpretation, catastrophising and erroneous predictions regarding future activities, thus creating a vicious circle in which meaningful activity and life pursuits become increasingly limited, and mood and psychological wellbeing deteriorate. In addition, due to the deconditioning physical impact of inactivity, avoidance also potentially worsens the pain experience.

Phillips (1987) asserted that "*avoiding is the most prominent of pain behaviour. It is not confined to avoidance of movement, but includes extensive withdrawal, particularly from social interactions*" (p, 274). Asmundson and colleagues (1996) also put forward a vicious cycle of social fear in which pain and disability are maintained by the powerful influence of anxiety reduction attained through avoidance of social situations. Sofaer-Bennett and colleagues suggest that social avoidance "*is not solely a consequence of loss of physical function or mobility. The uncertainties imposed by the potential for pain imposed almost as many restrictions as the actual presence of pain. This led to loss of confidence and consequent withdrawal from social engagements*" (Sofaer-Bennett *et al.,* 2007, p. 267). The power of pain to influence cognition and behaviour is extensively documented (Banks and Kerns, 1996; Eccleston and Crombez, 1999; Gil, Williams, Keefe, & Beckham, 1990), and is particularly salient at times of pain flare-ups (Gil *et al* 1990). Thus, it is not only the interpretation of the social situation, but the appraisal and interpretation of self within that context which may limit social interaction.

1.5.   Pain and Identity

Chronic pain is frequently experienced as a *"crumbling away of former self-images without simultaneous development of equally valued new ones"* (Charmaz, 1983, p. 184), and is set in the social context of a society which bases its norms and values around 'healthy' and 'able' individuals (Nettleton, 2006). This deterioration of self-concept is further impacted by undesirable experiences that cannot be accommodated into a valued self (Smith & Osborn, 2007)*.* This is not exclusive to the physical sensation of pain, but goes beyond to include the devaluing experiences of being ignored, embarrassed, humiliated or devalued by others

(Arnold *et al*., 2009; Charmaz, 1983; Osborn & Smith, 1998). The significance of discrediting events is dependent on a number of factors, including "*its perceived magnitude, the relative importance of who discredits, the situation in which discrediting takes place, and the amount of repetition of discrediting events*".

Discrediting experiences can be either tacit or dramatic and it is noted that the more dramatic discrediting is likely to occur when a person experiences *"public mortification"* (Charmaz, 1983, p.181).   This is consistent with evidence to suggest that, because they pose a threat to the "social self", social-evaluative threats, such as rejection, criticism, and exclusion, are particularly potent stressors (Dandeneau, Baldwin, Baccus, Sakellaropoulo & Pruessner, 2007; Grunewald, Kemeny, Aziz, & Fahey, 2004).

Many patients experience a difference in the quality of their interaction with others and are uncomfortably aware of the threat of rejection, not only because they feel they are a burden and unproductive, but also because they feel they may not be believed, and therefore lack a legitimate reason for this perceived unproductivity (Osborn & Smith, 1998). The experience of being pitied, excluded, disbelieved or humiliated or the perceived likelihood of this type of interaction means that the *"potential utility of social contact and comparison for self- affirmation and support [is] negated by their fear of misunderstanding and rejection."* (Osborn & Smith, 1998, p.98)

These discrediting encounters together with the physical and psychological consequences of pain can lead to a reappraisal of the self and a significant shift in a person's identity. Smith and Osborne (2007) describe this new identity as the 'self

with pain', a self which *"was socially undesirable, shameful and intruded into the participant's consciousness most acutely when they were in a social or relational context"* (Smith & Osborn, 2007, p. 527). That chronic pain is experienced as shameful is further evidenced by the considerable effort chronic pain patients exert in order to avoid displaying pain behaviour in an attempt to preserve the appearance of normality when in a socially evaluative context (Morley, Doyle, & Beese, 2000).

1.6. Self-Compassion

Since holding a valued self-identity is challenged by the experience of chronic pain, self-critical cognitions are common (Banks and Kerns, 1996; Eccleston & Crombez, 1999; Gil *et al.*, 1990). High levels of shame and self-criticism means that the development of a warm, caring, safe relationship, with oneself and with others, is very difficult (Gilbert, 2009a). Holding such a caring relationship with oneself has come to be understood as 'self-compassion' (Neff, 2003a). Self-compassion holds growing research interest, particularly with regards to its implications for physical and mental health (MacBeth & Gumley, 2012) and can be understood from a number of perspectives. The following will consider the relevance of these conceptualisations to the experience of self-compassion in the chronic pain population.

1.6.1. *Buddhist conceptualisations of self-compassion*

Eastern philosophies, particularly Buddhism, have garnered increasing interest from academic and clinical psychology and adaptations of key concepts are becoming a common aspect of clinical practice (Mijares, 2014). One such concept is self-compassion. Buddhist thought holds that the cultivation of loving kindness and compassion for both self and others is the path to release from

suffering (Rahula 1959, in Gilbert, 2013). Compassion, in Buddhist conceptualisations, is linked to the notion of '*metta'* or 'loving kindness' and there is an element of this which involves attentional sensitivity to suffering through being "*open to the suffering of oneself and others in a non-defensive and non- judgemental way*" (p.1), and also incorporates a desire to relieve this suffering (Gilbert, 2013). MacBeth and Gumley (2012) assert that Buddhist conceptualisations therefore hold compassion as a cognitive, affective and motivational construct and describe compassion as "*an attention and intention towards alleviating interpersonal distress*" (p.547). However, their definition omits a centrally significant aspect in that, in Buddhist thought, compassion to self is as important as compassion to others. In other words, the attention and intention associated with compassion is focussed not only on the alleviation of the suffering of others, but is also concerned with one's own suffering and distress. Compassion therefore seen as not only an affective response but also includes a motivation to relieve suffering, where possible, whilst also accepting its inevitability as part of the human experience. The capacity to respond adaptively and compassionately to one own suffering, has the potential to offer great benefit, particularly to those who experience chronic pain.

1.6.2. Psychological conceptualisations of self-compassion

Kristen Neff's (2003) psychological conceptualisation of self-compassion is informed by these Buddhist ideologies and she has defined the notion in terms of a healthy attitude and relationship with oneself:

"*Self-compassion can be defined as being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the*

desire to alleviate one's suffering and to heal oneself with kindness. Self-compassion also involves offering non-judgmental understanding to one's pain, inadequacies and failures, so that one's experience is seen as part of the larger human experience." (p. 87).

According to Neff, holding a self-compassionate attitude allows people to view their own problems, weaknesses, and shortcomings, such as, for example, pain and pain-related difficulties, accurately and at the same time respond with kindness and compassion rather than with self-criticism.

In Neff's (2003a) conceptualisation, there are three facets which comprise self-compassion: self-kindness, common humanity and mindfulness. Neff sought to formally quantify these three qualities through the development of the Self-compassion Scale (Neff, 2003b). This led to their characterisation of the qualities as three opposing pairs, identified by the positive pole. The pairs are generally identified as self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification (Neff, 2003b). However, in her original article, Neff found that the items best fit a six factor model, as well as a single higher-order factor of self-compassion, and hypothesised that these qualities were across six dimensions, rather than as three, as the "poles" of each pair may not necessarily be mutually exclusive. In that, for example, a person may rarely feel isolated in response to failure but would not necessarily also identify their failure as being a common human experience. The facets comprising Neff's conceptualisation of self-compassion will be explored further below.

Self-kindness describes the ability to treat oneself with care, and presents an alternative to the self-criticising, self-condemning and self-blaming styles of

thinking which are commonly associated with depression (Beck, Rush, Shaw, & Emery, 1979), as well as other forms of psychological distress (Forsyth & Eifert, 2008). As noted earlier in this review, negative views of the self and self-criticism are common responses to pain and have a negative impact on pain-related coping and adjustment (Banks and Kerns, 1996; Eccleston & Crombez, 1999; Gil *et al.*, 1990). Of particular relevance to the self-kindness facet is the differentiation between the concepts of self-compassion versus self-esteem (Neff, 2003a, b; Leary *et al.*, 2007). Neff argues that unlike self-esteem, self-compassion does not rely on performance-based evaluations of the self, or comparison to idealised standards, but rather it circumvents the evaluation process (both positive and negative) altogether and focuses instead on a positive affective response (i.e. kindness and warmth) to the self which is unconnected to personal attributes. In a chronic pain context, where self-evaluations are often negative in the face of the perceived failure which persistent pain imposes (Smith & Osborn, 2000) this distinction appears particularly pertinent. The cultivation of a quality not moderated by evaluation such as self-compassion has a particular relevance to this population and in terms of interventions may, potentially, be more fruitful than attempts to increase self-esteem. Neff contends that one of the novel contributions of the self-compassion construct is the focus on the "*emotional stance that individuals take towards themselves with when faced with an experience of failure or suffering, rather than feelings of self-worth per se*" (Neff *et al.,* 2005, p266).

Common humanity refers to the perception that suffering is an intrinsic aspect of the human experience and that we are therefore not alone in our pain when we experience problems, pain or suffering. Holding a belief of common

humanity is associated with better general well-being (Neff, 2003a) and Neff and colleagues (Neff, Hsieh, & Dejitterat, 2005) suggest that the common humanity facet of the self-compassion construct particularly highlights the importance of social connectedness as an essential aspect of well-being. Neff suggests that the capacity to recognise common humanity in one's experiences is a self-reflective process which requires taking an "other" position towards oneself and in this way is distinct from the more problematic concept of self-pity. Self-pity can be identified when individuals become absorbed by their own difficulties and forget that others have similar difficult experiences. As noted earlier, chronic pain is often a socially isolating experience (Cudney *et al.*, 2002; Hallberg & Carlsson, 2000; Geuskens *et al.*, 2007; Katz, 1995; Katz & Yelin, 2001; Liedberg & Henriksson, 2002; Mengshoel & Heggen, 2004; Mustafa *et al.,* 2012; Ozgül *et al.*, 2006; Söderberg & Lundman, 2001; Ward *et al.*, 2008) and the capacity to retain a sense that one is connected to others, and not alone in pain, would seem valuable in this context.

Mindfulness depicts a stance of *"equanimity towards difficult and uncomfortable thoughts, experiences and emotions"* as an alternative to excessive fixation upon them, termed over-identification (Van Dam *et al.,* 2011, p.124). Neff (2003) describes the mindfulness element of self-compassion as being able to acknowledge and attempt to understand one's emotions without either repressing them or becoming overwhelmed by them. Reviews of the relationship between pain and emotion have identified that a lack of awareness and experiencing of negative emotions is associated with, and potentially contributes to, greater pain and functional impairment. (Lumley *et al.*, 2011). It is therefore unsurprising that mindfulness techniques as a standalone treatment for chronic pain have been used

extensively and have been described in the literature for almost thirty years (Kabat-Zinn, 1985). The use of mindfulness techniques marked the beginning of the 'third wave' approaches to chronic pain (McCracken, 2011). These include Acceptance and Commitment Therapy (ACT; Hayes, Strosahl & Wilson, 1999) and Compassion Focussed Therapy (Gilbert, 2009a). Mindfulness-based interventions have been reported to have good treatment outcomes including improvements in pain, reduction in distress, and in pain-related disability (Grossman, Tiegenthaler - Gilmer, Rausz & Kesper, 2007; Morone, Greco & Weiner, 2008; Pradhan *et al* 2007; Sagula & Rice, 2004). Acceptance and Commitment Therapy has also had some documented success as a psychological therapy for chronic pain (Vowles

& Thomson, 2011). However, meta-analytic and systematic reviews regarding treatment effects report mixed findings. Veehof, Oskam, Schreurs and Bohlmeijer (2011) found robust effect sizes for ACT and mindfulness based interventions and concluded that "*mindfulness-based stress reduction program and acceptance and commitment therapy are not superior to cognitive behavioral therapy* (sic) *but can be good alternatives*" (p. 533). However, in a review conducted in the same year Chiesa and Seretti (2011) determined that "*there is not yet sufficient evidence to determine the magnitude of the effects of MBIs for patients with chronic pain*" (p.83). Thus the evidence base for existing third wave therapies for chronic pain indicates potential, however, the effects are yet to be consistently and robustly demonstrated.

Much less attention has thus far been given to the effects of self-compassion on chronic pain. To date, there have not been any published studies documenting the effects of a compassion focussed intervention (Gilbert, 2009) in a chronic pain

population, although the results of a loving kindness meditation showed promising results in terms of pain reduction and adjustment (Carson *et al*, 2005). Self-compassion has been found to be a more robust predictor of symptom severity and quality of life than mindfulness alone (Van Dam, Sheppard, Forsyth, & Earleywine, 2011), and has been found to play an important role in the improved wellbeing associated with mindfulness training (Baer, Lykins, & Peters, 2012). These findings suggest a potential research avenue in investigating self-compassion further in a chronic pain population, with regard to both academic and clinical interest.

The predominant focus of research into self-compassion has used the Self-compassion Scale (Neff, 2003), and has therefore measured self-compassion as a trait-like, dispositional quality. However, researchers are also starting to attempt to induce self-compassion in order to examine the effect of transitory self-compassionate states. For example Leary and colleagues (2007) successfully induced self-compassion in participants who then reported less negative affect in relation to a negative event from their past than those who had not been prompted to think about the event in a self-compassionate manner.

In his work with clinical populations, Paul Gilbert has documented the effect of compassion-focussed therapeutic interventions, (Gilbert, 2009; Gilbert and Irons, 2005; Gilbert and Proctor 2006; Mayhew and Gilbert, 2008) in which enhanced psychological wellbeing, lower self-criticism and self-attacking were found. However, no specific measure of self-compassion was used in this study. Neff, Kirkpatrick, and Rude (2007) also documented the effectiveness of brief therapy in enhancing self-compassion using a Gestalt technique intended to reduce self- criticism and aid people in showing themselves more compassion. Self-

compassion increased over the course of this brief therapeutic intervention. Adams and Leary (2007), in an experimental study of brief self-compassion induction for women with high eating-related guilt, showed that during a real life distressing event (being directed to eat a taboo food), when participants were directed to think about the event in a self-compassionate manner, those in the self-compassion induction group were less distressed and ate less in a follow-up experiment in comparison to the restrictive eaters control group. This also indicates a motivational and responsibility-focussed response from people with higher state self-compassion.

1.6.3. Conceptualisations of self-compassion with an evolutionary/neurobiological focus

Self-compassion has also been explored in more evolutionary terms, most notably by Paul Gilbert (Gilbert 2009a; b; 2013). Gilbert (2013) argues that compassion is a process which both underpins prosocial relationships and has the potential to heal both mind and body. Influenced by the work of Depue (Depue & Morrone-Strupinsky, 2005), Gilbert (2009a) describes three emotion regulation systems which influence people's capacity to relate to themselves and others; the threat system, the drive system and the soothing-affiliation system. The 'threat system' is described in terms of a process for detecting danger in the environment and activating survival systems to protect against the perceived threat. This system is associated with emotions including fear, anger, disgust and shame (Gilbert, 2009a). "*Heightened sensitivity and over-activity of the threat protection and/or drive systems is a common problem in people with high shame and self-criticism*" (Gilbert, 2006, p.202), which has a relevance for the notion of a shameful self with pain (Smith & Osborn, 2007). Moreover, the perceived vulnerability of

people who experience pain in terms of lowered social status and perceived social rejection are also likely to activate this system (Macdonald & Leary, 2005).

The two further systems depicted are both associated with emotions more typically characterised as positive (Gilbert 2009b). The 'drive system' is associated with resource seeking and linked to motivation with its basis in obtaining evolutionary necessities such as food, sexual opportunities, alliances, and territories. The emotions associated with this system are linked to arousal and feeling energised, typically characterised as excitement (Kelly, Zuroff, Leybman, & Gilbert, 2012). This may have particular salience to those patients who may have previously utilised achievement as a mechanism by which to reduce their unpleasant feelings and for whom, as a result of chronic pain, opportunities to achieve are no longer readily available (Gilbert, 2009a). This in turn makes the capacity to activate the third and final system all the more necessary.

The final system is described as the 'soothing-affiliation system', and is associated with safety and contentedness (Liotti & Gilbert, 2011). This system is *"sensitive to social signals from of warm, kind, and supportive others and that this system evolved concurrently with the attachment system"* (Kelly *et al.*, 2012, p. 816)*.* The activation of this system is thought to have a modulating effect on the activation of the threat system (Kelly *et al* 2012). In Gilbert's conceptualisation, self-compassion is rooted in this affect regulation system, which has evolved to facilitate co-operation, kinship, caring, and the formation of attachment bonds in mammals (Bowlby, 1973; Gilbert, 2005). Compassion is therefore understood as *"an evolved motivational system designed to regulate negative affect through attuning to the feelings of self and others, and expressing and communicating*

feelings of warmth and safeness" (Macbeth & Gumbley, 2010, p. 546). There is evidence to suggest that early experiences of social interactions influence later pain experience and expression (Craig, 1978). Moreover, affiliative and attachment relationships have a physiologically soothing quality which not only reduce threat sensitivities but also alter pain thresholds (Cozolino 2007, Depue and Morrone-Strupinsky, 2005; Panksepp 1998).

The links between the attachment system, self-compassion and pain are complex, but research indicates interaction at a psychological as well as a neurobiological level. Attachment theory proposes that internalised working models of caregivers developed in early childhood have a significant impact upon the way in which individuals treat themselves (Bowlby, 1988). In support of this, Neff and McGehee (2010) found that when children are raised in an environment in which caregivers are consistently available and nurturing, they develop the capacity to relate to themselves in a compassionate manner as an adult. They found that attachment security predicted higher levels of caring and compassion toward themselves, and that individuals with an anxious attachment style had greater difficulties in being kind to themselves and mindfully approaching distressing issues. In support of this, Wei and colleagues (2012) also found a negative association between attachment anxiety and self-compassion.

The attachment system is therefore implicated in whether individuals have a compassionate attitude towards themselves and others (Gilbert & Tirch, 2009). In addition, there is evidence indicating a link between attachment and physical health (Huntsinger & Luecken, 2004; Raque-Bogdan, Ericson, Jackson, Martin, & Bryan, 2011). Moreover *"adult attachment theory has increasingly been*

linked theoretically and empirically with perceptions of, and capacity to cope with

pain," (Meredith, Ownsworth, & Strong, 2008, p. 409). Thus responses to pain and

pain related events are very likely to be linked into attachment and social

interaction (Eisenberger and Lieberman, 2004; Kratz, Davis & Zautra, 2012;

Lumley *et al.*, 2011; MacDonald & Leary, 2005).

Whilst these theoretical models of self-compassion differ in terms of which

aspects are emphasised, all models predict that self-compassion will be associated

with better psychological health and wellbeing and each provide an indication that

this is a concept which is likely to have real relevance for people experiencing

chronic pain. The following section will further explore the potential benefits of a

self-compassionate response to one's difficulties and consider these in the context

of chronic pain.

1.7.   Self-Compassion and Coping

Self-compassion has been shown to be associated with higher subjective

wellbeing and life satisfaction (Baer, Lykins & Peters, 2012; Leary, Tate, Adams,

Allen, & Hancock, 2007; Neely, Schallert, Mohammed, Roberts, & Chen, 2009; Neff,

2003a ; Neff, Rude, & Kirkpatrick, 2007; Wei, Yu-Hsin, Tsun-Yao,& Shaffer, 2011)

as well as lower levels of psychological distress, depression and anxiety in both

general and clinical populations (Ferrerira, Pinto-Gouveia, & Duarte, 2013;

Krieger, Altenstein, Baettig, Doerig & Holtforth, 2013; Neff 2003a; Przezdziecki,

Sherman, Baillie, Taylor, Foley and Stalgis-Bilinski, 2012; Raes, 2010; Samaie &

Farahani, 2011;Van Dam *et al.*, 2011). A meta-analysis also supported the finding

that higher levels of compassion were associated with lower levels of depression,

stress and anxiety (MacBeth & Gumley, 2012). It has therefore been suggested

that "*compassion is an important explanatory variable in understanding mental health and resilience*" (MacBeth & Gumley, 2012, p.545). These are meaningful and significant factors for individuals experiencing chronic pain, particularly in the light of the high levels of concomitant depression (Banks & Kerns, 1996).

One of the reported positive functions of self-compassion is to act as a buffer against negative events (Leary *et al.*, 2007) and this enhanced ability to cope with difficult situations and experiences is fundamental to self-compassion:

> "*The central aspect of self-compassion involves treating oneself kindly when things go wrong. For instance, when they fail or make a critical error, self-compassionate people tend to treat themselves with greater kindness, care, and compassion and with less self-directed criticism and anger than people who are low in self-compassion.*" (Allen & Leary, 2010, p.108)

Self-compassion has been found to be associated with adaptive responses and coping strategies in the face of difficult experiences (Allen & Leary, 2010) across affective, cognitive and behavioural domains. The following sections will explore the research evidence for the impact of self-compassion on responses to adversity.

1.7.1. *Affective responses to difficulty associated with self-compassion*

In a compendium of five experiments, Leary and colleagues (Leary, Tate, Adams, Allen, & Hancock , 2007) established that self-compassion attenuates responses to distressing social situations such as failure and rejection. This was demonstrated across real, imagined and remembered events. The paper was one of the first which examined self-compassion using an experimental framework as much of the prior research is dominated by correlational designs. Leary *et al.*,

(2007) found that self-compassion did not appear to influence perceptions of how serious or negative the event was, but rather influenced people's reactions and responses to themselves in the context of the event. This resulted in lower intensities of sadness, anxiety and self-conscious emotion. In support of this, Brown and Ryan (2003) found that people with greater self-compassion experience less intensity of negative emotions in the face of negative events and moreover, Neff and colleagues found that highly self-compassionate individuals are less likely to focus on the negative emotions that do emerge in response to negative events such as failure (Neff, Hsieh, & Dejitterat, 2005). Leary *et al* (2007) also reported that perception of fault did not influence reactions to events in participants with high self-compassion, which is consistent with Neff's (2003a) conceptualization which suggests self-compassion should be equally effective in protecting people against the negative impact of events regardless of whether the event was perceived as their fault.

Leary *et al.,* (2007) also found that in social situations, self-compassion moderated responses to interpersonal feedback in that individuals with high self-compassion had less strong emotional reactions to neutral feedback. However, reactions to negative feedback were not examined in order to minimise discomfort for participants, and therefore the influence of self-compassion on negative interpersonal feedback was not established. In the final experiment Leary *et al.,* (2007) attempted to induce compassion and found that participants in the induced self-compassion condition showed lower negative affect regarding recalled negative events.

However, because the negative affect was summed, the potential

differences between affects (such as sadness versus anxiety versus anger) in the face of difficult events were not compared or examined. Given Gilbert's theoretical focus on self-compassion and emotion regulation systems (Gilbert, 2005; 2011; 2013), these fine grain distinctions appear to be theoretically relevant, and further research to understand the differences in emotional response in terms of specific affect as well as affect intensity in response to negative events is indicated.

In addition, the experiments carried out by Leary and colleagues (2007) used an undergraduate sample and therefore the extent to which self-compassion impacts coping in more general or clinical populations was not ascertained. However, Terry and Leary found that self-compassion was associated with lower levels of depression, anxiety, irritation, loneliness, and anger in response to physical health problems (Terry *et al.*, 2010, cited in Terry and Leary, 2010).

Overall, the evidence is promising with regards to the connection between self-compassion and reduced negative affect in the face of distressing or difficult circumstances and indicates the potential for further work to be undertaken to explore this further in additional samples.

In the context of a chronic pain population, there is a growing literature which demonstrates connections between pain and emotion at a neurobiological, psychological and social level documented extensively in reviews by Lumley *et al.*, (2011) and Keefe *et al.*, (2001). Lumley *et al* (2011) reported that pain anxiety, pain-related fear, and high arousal of negative emotions are associated with higher pain and poorer adjustment, and that the research suggests a bidirectional

relationship in which these emotional factors occur "*not only in response to pain but also trigger, maintain, or exacerbate pain*" (p.961). However, to date no studies have documented the influence of self-compassion on emotion regulation in response to negative events in a chronic pain population.

1.7.2. *Cognitive coping strategies linked to self-compassion*

Since self-criticism is postulated to be the antithesis to self-compassion (Neff 2003a; b) it is reasonable to expect differences in cognition between people who are high versus low in self-compassion. Leary *et al.* (2007) found that people higher in trait self-compassion (as measured on the Self-Compassion Scale) have reported fewer negative and self-critical thoughts in response to negative events. Whist the existence of lower self-criticism in self-compassionate individuals may appear somewhat tautological, there are further cognitive differences reported.

In an undergraduate sample, Raes (2010) found that self-compassion attenuated depression and anxiety through decreased rumination. Similarly, Samaie and Farahani (2011) found that self-compassion was associated with less rumination, and moreover that self-compassion significantly moderated the link between rumination and stress in undergraduate students. A further study looking at self-compassion in undergraduate students conducted by Wasylkiw, MacKinnon and MacLellan (2012) found that self-compassion was associated with less negative cognitions concerning body image and weight. In addition, there is some limited evidence for the use of distraction by individuals who score high in self-compassion in response to negative events (Leary *et al.*, 2007). However, the evidence is scant.

In clinical samples, differences in cognition have also been demonstrated,

for example, self-compassion has been found to be associated with lower body image dissatisfaction in a sample of patients with diagnosed eating disorders (Ferreira *et al.*, 2013). In addition, self-compassion was found to be negatively associated with symptom-focused rumination in patients diagnosed with clinical depression (Krieger *et al.*, 2012) and with less fear of interpersonal evaluation (both negative and positive) in a sample diagnosed with Social Anxiety Disorder (Werner *et al.*, 2012).

The relationship between self-compassion and cognition has also been demonstrated in interventions designed to induce or increase self-compassion. Neff, Kirkpatrick, and Rude (2007) found that, in response to therapeutic intervention aimed at increasing self-compassion, as levels of self-compassion increased, self-criticism, rumination and thought suppression decreased.

Similarly, Gilbert and Procter (2006) presented the results of compassionate mind training (CMT), a group-based therapy intervention that focusses on cognitive restructuring with a view to teaching self- critical clients the skills to be more self-compassionate. They reported a significant decrease in self-attacking tendencies along with decreased depression, feelings of inferiority, submissive behaviour and shame as a result of the intervention.

In a review, Allen and Leary (2010) also assert that "*self-compassion involves a certain degree of positive restructuring as people who are high in self-compassion construe negative events in less dire terms than people low in self-compassion*" (p. 110). Moreover, they contend that since all reported interventions for inducing or enhancing self-compassion rely on positive cognitive restructuring, that this is likely to be a coping strategy employed by

people higher in trait self-compassion in response to difficulty. It is of note, however, that the presence of positive cognitive restructuring in self-compassionate individuals has not yet been clearly demonstrated empirically. Rather, the evidence highlights an absence of, or reduction in the frequency or intensity of, negative cognitive processes. This is nonetheless an important difference and one which the evidence suggests is associated with lower intensities of negative affect and psychopathology and higher psychological wellbeing (Raes, 2010). In relation to chronic pain, the detrimental impact on pain-related coping and adjustment associated with negative cognitions concerning both the self and pain have been well documented (Banks and Kerns, 1996; Eccleston and Crombez, 1999; Gil, Williams, Keefe, & Beckham, 1990; Lumley *et al.*, 2011) and highlight the need for factors which may foster alternative cognitive responses to pain-related difficulties.

1.7.3. *Behavioural coping strategies linked to self-compassion*

Three main behavioural strategies have been either positively or negatively related to self-compassion; problem solving, avoidance, and support-seeking and these will be explored in the following sections.

1.7.3.1. Problem Solving

Problem focussed coping incorporates the use of planning, strategizing, and applying effort in an attempt to correct or improve the situation (Skinner *et al.*, 2003). Problem solving is an adaptive strategy in the face of difficulties that can be solved by personal action (Lazarus, DeLongis, Folkman, & Gruen, 1985) but can be maladaptive in the face of unchangeable difficulties.

Allen and Leary (2010) suggest that the concept of self-compassion includes features which would predict action-oriented coping. However, the research evidence for this is mixed. Despite findings that self-compassion was associated with higher mastery based motivation, and maintenance of personal responsibility taking after failure, Neff *et al.*, (2005) did not find any significant relationship between self-compassion and problem-focused strategies. Leary and colleagues similarly found that in response to a self-compassion induction exercise participants showed a markedly higher sense of personal responsibility in relation to negative events, however, they also found no relationship between self-compassion and problem focussed coping in response to negative personal events (Leary *et al* 2007). In support of this, Baker and McNulty (2010) found that self-compassion was associated with higher motivation to correct interpersonal mistakes. However, in contrast to these findings, Breines and Chen (2012) found that participants with high self-compassion reported higher likelihood of problem focussed reparations, in that they spent more time studying for a difficult test in response to initial failure than did the high self-esteem and general control group participants.

There is not yet a consistent evidence base which connects self-compassion with a problem solving approach to difficulties. Allen and Leary (2010) propose that the conflicting evidence for a relationship between self-compassion and problem-solving coping techniques may be due to a mediating effect of perceived control with regards to the potential for problem solving, however, there is as yet no empirical evidence regarding this hypothesis. Nonetheless, in a chronic pain context the notion of mediated problem solving may be particularly applicable since problem solving effort focussed on the relief of pain will be "*frustrated by the*

insolubility of the problem" (Aldrich, Eccleston, & Crombez, 2000, p. 457).

Similarly, Crombez *et al* (2012) conceptualise maladaptive problem solving as being a central aspect of the fear avoidance model of chronic pain and state that this model captures the *"persistent but futile attempts to solve pain-related problems in order to protect and restore life goals*" (p. 488). However, when efforts are focussed on solving the difficulties associated with pain (rather than solve the problem of pain itself) through adaptation where possible and through acceptance where there is no possible solution, this is considered an adaptive response (De Vlieger, Van den Bussche, Eccleston, & Crombez, 2006). Whilst the capacity to actively and assertively respond to difficulties in which there are potential solutions, appears to be an adaptive coping strategy, the research evidence remains unclear as to whether this is a strategy associated with self-compassion in either the general or chronic pain population.

1.7.3.2. Avoidance

Allen and Leary (2010) assert that the extant evidence suggests a negative relationship between self-compassion and avoidance-oriented coping strategies. For example, Neff and colleagues (2005) found that self-compassion moderates responses to real and potential failure. Students higher in self-compassion maintained mastery based motivation and were less likely to be avoidant, even shortly after an academic failure. This study also provided support to Neff's (2003) argument that self-compassion has no detrimental effect on personal responsibility or motivation and states: Neff and colleagues suggest that instead "*self-compassionate individuals are motivated to achieve, but this goal is not driven by the desire to bolster one's self-image. Rather, it is driven by the compassionate*

desire to maximize one's potential and well-being." (Neff *et al.*, 2005, p901). This relationship has been replicated in clinical populations. Self-compassion has been negatively associated with experiential avoidance in a sample with diagnosed PTSD, and with less cognitive and behavioural avoidance in a sample with diagnosed clinical depression (Krieger *et al.*, 2012).

As discussed earlier in this review, the Fear-Avoidance model of chronic pain (Crombez *et al.*, 2012; Vlaeyen & Linton, 2000) proposes that avoidant responses to pain are central to pain-related functional disability and lead to " *an inability or unwillingness to pursue valued activities, a reduction of positive experiences, and eventually to social isolation, all of which provide fertile ground for affective distress*" (p. 480). The evidence for a negative relationship between avoidance and self-compassion is not yet well established, and more research is indicated, in both the general and chronic pain population since avoidance is a central maladaptive coping strategy with so many negative consequences for the chronic pain population.

1.7.3.3. Affiliative/Support-seeking behaviour

People high in self-compassion report greater feelings of social connectedness (Neff & McGehee, 2011), and higher satisfaction in their relationships (Baker & McNulty, 2011). Therefore one might therefore also expect self-compassionate individuals to seek care or support in response to difficulty. Particularly since eliciting social support in response to negative experiences is associated with higher resilience and lower psychological distress (Burckhardt, 1985; Löfgren *et al.*, 2006). However, the evidence suggests that self-compassion is not associated with seeking emotional support from other people in the face of

difficulty or failure (Neff *et al.*, 2005; Leary *et al.*, 2007). Nonetheless the evidence is scant on this point and there is not yet a clear evidence base established regarding self-compassion and social support. It is therefore not possible to firmly predict the likely impact of self-compassion on social support-seeking in the face of difficult events in either the general or the chronic pain population.

As noted earlier in this review, the social impact of chronic pain has been well documented (Cudney *et al.*, 2002; Hallberg & Carlsson, 2000; Geuskens *et al.*, 2007; Katz, 1995; Katz & Yelin, 2001; Liedberg & Henriksson, 2002; Mengshoel & Heggen, 2004; Mustafa *et al.,* 2012; Ozgül *et al.*, 2006; Söderberg & Lundman, 2001; Ward *et al.*, 2008) and, whilst the relationship between social interaction and pain is complex (Hadjistavropoulos *et al.*, 2011), this is particularly detrimental since social support can serve as an important facilitator of pain-related coping, resilience and adjustment and has also been associated with superior mental health and wellbeing (Cohen & Wills, 1985; ; Holzmann, *et al.*, 2004; Goldberg *et al.*, 1993; Jamison & Virts, 1990; Kerns *et al.*, 2002; Kerns & Turk, 1984; López-Martínez, *et al.*, 2008; Löfgren *et al.*, 2006). There are calls for more research regarding the connection between self-compassion and support-seeking (Allen and Leary, 2010) and regarding the interpersonal implications of self-compassion more generally (Baker & McNulty 2011). Given the applicability of this to a chronic pain population, research is indicated in this field as well as in the general population to better understand whether self-compassion influences support-seeking behaviour.

1.7.4. *Implications of the evidence concerning self-compassion and coping with regard to chronic pain*

Collectively, the evidence indicates that self-compassion influences affective

responses as well as cognitive and behavioural strategies in response to negative events such as failure and rejection. This is consistent with definitions which emphasise the role of self-compassion in responding "*when things go wrong*" (Neff & Germer, 2013, p32). However, across many of these studies, the impact of self-compassion on responses to negative events is identified in terms of isolated or one-off events. Nonetheless, the demonstration of differing coping strategies and affective responses in clinical populations such as people with diagnosed depression (Krieger *et al.*, 2012; Raes, 2010) or experiencing enduring health difficulties (Terry *et al.*, 2010, cited in Terry and Leary, 2010) raises the possibility that self-compassion may buffer individuals against chronic failure, suffering or repeated negative life events such as those experienced for people with chronic pain. People who experience chronic pain are subject to frequent setbacks and difficulties as a result of both the physical restrictions and the disabling society around them (Charmaz, 1983), and so the ability to cope and respond with compassion to these difficulties would likely be of great benefit.

1.8.   Self-Compassion and Chronic Pain

To date, only two studies have specifically examined self-compassion in a chronic pain population. Costa and Pinto-Gouveia (2011), using a cross-sectional design, found that self-compassion was associated with greater pain acceptance and lower levels of depression, anxiety and stress. The authors note that a key implication from this research was the relationship between self-compassion and activity engagement which the authors inferred from the responses to the Chronic Pain Acceptance Questionnaire (McCracken, Vowles, & Eccleston, 2004). However, specific activity or participation levels were not measured within the study. Given the importance of the maintenance of meaningful participation in

life activities for chronic pain patients more research is indicated to more clearly establish the influence of self-compassion upon important life activities in a chronic pain population.

Subsequently, Wren and colleagues (2012) also investigated the influence of self-compassion on pain and found that self-compassion did not influence participants' perception of pain (unpleasantness or intensity) but was associated with several aspects of pain-related adjustment. This included lower levels of negative affect, higher levels of positive affect, lower levels of pain catastrophising and lower reported levels of pain disability. Wren *et al* (2012) hypothesised that the lower levels of pain-related disability may be associated with a greater level of pain acceptance which in turn enables people with chronic pain to be "*more accepting of the emotional experiences in relation to their disability while still maintaining meaningful day to day activities*" (p.767). However, the specific processes by which self-compassion increases the likelihood of maintaining meaningful activity is not yet established. More research is indicated to ascertain specifically how self-compassion might enable people with persistent pain to persist in meaningful activity despite their pain.

In addition, Carson and colleagues (2005) found that a loving-kindness meditation programme had positive effects on pain, anger and psychological distress for chronic pain patients. They suggested that further studies were indicated which established more refined understanding of how compassion effects change and specifically whether these changes are affective or cognitive.

These studies provide an early indication that self-compassion could play a role in pain-related adjustment. However, since both studies rely on self-report

questionnaires alone, the implications of self-compassion in context can be only be inferred. Research is indicated which seeks to establish the influence of self-compassion on factors associated with adjustment to chronic pain within a contextual framework, using an experimental design.

1.9.   Summary

Chronic pain can have significant negative consequences for many areas of life, and social participation in particular is a key area which frequently deteriorates after the onset of chronic pain. This appears in part to be due to the physical and psychological changes associated with the pain experience, but is also likely to be due to the frequent discrediting events which also challenge identity and result in withdrawal and isolation. This withdrawal from contact with others then negates the potential for people to benefit from the protection against distress and enhanced resilience which social participation is known to facilitate. Self-compassion is increasingly becoming established as a factor which can promote psychological wellbeing, resilience and coping in the face of difficulties and holding a self-compassionate attitude is associated with increased acceptance of pain as well as lower levels of negative affect, pain catastrophising and pain disability (Costa & Pinto-Gouveia, 2011; Wren *et al.,* 2012).

These results are promising, and suggest that self-compassion could play a role in attenuating the impact of pain-relevant unpleasant social events in a pain population. However, questions remain as to precisely which coping strategies self-compassion is reliably connected with and whether the positive effects of self-compassion on coping can be replicated in a chronic pain population in a social context.n Further research is indicated to develop a greater understanding of the

factors which may underpin the cognitive, emotional and behavioural responses of patients with chronic pain in a social context, and whether self-compassion could play a role in social resilience and coping.

1.10. Aims

The study aimed to establish whether trait self-compassion influenced social functioning and participation in a chronic pain population. This was carried out in two ways. First, using an experimental vignette design in which events were manipulated across social context and pain relevance in order to examine whether self-compassion influenced affective, cognitive and behavioural responses to unpleasant self-relevant events occurring in a social context. This enabled the examination of the effect of context as well as self-compassion, and a consideration of the interaction between these factors. Secondly, the study aimed to ascertain the influence of self-compassion on social role functioning and participation more universally using self-report measures.

1.11. Research Hypotheses

The evidence suggests that in a chronic pain population, participants with higher levels of self-compassion will report superior social functioning, both in terms of their social participation and their ability to respond to difficult social events. It

was therefore expected that higher self-compassion scores would be associated with lower reported negative affect in response to difficult social events, and a reduced likelihood of maladaptive coping strategies. The evidence regarding self-compassion also suggests a consistent effect of self-compassion across context and perception of personal fault, therefore it was anticipated that self-compassion would be equally influential across social and pain contexts. In terms of global social

functioning, the evidence suggests greater social connectedness and relationship satisfaction in people with higher rates of self-compassion. Therefore more positive social functioning was expected to be reported by participants reporting higher self-compassion.

2. VIGNETTE METHODOLOGY:
Designing a Vignette Method to Elicit and Capture Responses to Unpleasant Self Relevant Events in a Chronic Pain Population

Vignettes refer to *"text, images or other forms of stimuli to which research participants are asked to respond"* (Hughes & Huby, 2004, p.37). Vignette methodology enables the systematic exploration of potentially sensitive issues, because it gives participants control over the degree to which personal information is disclosed, if at all (O'Dell, Crafter, De Abreu, & Cline, 2012), and allows them to consider subjects from a *"non-personal and therefore less threatening perspective"* (Hughes, 1998, p.383).

There are also, however, a number of potential limitations associated with the use of vignettes. It has been suggested that participants may react differently to vignettes than to real-life situations (Hughes & Huby, 2004). In addition, it has been argued that the limited contextual information contained in vignettes may lead each participant to infer additional contextual information which may confound the result (Grey, McClean, Barnes-Holmes, 2002). Moreover, Hughes (1998) argues that *"we do not know enough about the relationship between vignettes and real life responses to be able to draw parallels between the two"* (p.384). In contrast to these suggestions however, there have been findings to support the validity of vignette methodology. For example, when the use of vignettes, video tapes and participant recall were compared, all three methodologies produced consistent results (Johnston and Freeman, 1997). Moreover, it has been argued that vignettes promote reflection and have the capacity to evoke imagination, feelings and thoughts at the same time (Miles,

1990) and offer *"a combination of expressive and objective ideas and projective methods, and as such they should be increasingly used in psychological... research"* (Poulou, 2010, p58). Nonetheless, in light of these potential limitations generalising data gathered from vignettes must be done with caution (Hughes & Huby, 2004; Paddam, Barnes, & Langdon, 2010).

After considering the evidence for the use of vignettes, the ongoing debate concerning validity and generalisability was an important consideration; however, it was also apparent that there are advantages to the method which fitted well with the research aims of this study. Therefore vignettes were selected as a central aspect of the research design.

2.1. Previous Applications of Vignette Methodology to Examine the Influence of Self-Compassion in a Social Context

In one of the five experiments in their published compendium of studiesexamining the influence of self-compassion in social contexts, Leary *et al* (2007) applied a vignette methodology. They posited that the use of vignettes in the context of self-compassion, whilst sacrificing realism, allowed for the exploration of whether and how self-compassion moderates responses to difficult self-relevant events across contexts. Through the presentation of a common set of situations a potential bias is circumvented, in that there may have been a difference in perception between the types of events which those low, versus those high, in self-compassion would identify as being difficult or distressing, should they have been asked to recall their own real life events (Leary *et al.*, 2007).

Leary and colleagues (2007) provided participants with three written hypothetical scenarios which involved failure at an individual academic (i.e. failing at a test), sporting team (i.e. being responsible for team defeat) and wider public

level (i.e. forgetting lines in a play). Instructions were given to participants to imagine themselves as vividly as possible in each situation and then provide ratings about each. Participants were asked to rate potential emotional, behavioural and cognitive responses on seven point Likert scales.

The findings of Leary's studies were promising regarding the potential for self-compassion to influence affective, cognitive and behavioural responses to difficult self-relevant events and moreover provided some indication of the potential use of vignettes in this context. However, there was significant ambiguity regarding the methodology. The paper lacked a coherent narrative regarding how the scenarios were selected, written or tested. The validity of vignettes is predicated on the presentation of scenarios which are precisely designed and are comprehensible, realistic to respondents' experiences, and carefully written in a tone which does not unintentionally influence responses (Hargrave, 2011). The provision of a transparent, methodical description of the methods by which scenarios have been developed prior to implementation is therefore an essential aspect of establishing methodological validity. This is an aspect of the methodology which Leary and colleagues (2007) neglected to provide, and as a consequence the validity of their methodology is hard to assess.

Leary *et al.* (2007) also did not clearly delineate the procedure and conditions under which the participants responded to the vignettes. Krosnick (1991) suggests that there is a risk of impeding the response process if conditions under which vignettes were administered are not appropriate. Leary *et al* (2007) describe the scenarios being given to small groups of students at a time and this may have increased the potential for social bias. The ambiguity regarding the

procedure further impedes the capacity to make an objective assessment of the validity of participant responses overall in the study reported by Leary *et al.,* (2007).

In addition, whilst Leary and colleagues (2007) included multiple social contexts, the method of analysis did not offer an opportunity for direct comparison between these contexts. Although the findings indicated that self-compassion may impact cognitive and behavioural responses differently between contexts, there was no statistical assessment of context effects.

In sum, the study by Leary and colleagues (2007) was limited, particularly with regards to ambiguous methodological description, which inhibits the ability to draw conclusions regarding the validity of the method and subsequent findings. Despite this the findings of the study by Leary *et al.,* (2007), together with the wider literature (Johnston & Freeman, 1997; Miles, 1990; Poulou, 2010), provide sufficient indication that there is a potential benefit to the use of this design to establish participant responses to unpleasant self-relevant events. However, the successful application of vignette methodology as a means to clearly identify the influence of self-compassion in a social context is dependent upon a careful, well communicated design and implementation. The following section will attempt to clearly delineate the vignette design process for this study.

2.2. Design and construction of the vignettes

2.2.1 Developing a framework for the vignettes

Since chronic pain commonly interrupts and interferes with the capacity to fulfil social roles and tasks (Mustafa *et al.*, 2012), the vignettes were designed to represent this aspect of people's experience. It was therefore decided that each

vignette would be written to reflect a scenario in which the actor negates an agreed social contract, through being unable to complete an agreed social task or function. Thus, each scenario was consistent with the parameters of an unpleasant, self-relevant event, occurring within a social context. The following sections will describe how the content for each scenario was selected, including outlining the experimental manipulation of two key variables, pain and social context.

2.2.2. Experimental manipulation of the vignette content

In order to address the study aims, and previous limitations of vignette research in self-compassion, the vignette content was manipulated across two dimensions. These dimensions were selected on the basis of literature which indicates that the context of pain, as well as social context may influence the way in which people respond to difficult events.

The inclusion of pain versus non-pain relevant vignettes was selected to address the likely relevance of pain in connection with the inability to fulfil a social contract. The literature indicates that pain has a particular capacity to capture attention in a way which supersedes non-pain-related activities (Gatzounis *et al.*, 2014). Over time chronic pain becomes enmeshed within a person's self-concept, such that their self becomes increasingly defined as a "self with pain", and that this enmeshment is associated with greater distress regarding impact of chronic pain on that person's life (Morley, Davies & Barton, 2005; Smith & Osborne, 2007; Sunderland & Morley, 2008). Therefore a pain-relevant and non-pain-self relevant comparison was included in order to test whether self-compassion maintained the same attenuating effect across pain and non-pain contexts.

Variation of social context was selected in response to findings that the significance of self-relevant unpleasant events (described as discrediting encounters) depends upon social contextual factors (Charmaz, 1983 ; Dandeneau *et al.,* 2007; Grunewald *et al.*, 2004). The social contexts selected were chosen to reflect commonly held, highly salient roles. Mustafa and colleagues assert that these include "*paid work, personal relationships, such as marriage, parenting and friendships, caregiving, household as well as leisure activities such as travel or sports*" (Mustafa *et al.*, 2012, p.2). Review of the literature and consultation with an expert in the literature on the experiences of chronic pain patients (Toye, 2013, personal communication) led to the final selection of three of these role domains   as being the most salient in relation to chronic pain patients. These were occupational, marriage and peer/friendship domains. The manipulation of pain and social context variables created a two by three within subjects design which is depicted in Figure 1.

Vignette 1: Pain x friendship	**Vignette 3:** Pain x spouse	**Vignette 5:** Pain x occupational
Vignette 2: Non-pain x friendship	**Vignette 4:** Non-pain x spouse	**Vignette 6:** Non-pain x occupational

Figure 1: Manipulation of pain and social context variables within the six vignettes

2.3.   Developing the Vignette Content

In accordance with recommendations by Paddam *et al.*, (2010) regarding the construction of vignettes, the construction of vignettes has followed an eight stage process, which is depicted in Figure 2).

1 • Background reading

2 • Consult patient narratives and experts in chronic pain as sources of further information

3 • Gather themes from stages one and two

4 • Create vignettes, adhere to vignette equivalence, based on real life.

5 • Vignettes rated by an independent expert panel

6 • Calculate standard deviations and means. Modify vignettes where indicated.

7 • Vignettes rated again by expert panel if necessary

8 • Use vignettes in research

Figure 2: Vignette construction process chart, adapted from Paddam *et al* 2010, p.70.

Since developing a clear understanding of likely scenarios is important in assuring that the responses correspond to actual behaviour (Neff, 1975) and thus increases internal validity (Gould, 1996) several sources were consulted to establish an understanding of commonly experienced unpleasant self-relevant events in a social context. Firstly, an expert in the literature surrounding the experiences of people with chronic pain was consulted for recommendations of commonly experienced social difficulties in adults with chronic pain conditions (Toye, 2013, personal communication), and a further literature search was conducted on the basis of these recommendations. In addition, 47 videotaped interviews with people with chronic pain conditions were reviewed (Health Talk

Online, 2013) and from this, any specific examples of unpleasant pain-relevant events, occurring in a social context, were collected. Lastly in order to establish non-pain self-relevant events the unpleasant events schedule was consulted (Lewinsohn *et al.*, 1985). After gathering themes from these multiple sources, an initial six vignettes were created (to view the six vignettes please see Appendix E).

In writing the vignette content, two further factors were considered. First, the participant position within the vignette narrative. A number of approaches can be taken in terms of the position participants are asked to take in vignette research (Hughes and Huby, 2004), most commonly taking one's own position (i.e. vignettes written in the second person) or taking the position of another. Taking the perspective of another provides a level of protection for research participants (Bradbury *et al*, 2014; Hughes, 1998), as well as helping to reduce the likelihood of responses based upon social desirability (Constant *et al.*, 1994). Therefore, in the current study, participants were asked to respond from a vignette characters' perspective, as if they were that person in that particular situation.

Secondly, in order to ensure that the language used in the vignettes was appropriately accessible and relevant to the population (Barter and Reynolds, 1999) the vignettes underwent readability tests using software available at http://www.read-able.com. Vignettes were adapted accordingly to ensure a reading age was achieved which was equivalent to the national average (See Appendix D for readability results).

2.3.1. *Reviewing and finalising the vignette content*

The vignettes were then reviewed by a panel which was comprised of four Clinical Psychologists with experience working in chronic pain, as well as a

person who experiences persistent pain. Panel members were asked to rate the face validity of the scenarios on a scale of one to ten and also provided spontaneous qualitative feedback. According to Paddam *et al.* (2010) "*vignettes with mean ratings above six and a standard deviation below three should be accepted as sufficiently valid*" (p. 67). The scores revealed that by this criteria vignettes three to six were sufficiently valid and these remained unchanged. However, vignettes one (1a) and two (2a) had mean scores below six and so were redrafted and re-rated by the same panel. The second drafts (1b and 2b) had final mean scores of 8.80 (SD: 0.84) and 7.40 (SD: 0.89) respectively. The ratings, means and standard deviations are depicted in table 1. The final vignettes are available in Appendix E.

Table 1: First and second draft vignette ratings, including mean and SD.

	Vignette	1a	2a	1b	2b	3	4	5	6
	CP1	4	4	8	7	8	7	8	8
	CP2	5	5	9	8	10	9	9	8
Rater	CP3	6	4	8	6	8	6	7	6
	CP4	8	9	10	8	10	9	10	9
	SU1	3	3	9	8	8	9	7	6
	M	5.20	5.00	8.80	7.40	8.80	8.00	8.20	7.40
	SD	*1.92*	*2.35*	*0.84*	*0.89*	*1.10*	*1.41*	*1.30*	*1.34*

CP = Clinical Psychologist; SU = Service User

2.3.2. *Establishing internal validity*

In the construction of the vignettes, steps have been taken as far as possible to establish internal validity within the vignettes, consistent with the recommendations set out by Gould (1996). These have included 1) drawing upon existing literature or case study material to develop each of the scenarios; 2) vetting by an expert panel whose members have sufficient knowledge and experience to judge their suitability; and 3) adequate

pretesting to extract items that are ambiguous or otherwise unsuitable.

2.4.   Capturing Responses to the Vignettes

Two methodologies were considered to capture participant response to the vignettes, firstly, predetermined response phrases with a Likert scale and secondly, the use of a talk-aloud methodology with open questions.

The first method of response collection considered was an extension of the data collection method employed by Leary and colleagues (2007). In this methodology participants are provided with predetermined items representing potential emotional, cognitive and behavioural responses to the vignette and asked to rate the intensity (in the case of emotion) and likelihood of the response (in the case of cognitive and behavioural reactions). Using a method where responses are predetermined has the advantage that data pertaining to the target variables will definitely be obtained and makes subsequent data entry and analysis relatively straightforward. However, in comparison to open-question data collection the method has lower content validity as, potentially, participants may not feel their personal response fits with any of the predetermined response choices.

The alternative method considered was the Articulated Thoughts in Simulated Situations (ATSS; Davison, Navarre, & Vogel, 1995), which is a talk-aloud methodology that accesses on-going cognitions in order to assess thoughts and emotional reactions to stimuli. To use this method, participants would be asked to describe out loud whatever is going through their mind in response to each scenario. This would be transcribed and then coded to establish cognitive and behavioural responses to unpleasant self-relevant events. This method has the

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advantage of higher content validity as responses are not forced choice, however, there are practical constraints as each respondent would require six transcripts and these would need to be coded, and there are potential problems with the validity of single-rater coding. The codes would then form part of a statistical analysis requiring a sufficient amount of participants (N = 60+) which would mean that 360 transcripts would be required overall. In addition, this method has the disadvantage of being unable to quantify responses in terms of likelihood and intensity. Thus, despite potentially higher content validity, the practical and methodological constraints of the ATSS method ruled out its use for the current study.

It was therefore concluded that the best method of response collection was to employ predetermined rating sheets. However, since open ended questioning has been shown be a valuable method in vignette studies (Hughes, 1998; Sheppard and Ryan, 2003; Sumrall and West, 1998), the study incorporated a short (>5 minute) priming discussion, following a similar format to the ATSS method, with the researcher, prior to participants rating their response to each vignette on affective, cognitive and behavioural variables.

2.4.1 Developing the response items

The response items were adapted from those employed by Leary and colleagues (2007). These were altered to incorporate the five categories of coping identified by Skinner *et al.* (2003): cognitive coping, problem solving, seeking support, distraction and escape/avoidance, It has been suggested that "*this taxonomy is useful for considering the nature of self-compassion as a coping strategy*" (Allen and Leary 2011, p109). Consideration was also given to the

chronic pain coping literature regarding the impact of negative cognition and

avoidance (Vlaeyen *et al.,* 2000; Crombez *et al.,* 2012) when selecting the final

items.

3. METHOD

3.1.   Design

An experimental vignette design was used to assess the influence of self-compassion on affective, cognitive and behavioural responses to unpleasant self-relevant events, which were manipulated across social context and pain relevance, in a sample of chronic pain patients.

3.2.   Population and Sample

The target population was adult chronic pain patients, aged 18 years and over. Chronic pain is defined for the purpose of this study as *"continuous, long-term pain of more than 12 weeks or after the time that healing would have been thought to have occurred in pain after trauma or surgery"* (British Pain Society, 2013). The proposed sample was adults with chronic pain recruited from the West Yorkshire area. The recruitment target was 60 to facilitate sufficient statistical power. Inclusion and exclusion criteria are outlined in table 2.

Table 2: Inclusion and exclusion criteria for the study

Inclusion Criteria:	Exclusion Criteria:
18 years and older (no upper age limit)	Alcohol and illicit drug use sufficient to impair performance during the research
Diagnosed with a chronic pain condition for three months or more.	Known learning disability
English speaking; with a level of language fluency sufficient to complete standardised measures and understand vignettes.	Currently actively experiencing an episode of psychosis.
Pain condition with a malignant origin	

3.3.   Recruitment

Participants were recruited from multidisciplinary pain clinics at the Bradford Teaching Hospitals NHS Foundation Trust and Mid Yorkshire Hospitals NHS Trust. Clients at the service who met the inclusion criteria were identified by health professionals working within the service, and were approached initially by those health professionals to seek permission for the researcher to contact them regarding their potential participation in the study. At this time, clients were provided with an information sheet describing the aims of the study, what they would be required to do should they participate, the limits of confidentiality, anonymity and the right to withdraw. This sheet also gave details of the researcher in order to afford them the opportunity to seek further information should they require this prior to giving their consent to be contacted. Clients were asked to complete a 'consent to be contacted form' if they were amenable to being contacted regarding participation in the research. For examples of the participant information sheet and consent to be contacted form please see appendices A and B.

After initial recruitment contact was established, contact details were securely emailed to the researcher using an encrypted server (NHS.net emails). Clients were then telephoned by the researcher to arrange a convenient date and time to carry out the study with them. At this time participants were given the opportunity to ask any questions about the written information previously given to them. Participants were reminded at this time of confidentiality limitations and data use and management and their right to withdraw and their right to decline to answer any questions. It was made clear that taking part was voluntary and that there would be no overt or covert consequences for non-

participation or withdrawing from the study.

After these discussions had taken place informed consent to participate was obtained verbally and this was followed up with a written information sheet and consent form on first face to face contact (for an example of the consent form used please see Appendix C). Participants were given the opportunity to take part in the research at their home, or, if preferred, an alternative venue within the hospital was made available.

In total, 96 participants provided consent to be contacted. Figure 3 depicts the attrition of participants associated with ability to contact, meeting inclusion/exclusion criteria and willingness to participate after discussing the study with the researcher.
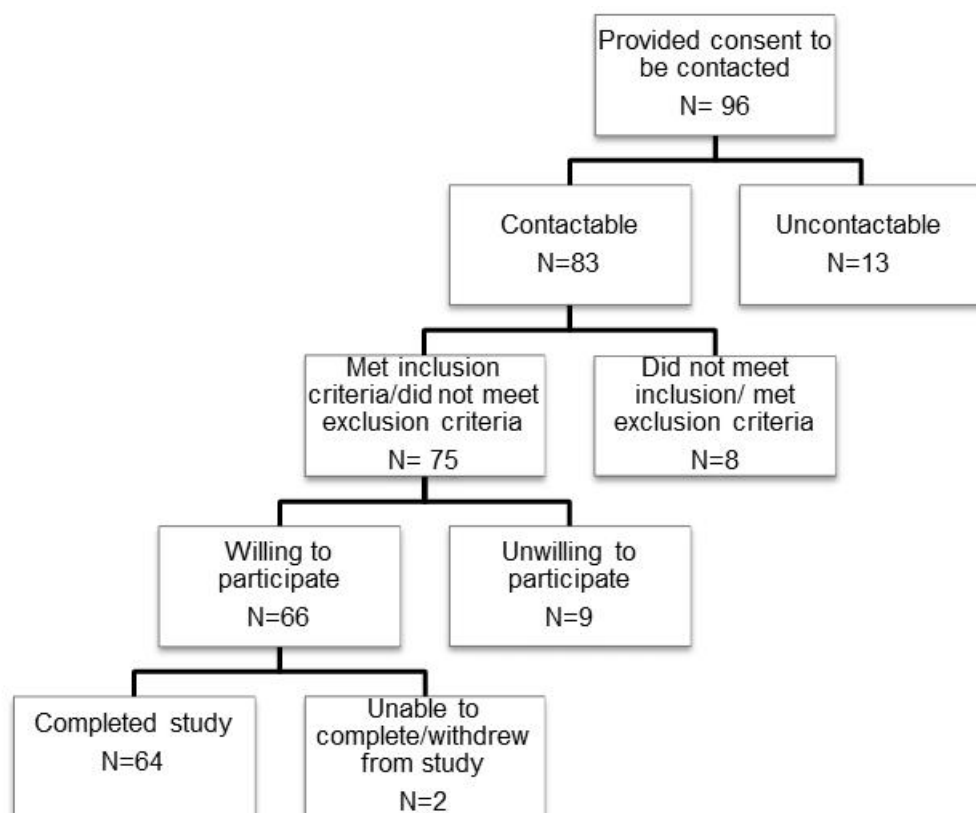
Figure 3: Participant attrition rates following consent to be contacted being granted.

3.4. Measures

The research incorporated measurement of demographic, pain-related and psychological factors and the measures used will be documented in the following section. Measures were chosen based on their reliability and previous use and validation in a chronic pain population.

3.4.1 Demographic information

The following demographic information was obtained from participants:

- Age
- Gender
- Ethnicity
- Marital/relationship status
- Occupational status
- Previous occupation

- Pain duration
- Age of onset of pain problem
- Diagnosis
- Previous pain treatment including psychological input

For an example of the demographic and pain-related questions used in the study please see appendices G and H, respectively.

3.4.2. Pain: Visual analogue ratings of pain

Visual analogue scales (VAS) were used to measure: pain at its highest intensity; pain at its lowest intensity, pain at its usual intensity, and pain at its current intensity (Wade, Dougherty, Archer, & Price, 1996). All judgements were made with reference to the past week. The VAS for pain will be anchored '0 = no sensation', '150 = most intense sensation imaginable' using a 150mm scale (Wade *et al*., 1996). Please see appendix I for an example of the VAS used in this study.

3.4.3. Social participation and functioning: The SRPQ

Social participation was assessed using the modified Social Role

Participation Questionnaire (SRPQ) (Davis *et al.*, 2009; Gignac *et al.*, 2008). This is a 42 item scale, which assesses three components of social role participation in each of eleven domains (work; education; intimate relationships; children/ stepchildren/ grandchildren; other family; community involvement; socializing; casual contact with others; travel; physical activity; and hobbies), plus one overall summary domain. The first component is role salience, which assesses the extent to which different roles are important to a person, irrespective of whether or not an individual is currently engaged in that role (e.g., the importance of employment was assessed even if a participant was not working). The second component is role limitations, in which participants were asked how difficult it is, given their present health status, to participate in each of the role domains. The third and final component is role satisfaction, in which questions assess extent to which participants are satisfied with their ability to participate in each of the applicable roles, in the ways they would like, in the context of the difficulties associated with their health condition. Because individuals may not engage in all roles, a mean role satisfaction score will only be calculated if participants respond to at least nine of the eleven domains, in accordance with the recommendations set out by Gignac *et al.*, (2008).

This measure was developed and validated for use with individuals experiencing chronic pain (Gignac *et al.*, 2008). Permission was granted by the author for the scale to be used in this study. Cronbach's alpha demonstrated an acceptable level of internal reliability for the three subscales of the SRPQ in this study (salience: $\alpha=.77$; difficulty: $\alpha=.64$; satisfaction: $\alpha=.71$). Please see appendix J for a copy of the SRPQ used in this study.

3.4.4. Self-Compassion: The Self Compassion Scale (SCS)

The SCS is a 26 item scale which assesses the six facets of self-compassion: self-kindness, common humanity, mindfulness, self-judgement, isolation and over-identification. The latter three (negative) aspects reverse coded. Responses are on a five point scale from "almost never" to "almost always." The scale has good predictive, convergent, and discriminant validity (Neff, 2003b) and has been shown to have good internal reliability when used with a pain population (α =.93-.95; Wren *et al*, 2012, Costa & Pinto-Gouveia, 2011). Permission was granted by the author for the scale to be used in this study. Cronbach's alpha demonstrated an acceptable level of internal reliability for SCS in this study (α=.91). Please see appendix K for a copy of the SCS.

3.4.5. Mood: The Depression, Anxiety and Positive Outlook Scale (DAPOS)

The DAPOS is an 11 item scale, designed to measure depression, anxiety and positive outlook in people who suffer from pain (Pincus, Williams, Vogel & Field, 2007). The DAPOS contains three subscales: Depression, Anxiety, and Positive Outlook. Each of these provides an independent score. There is no total score. The DAPOS was selected as it has been demonstrated to have good internal consistency and construct validity for use in a chronic pain population (Pincus, Rusu & Santos, 2008). Cronbach's alpha demonstrated an acceptable level of internal reliability for the three subscales of the DAPOS in this study (Depression: α=.88; Anxiety: α=.85; Positive Outlook: α=.74). Please see appendix L for a copy of the DAPOS.

3.5. Vignettes

The following will describe the methods by which the vignettes were administered and data collected in this study. Please see chapter two regarding the design, construction and decisions regarding method of response collection for the experimental vignettes in this study.

3.5.1. Summary of vignette content

Six experimentally manipulated vignettes were used in the study. Vignettes were manipulated across three social contexts: immediate family, peer and occupational domains (Hellström, 2007), and the hypothetical scenarios were either pain relevant, in the sense of pain playing a causal role in the difficulty being experienced, or self-, but not pain, relevant. Please see appendix E for the six vignette scenarios.

3.5.2. Vignette administration

Vignette administration and data collection was designed taking into account the considerations set out by Bradbury-Jones *et al* (2014). Participants were seen individually to respond to the vignettes in order to reduce any other focussed social desirability effects. In accordance with recommendations by Paddam *et al*., (2010), vignettes were given in a random order using a 6 x 6 latin square (Grant, 1948) to facilitate randomisation in order to prevent order effects. Participants were asked to read vignettes to reduce potential bias caused by having them read aloud by the researcher.

3.5.3. Vignette data collection

After reading each vignette (presented on separate cards) participants were asked about their response to the vignette, prompted to express what they

would be feeling, thinking and doing in this situation in a short discussion (< 5 minutes) with the researcher. This was designed to improve participant experience and also maximise participants' capacity to vividly imagine themselves in the scenario. This was incorporated in order to prime participants for the provision of an authentic response to the closed ended questions regarding the vignettes which followed. Participants were then provided with potential emotional, cognitive and behavioural responses to the vignette and asked to rate the intensity of each of four emotions (sadness, anxiety, anger, embarrassment) and likelihood of each of six responses (problem solving; support-seeking; distraction; avoidance; rumination; catastrophising). Please see appendix F for an example rating sheet.

3.6. Procedure

After participants had been contacted and agreed to take part in the study, the research followed a set progression for each participant, which is documented in Figure 4.

3.6.1. Debriefing

After all measures were completed, participants were debriefed regarding the study in both verbal and written form, this included the provision of support lines as standard. Participants were also asked if they would a summary of the results once the research project was concluded. As part of the debrief it was made clear to participants that they could withdraw at any time until the study deadline using the unique code which is on their debriefing information (please see Appendix M & N for end of study debrief letter and participant support information).

1	• Researcher introduced self and research
2	• Opportunity created to ask any further questions
3	• Written consent obtained
4	• Demographic details collected
5	• Pain rating scale administered
6	• Social Role Participation Questionnaire administered
7	• Self-Compassion Scale administered
8	• Depression, Anxiety and Positive Outlook Scale administered
9	• Vignettes carried out in pre-selected randomised order
10	• Participant debriefed and given the opportunity to request details of research outcomes

Figure 4: Research procedure.

3.7.   Ethical Considerations

The research was conducted in accordance with the standards set out by the

British Psychological Society (BPS, 2009). Approvals for the study were granted by

NHS research and ethics committee, Bradford Teaching Hospitals Foundation

Trust and Mid Yorkshire Hospitals Trust Research and Development departments.

Participants were provided with information regarding the study, in both

verbal and written form, and were given an opportunity to ask questions, to ensure

fully informed consent. Participants were informed of their right to withdraw and

their right to decline to answer any questions. It was made clear that study

participation was entirely voluntary and that there were no overt or covert

consequences for not taking, for example to the subsequent health care offered or

provided to them. Capacity to consent to the study was assessed, and any

participants deemed to lack capacity were not included in the study. A signed

consent form was sought from participants at the commencement of the study.

Participants were fully debriefed and information on the study's outcomes

was made available to participants.

In accordance with the Data Protection Act (1998) electronic data/information was stored in password protected files on a secure server. Participants were allocated an anonymised code upon entry to the study and this was used when data was inputted. No personally identifiable data was used. The researcher and research supervisor alone had access to the data. Any paperwork pertaining to the study was stored in a locked cabinet with access restricted to the researcher. These procedures ensured anonymity and confidentiality.

In terms of the potential psychological impact on participants, the situations depicted in the vignettes were designed to represent ordinary, everyday situations, and it was deemed unlikely that this would cause significant psychological distress for participants. In addition *"evidence suggests that vignettes provide protection for research participants by placing distance between their experience and that of the vignette character"* (Bradbury-Jones *et al.*, 2014 p. 1.). Since the sample was recruited from routine NHS patients, patients were instructed to discuss any concerns or psychological issues raised by the study with their health care provider in the first instance, and telephone support lines were routinely made available with the end of study debrief letter. Participation in this study was determined as being extremely unlikely to have any significant or lasting harmful effects on participants' psychological wellbeing.

3.8.   Analysis

Prior to commencing statistical analysis data checks were performed to ensure the data met assumptions for parametric tests. The following section documents these checks and goes on to describe the statistical analysis undertaken.

3.8.1. Data checks

After data entry, the data was proofread by eye against the original questionnaires. Any missing data was coded as such and the results were adjusted for the missing data. In this study, missing data accounted for less than five percent of the data for the vignette responses, self-compassion scale and DAPOS, which is within acceptable limits (Tabachnick and Fidell, 2007). However, a larger proportion of the data was missing for the SRPQ (10%; N=6). This is as a result of treating the SRPQ data in accordance with the recommendation set out by Gignac and collagues (2008) that participants who respond with a not applicable or miss more than three social roles should not have a total score calculated. Therefore independent T tests were calculated on all the dependent variables (SCS total and subscale, DAPOS subscales, summed vignette responses) with missing data versus completed data as the independent variable. The results showed no significant difference between the groups in any of the dependent variables. Therefore, in this study, missing data was omitted from all analyses using pairwise deletion.

3.8.1.1. Normality

The data was checked for outliers, and two extreme cases were identified. The dependent variables were checked for normality with these outliers included in the first instance. In this case, the following factors had adequate skewness and kurtosis scores (-1.0 to +1.0): vignette responses including summed anxiousness, summed embarrassment, summed problem-solving, summed social support-seeking, summed distraction, summed avoidance and summed rumination. All SRPQ subscales, all DAPOS subscales, as well as the SCS and all SCS subscales also had adequate skewness and kurtosis scores. However, summed sadness did not meet normality assumptions, with a skewness value of -1.44 and a kurtosis value of 2.65,

nor did summed anger with a a skewness value of -1.21 and a kurtosis value of 1.47. Summed catastrophising also had an inadequate kurtosis value of -1.21. After removing the two outlier cases the distribution of all the dependent variables fell within the normal limits of skewness and kurtosis.

3.8.2. *Analysis progression*

The analysis proceeded in four stages. First, descriptive statistics were performed to ascertain an understanding of patient demographics and pain experience and to document the mean scores on each of the instruments employed.

Secondly, correlations were undertaken to assess the inter-relationships between these factors. In addition the responses to the vignettes were summed and correlations performed between the demographic and psychological measures and these responses.

Thirdly, the main analysis on the vignette responses was performed using repeated measures analysis of covariance, with self-compassion employed as a continuous between subjects factor, and there were two within subjects factors: levels of pain relevance (pain versus non-pain relevant) and social context (family, peer and occupational). These were ordered to reflect the potential degree of social evaluation from smallest to largest social arena. Delaney and Maxwell (1981) describe a potential limitation of the use of MANCOVA and ANCOVA in that the main effects can be obscured. They recommend mean centring the covariate prior to running the ANCOVA in order to eliminate the change in the main effect. Self-compassion was accordingly centred prior to carrying out any of the ANCOVA analyses. Assumption testing was also

performed for the MANCOVA and ANCOVAs following the guidance set out in Tabachnick & Fidell (2007) and corrections applied where the data did not meet sphericity assumptions. For the affective responses to unpleasant self-relevant events a MANCOVA was performed and Pillai's trace was reported for each of the main and interaction effects. For each of the coping responses separate ANCOVAs were performed. As the between subjects factor (self-compassion) was continuous, correlations were performed to ascertain the direction of effect where self-compassion had a significant effect on participant response.

Fourthly, linear regressions were performed to establish the relationship between self-compassion and social role satisfaction, difficulty and importance, and lastly forward regression was used to explore whether the responses participants gave in relation to unpleasant self-relevant events were related to their social role satisfaction, importance or difficulty overall.

4. RESULTS

4.1. Sample Profile

Sixty-two participants were included in the final analysis. The mean age of participants was 47 years and participants ranged from 22 to 69 years of age. The sample had a proportionally higher representation of female (75.8%, n=47), white (81.6%; n=50), married (43.2%; n=27), and unemployed (56.5%; n=35) participants. Table 3 illustrates the complete participant demographics across gender, age, ethnicity, relationship status and employment.

Table 3: Participant demographics

Demographic	Participants (n = 62)
Gender	
Male, n (%)	15 (24.2)
Female, n (%)	47 (75.8)
Age	
Mean age, years (SD)	47 (11.61)
Age range, years	22 – 69
Ethnicity	
White, n (%)	51 (81.6)
Black, n (%)	1 (1.6)
Asian, n (%)	9 (14.4)
Mixed white and Asian	1 (1.6)
Relationship status	
Single, n (%)	14 (22.4)
Married n (%)	27 (43.2)
In a relationship, n (%)	10 (16.0)
Divorced, separated or widowed, n (%)	24 (38.4)
Employment status	
Employed, n (%)	16 (25.8)
Unemployed, n (%)	35 (56.5)
Retired, n (%)	9 (14.5)
Missing, n (%)	2 (3.2)

4.1.1. Pain factors

Table 4 documents descriptive statistics regarding participants' experience

of chronic pain in terms of pain duration and intensity. The data suggests a wide

range of pain experience, in terms of current pain intensity, pain duration and age

of pain onset.

Table 4: Participant pain-related variables.

	N	Mean	SD	Minimum	Maximum
Pain duration (years)	61	13.88	*12.62*	1.00	53.00
Age of pain onset (years)	60	33.17	*13.22*	8.00	63.00
Highest intensity of pain (%)	62	76.37	*16.78*	20.00	100.00
Lowest intensity of pain (%)	62	37.82	*23.12*	1.00	98.00
Typical intensity of pain (%)	62	58.24	*20.41*	1.00	100.00
Current intensity of pain (%)	62	57.63	*24.92*	1.00	100.00

4.1.2. Descriptive statistics

The sample means and standard deviations for scores on the Self-

Compassion Scale (SCS) and the Depression, Anxiety and Positive Outlook Scale

(DAPOS) are documented in table 5.

Table 5: Descriptive statistics for the SCS, DAPOS and SRPQ.

Measure (scale range)	n	Mean	SD
Self-compassion scale	62		
SCS total scale (0-30)		15.24	*3.79*
Self-Kindness subscale (0-5)		2.36	*0.75*
Self-Judgement subscale (0-5)		2.38	*0.96*
Common Humanity subscale (0-5)		2.74	*0.99*
Isolation subscale (0-5)		2.43	*0.91*
Mindfulness subscale (0-5)		2.81	*0.80*
Over-identification subscale (0-5)		2.51	*0.96*
Depression Anxiety and Positive Outlook Scale	59		
Depression (0-25)		14.87	*5.57*
Anxiety (0-15)		9.18	*3.48*
Positive Outlook (0-15)		8.68	*3.42*
Social Role Participation Questionnaire	62		
Role Salience (0-60)		44.49	*7.81*
Role difficulty (0-48)		30.19	*5.44*
Role satisfaction (0-60)		20.61	*6.73*

4.2. The Influence of Context and Self-Compassion on Participant Responses to Unpleasant Self-Relevant Events

The following sections will explore the influence of self-compassion as well as contextual factors on participant responses to experimentally manipulated vignettes in which unpleasant self-relevant events were depicted, which were either pain or non-pain relevant and varied across three social contexts.

4.2.1. The influence of context and self-compassion on affective responses to unpleasant self-relevant events.

Table 6 illustrates the MANCOVA results regarding affective responses to unpleasant self-relevant events. This table shows the between-subject effect of self-compassion, the within-subjects effects of social context and pain relevance, and the interactions between the two within-subjects variables (social and pain context), as well as the interactions between these within-subjects variables and self-compassion, on predicted intensity of negative affect in response to unpleasant self-relevant events overall. The results will each be explored in more depth in the following section, together with the results of the univariate analysis for each of the negative emotions (sadness, anxiety, anger and embarrassment).

Table 6: The results of a MANCOVA to investigate the influence of context and self-compassion on affective responses to unpleasant self-relevant events

	F	df	Sig.	η^2_p
Centred self-compassion scale	6.63	4, 55	<.001	.33
Social context	5.82	8, 51	<.001	.48
Pain context	6.39	4, 55	<.001	.32
Social context x pain context interaction	3.87	8, 51	.001	.38
Pain context x self-compassion interaction	0.22	4, 55	NS	.02
Social context x pain context x self-compassion interaction	1.67	8, 51	NS	.21
Social context x self-compassion interaction	1.49	8, 51	NS	.19

In terms of the within-subjects variables, context had a significant effect on affective response to unpleasant self-relevant events. First, there was a statistically significant effect of pain context. Pairwise comparisons revealed that unpleasant, self-relevant events which were pain relevant (i.e. triggered by or associated with pain) provoked a significantly stronger affective response (sadness: p<.001; anger: p<.001; anxiety: p=.007; embarrassment: p=.017) than did non-pain relevant events. Secondly, the social context in which the event occurred also had a statistically significant effect. The mean scores suggested that occupational context was associated with the highest intensity of negative affect across all four emotions (sadness, anxiety, anger, and embarrassment), followed by family and then peer context.

Figure 5 depicts the interactions between pain relevance and social context on reported affect across anxiety, anger and embarrassment.
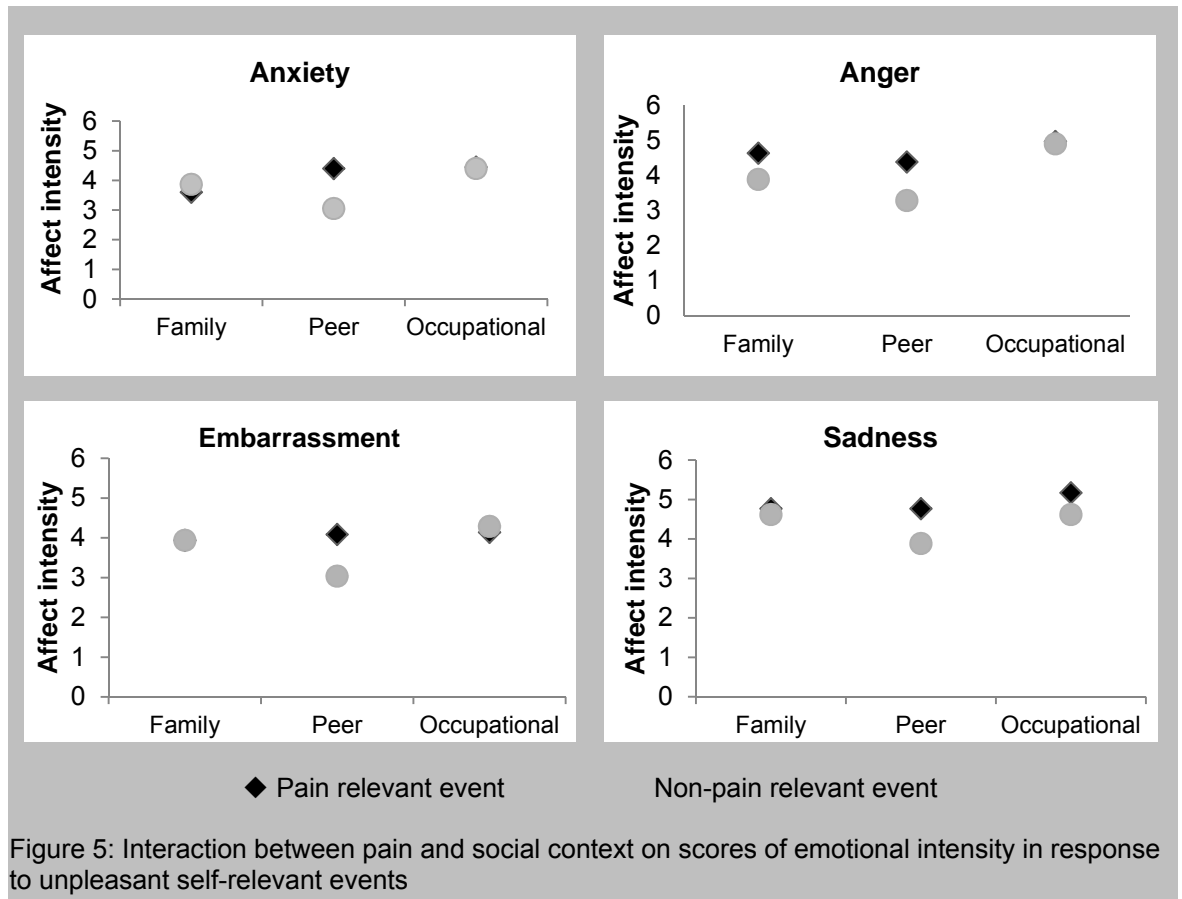
Figure 5: Interaction between pain and social context on scores of emotional intensity in response to unpleasant self-relevant events

Analysis revealed a significant interaction between the two contextual factors, in negative affect overall, and in three of the four emotions individually. The plots suggest pain relevance of events is more influential on levels of negative affect in peer contexts than in family or occupational contexts.

Regarding the between-subjects variable, analysis revealed a statistically significant effect of self-compassion on the intensity of affect that participants predicted in response to unpleasant self-relevant events. In addition, univariate tests on each of the negative emotions showed that self-compassion had a statistically significant effect on intensity of sadness ($F(1, 58) = 11.15$, $p = .001$, $\eta^2_p = .16$), anxiety ($F(1, 158) = 19.21$, $p = .001$, $\eta^2_p = .25$) anger ($F(1, 58) = 15.10$, $p < .001$, $\eta^2_p = .21$) and embarrassment ($F(1, 58) = 21.72$, $p < .001$, $\eta^2_p = .27$). Correlation indicated that participants with higher levels of self-compassion reported they would experience lower intensities of each of these four emotions in response to unpleasant self-relevant events (sadness: $r(55)=-.39$, $p=.003$; anxiety: $r(55)=-.50$; $p<.001$; anger: $r(55)=-.46$, $p<.001$; embarrassment: $r(55)=-.51$, $p<.001$).

Both the multivariate and the univariate analyses found no significant interaction between pain context and self-compassion, social context and self-compassion, or pain by social context by self-compassion either, suggesting that the attenuating influence of self-compassion on negative affect in response to unpleasant self-relevant events was consistent across social and pain contexts.

4.2.2. *The influence of self-compassion and contextual factors on coping responses to unpleasant self-relevant events.*

The following sections will document the influence of self-compassion and contextual factors on six possible responses to unpleasant self-relevant events:

rumination; catastrophic thinking; avoidance; distraction; problem solving; and

support-seeking.

4.2.2.1. The influence of self-compassion and context on rumination.

Table 7 provides a summary of the results of the repeated measures

ANCOVA regarding the influence of self-compassion and context on the reported

likelihood of rumination in response to unpleasant self-relevant events.

Table 7: Results of an ANCOVA to examine the influence of self-compassion and context on likelihood of rumination in response to unpleasant self-relevant events.

	F	df	Sig.	η^2_p
Centred self-compassion scale	11.45	1, 57	.001	.17
Pain context	15.54	1, 57	>0.001	.21
Social context	20.61	2, 114	>0.001	.27
Social context x pain context interaction	2.40	2, 114	NS	.04
Pain context x self-compassion interaction	5.63	1, 57	.02	.09
Social context x self-compassion interaction	2.28	2. 114	NS	.04
Social context x pain context x self-compassion interaction	0.67	2, 56	NS	.01

In terms of the influence of context, both pain and social contexts

significantly influenced the reported likelihood of rumination in response to

unpleasant self-relevant events. Mean scores showed that the reported likelihood

of rumination was higher in response to pain-related events (M=4.10) as compared

to non-pain-related events (M= 3.63). In terms of social context, mean scores

showed that reported likelihood of rumination was highest in response to events

occurring in an occupational context. Pairwise comparisons showed that there was

a significant difference in likelihood of rumination between occupational versus

family (M=4.63; M=3.52, respectively; p<.001) and occupational versus peer

contexts (M=4.63; M=3.44, respectively; p<.001). There was no significant

interaction between pain and social context.

Analysis also revealed a significant effect of self-compassion on likelihood of rumination in response to unpleasant self-relevant events. Correlations suggested that participants with high self-compassion reported themselves as less likely to ruminate ($r(57)=-.39$, $p=.002$). There was also a significant interaction effect between pain and self-compassion. The plotted means suggest that participants with higher self-compassion scores appeared more influenced by the pain relevance of events in terms of their likelihood of rumination than did participants with lower self-compassion, who reported a higher and more consistent likelihood of rumination overall (see figure 6).

Figure 6: The influence of self-compassion and pain relevance on the reported likelihood of rumination in response to unpleasant self-relevant events

There were no significant interaction effects between social context and self-compassion, and there was no significant three-way interaction between pain, social context and self-compassion.

4.2.2.2. The influence of self-compassion and context on catastrophic thinking.

Table 8 provides a summary of the results of the repeated measures ANCOVA regarding the influence of self-compassion and context on the reported likelihood of catastrophic thinking in response to unpleasant self-relevant events.

Table 8: Results of an ANCOVA to examine the influence of self-compassion and context on likelihood of catastrophic thinking in response to unpleasant self-relevant events.

	F	df	Sig.	η^2_p
Centred self-compassion scale	24.53	1, 57	<.001	.30
Pain context	16.85	1, 57	.001	.17
Social context	21.04	2, 114	<.001	.27
Social context x pain context interaction	2.24	2, 114	NS	.04
Pain context x self-compassion interaction	1.53	1, 57	NS	.02
Social context x self-compassion interaction	1.08	2, 114	NS	.02
Social context x pain context x self-compassion interaction	3.21	2, 114	.044	.05

Both pain and social contexts significantly influenced reported likelihood of catastrophic thinking. Pairwise comparisons showed that participants reported the highest likelihood of catastrophic thinking in response to pain-related events (M=3.55) as compared to non-pain-related events (M=3.12, p=.001). In terms of social context, mean scores revealed that the highest likelihood of catastrophic thinking was reported in occupational contexts. Pairwise comparisons showed that the reported likelihood of catastrophic thinking was significantly higher in occupational contexts (M= 4.06) than in family (M=3.19, p<.001) or peer contexts (M=2.76, p<.001). Likelihood of catastrophic thinking was also significantly higher in family compared to peer contexts (p=.014). There was no significant interaction between pain and social context.

The likelihood of catastrophic thinking in response to unpleasant self-relevant events was also significantly influenced by level of self-compassion.

Correlation showed that participants with higher levels of self-compassion reported lower likelihood of catastrophic thinking (r(57)=-.55, p<000).

There was no significant interaction between social context and self-compassion or pain context and self-compassion. However, there was a statistically significant three-way interaction between pain, social context and self-compassion. When plotted, it appears that the likelihood of catastrophizing reported by those lower in self-compassion is influenced by pain and social contexts to a greater degree (see figure 7). Specifically, there appears to be a particularly strong influence of pain relevance in a peer context on likelihood of catastrophic thinking in participants with low self-compassion, whereas the likelihood is reported as being more similar in both family and occupational contexts. In contrast, there is a lower amount of differentiation generally between pain and non-pain relevance in participants with high self-compassion.

Figure 7. The influences of self-compassion, social context and pain relevance on the reported likelihood of catastrophic thinking in response to unpleasant self-relevant events.

4.2.2.3. The influence of self-compassion on the reported likelihood of avoidance.
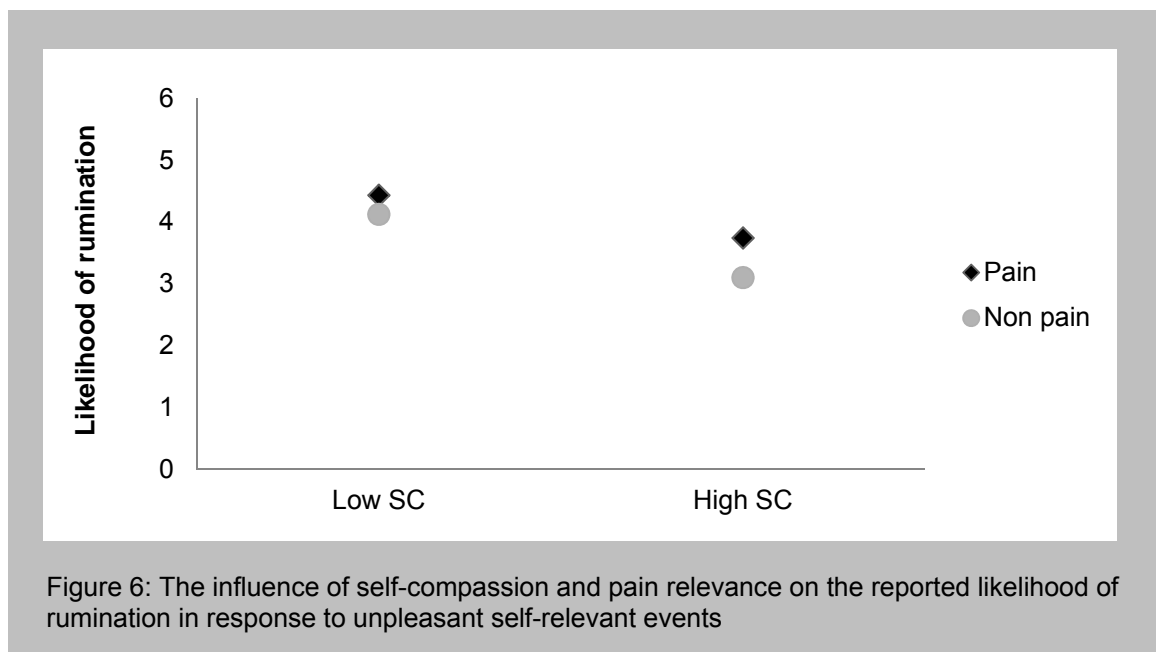
Table 9 provides a summary of the results of the repeated measures ANCOVA regarding the influence of self-compassion and context on the reported likelihood of avoidance in response to unpleasant self-relevant events.

Table 9: Results of an ANCOVA to examine the influence of self-compassion and context on likelihood of avoidance in response to unpleasant self-relevant events.

	F	df	Sig.	η^2_p
Centred self-compassion scale	9.34	1, 58	.003	.14
Pain context	10.22	1, 58	.002	.15
Social context	36.92	2, 116	<.001	.39
Social context x pain context interaction	4.39	2, 116	.01	.07
Pain context x self-compassion interaction	1.03	1, 58	NS	.02
Social context x self-compassion interaction	.56	2, 116	NS	.01
Social context x pain context x self-compassion interaction	.52	2, 116	NS	.01

Both pain and social context had a statistically significant effect on reported likelihood of avoidance. Pairwise comparisons showed that pain relevant situations were associated with significantly higher reported likelihood of avoidance (M=2.22) in comparison to non-pain-related situations (M=1.77). In terms of social context, pairwise comparisons showed that participants reported the highest likelihood of avoidance in response to events occurring in an occupational context (M=3.10) followed by family (M=1.74) and peer context (M=1.15).

There was also a significant interaction between pain and social context in reported likelihood of avoidance in response to unpleasant self-relevant events. Figure 8 shows the interaction effect between pain and social context on reported likelihood of avoidance. The plot suggests that pain relevance is much more influential in a family context, whereby participants are more likely to report a higher likelihood of avoidance than in a non-pain context, in contrast, in the occupational and peer domains very similar rates of avoidance

were reported across pain context.

Figure 8: Interaction between pain and social context on scores of likelihood of avoidance in response to unpleasant self-relevant events.
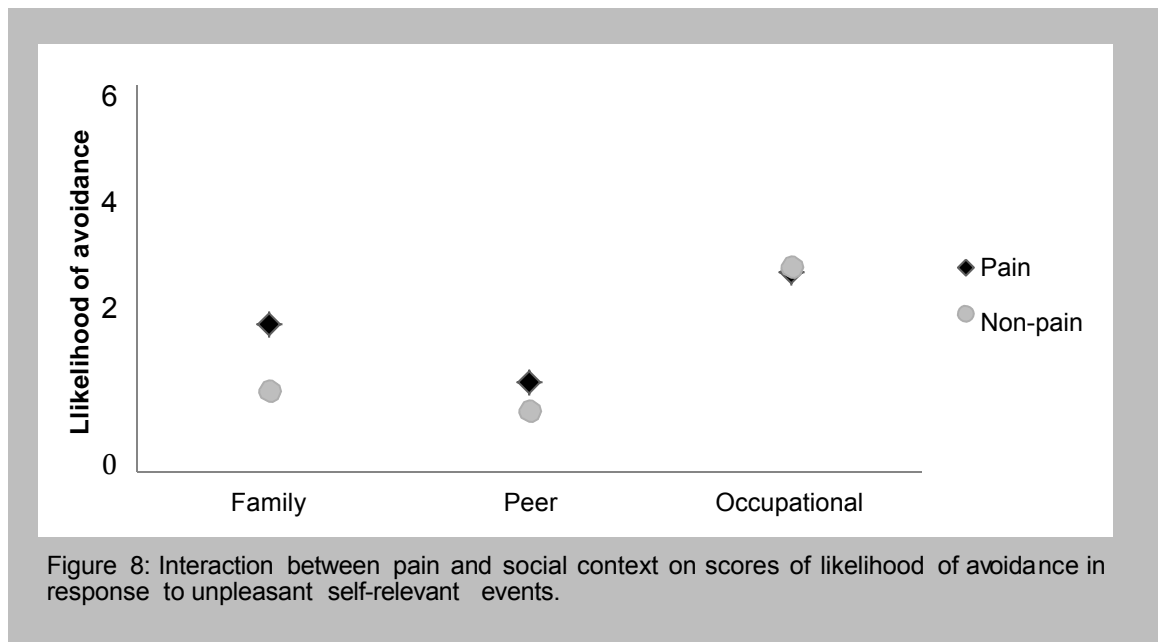
There was a significant effect of self-compassion on avoidance. Correlation suggested that higher self-compassion scores are associated with a lower reported likelihood of avoidance in response to unpleasant self-relevant events ($r(58)=-.35$, $p=.006$). The effect of self-compassion on avoidance was consistent across pain and social contexts. There was no significant interaction between pain and self-compassion, social context and self-compassion and the three-way interaction between pain, social context and self-compassion was also not significant

4.2.2.4. The influence of self-compassion on the reported likelihood of distraction.

Table 10 provides a summary of the results of the repeated measures ANCOVA regarding the influence of self-compassion and context on the reported likelihood of distraction in response to unpleasant self-relevant events.

Table 10: Results of an ANCOVA to examine the influence of self-compassion and context on likelihood of the use of distraction in response to unpleasant self-relevant events.
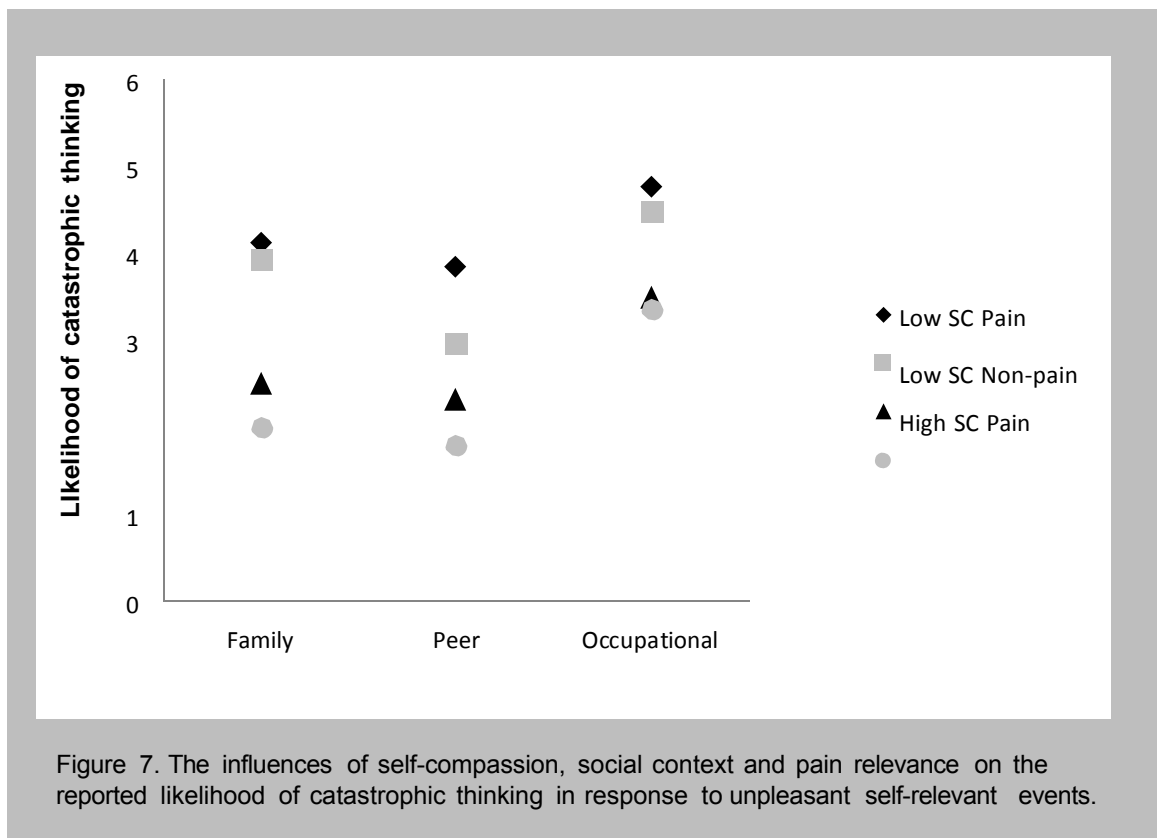
	df	F	Sig.	η^2_p
Centred self-compassion scale	1,58	.66	NS	.01
Pain context	1,58	.20	NS	.00
Social context	2, 116	5.49	.005	.09
Social context x pain context interaction	2, 116	.90	NS	.02
Pain context x self-compassion interaction	1,58	.68	NS	.01
Social context x self-compassion interaction	2, 116	2.26	NS	.04
Social context x pain context x self-compassion interaction	2, 116	.35	NS	.01

There was a significant effect of social context on reported likelihood of distraction in response to unpleasant self-relevant events. Mean scores showed that participants reported the highest likelihood of distraction in response to events occurring in occupational contexts (M=2.68) followed by family (2.17) then peer contexts (M=2.09). Pairwise comparisons showed a significantly higher likelihood of distraction in an occupational context than in a peer related context (p=.009).

There was no effect of pain context and no significant interaction between social and pain contexts on reported likelihood of using distraction as strategy in response to unpleasant self-relevant events. The likelihood of using distraction as a response to unpleasant self-relevant events was also not significantly influenced by a person's level of self-compassion and there were also no significant interaction effects between pain and self-compassion or social context and self-compassion. Three-way interaction between pain, social context and self-compassion was also not statistically significant.

4.2.2.5. The influence of self-compassion and context on the use of problem solving.

Table 11 provides a summary of the results of the repeated measures ANCOVA regarding the influence of self-compassion and context on the reported likelihood of problem solving in response to unpleasant self-relevant events.

Table 11: Results of an ANCOVA to examine the influence of self-compassion and context on likelihood of problem solving in response to unpleasant self-relevant events.

	df	F	Sig.	η^2_p
Centred self-compassion scale	1,58	.41	NS	.01
Pain context	1,58	27.60	<.001	.32
Social context	2, 116	2.62	NS	.04
Social context x pain context interaction	2, 116	1.16	NS	.02
Pain context x self-compassion interaction	1,58	1.00	NS	.02
Social context x self-compassion interaction	2, 116	2.12	NS	.04
Social context x pain context x self-compassion interaction	2, 116	.27	NS	.00

In terms of the influence of context, there was a statistically significant effect of pain context on the reported likelihood of problem solving, and pairwise comparisons suggest that participants reported a significantly higher likelihood of using problem solving as a strategy in response to non-pain relevant events (p<.001; M=4.99) in comparison to pain relevant events (M=4.32). Social context did not significantly affect the likelihood of the use of problem solving as a strategy. There was also no significant interaction between pain and social context in reported likelihood of problem solving.

Analysis revealed that self-compassion was not significantly influential on participants' likelihood of using problem solving as a coping strategy in response to unpleasant self-relevant events. There was no significant interaction between pain and self-compassion or social context and self-compassion and the three-way interaction between pain, social context and self-compassion was also not

significant.

4.2.2.6. The influence of self-compassion and context on support-seeking.

Table 12 provides a summary of the results of the repeated measures ANCOVA regarding the influence of self-compassion and context on the reported likelihood of support-seeking in response to unpleasant self-relevant events.

Table 12: Results of an ANCOVA to examine the influence of self-compassion and context on likelihood of support seeking in response to unpleasant self-relevant events.

	df	F	Sig.	η^2_p
Centred self-compassion scale	1,58	2.77	NS	.05
Pain context	1,58	.00	NS	.00
Social context	2, 116	37.97	<.001	.40
Social context x pain context interaction	2, 116	1.21	NS	.02
Pain context x self-compassion interaction	1,58	.01	NS	.00
Social context x self-compassion interaction	2, 116	.28	NS	.00
Social context x pain context x self-compassion interaction	2, 116	1.60	NS	.03

There was a significant effect of social context on reported likelihood of support-seeking and mean scores showed that participants reported the highest likelihood of support-seeking in response to events occurring in an occupational context (M=4.40), and pairwise comparisons revealed that they were significantly more likely to do so in an occupational context than in a peer (M=3.49; p<.001) or family context (M=2.30, p<.001). There was also a significant difference in the likelihood of seeking social support between peer and family contexts (p<.001). There was also no significant effect of pain context and no significant interaction between social and pain contexts on reported likelihood of seeking support in response to unpleasant self-relevant events.

Self-compassion also had no significant effect on the reported likelihood of support-seeking and there were no significant interaction effects between pain and self-compassion, social context and self-compassion and no significant three-way interaction between pain by social context by self-compassion.

4.2.3   Summary of the influence of self-compassion and contextual factors on responses to unpleasant self-relevant events.

Table 13 provides a summary of the analyses of the vignette ratings. This shows a pattern of results whereby both self-compassion and contextual factors are influential, with minimal instances of interaction between self-compassion and contextual variables.

Table 13: Summary of the MANCOVA and ANCOVA findings regarding affective and coping responses to unpleasant self-relevant events.

	Self-compassion	Pain	Social	Pain x social	Social x self-compassion	Pain x self-compassion	Social x pain x self-compassion
Negative affect	◆	◆	◆	◆			
Sadness	◆	◆	◆				
Anxiety	◆	◆	◆	◆			
Anger	◆	◆	◆	◆			
Embarrassment	◆	◆	◆	◆			
Coping responses							
Rumination	◆	◆	◆			◆	
Catastrophising	◆	◆	◆				◆
Avoidance	◆	◆	◆	◆			
Distraction			◆				
Support seeking			◆				
Problem solving		◆					

The analyses demonstrated that self-compassion has a significant effect on intensity of affect in response to unpleasant self-relevant events, whereby higher self-compassion scores are associated with lower predicted intensity of negative affect, across four emotions: sadness, anxiety, anger and embarrassment. The effect

of self-compassion on affect was consistent across social context and was unaffected by whether events were pain or non-pain relevant.

Participants higher in self-compassion also reported significantly lower likelihood of avoidance, rumination or catastrophic thinking. The influence of self-compassion on both rumination and catastrophic thinking appeared to be influenced by context, there was a greater differentiation in likelihood of rumination between pain contexts for participants with high self-compassion compared to a more consistent and higher effect seen for those with low self-compassion, and a greater differentiation in catastrophic thinking between pain contexts for participants with low self-compassion compared to those with high self-compassion.

Pain context was also highly influential whereby participants reported higher negative affect, more avoidance, rumination and catastrophic thinking and less problem solving in response to unpleasant pain-relevant situations as compared to non-pain relevant situations.

In addition, there was a significant effect of social context on many of the responses to unpleasant self-relevant events. It appeared that unpleasant self-relevant events occurring in an occupational context provoked the highest intensity of negative affect, and had the highest ratings of rumination, catastrophic thinking, avoidance, distraction and support-seeking.

Pain and social context interacted to influence affect and avoidance, whereby larger differences in affect intensity were predicted to occur between pain and non-pain relevant events in a peer context than in either a family or occupational context. In addition, a greater difference was reported in likelihood of avoidance between pain and non-pain relevant events in a family context than

in either a peer or occupational context.

4.3.   Significant Inter-relationships

Table 14 outlines the significant inter-relationships between the participants'

scores on the Self-Compassion Scale, Depression, Anxiety and Positive Outlook

Scale, the Social Role Participation Questionnaire, ratings on the Visual Analogue

Pain Scale as well as reported pain duration, age of pain onset and participant age.

There was a strong, negative correlation between participants' level of

self-compassion and their level of depression($r(57)=.70$, $p<.001$) and anxiety

($r(58)=.52$ $p<.001$). Participants with higher self-compassion also reported

greater satisfaction in their social participation, with a moderately strong,

statistically significant correlation shown between these two variables($r(54)=.35$,

$p=.009$). In addition, it also appeared that participants who were older when they

first experienced chronic pain had higher levels of self-compassion ($r(57)=.42$,

$p=.002$), although there was no significant relationship between self-compassion

and age overall ($r(57)=.24$, $p>.05$). There was also a weak, though statistically

significant, negative correlation between pain duration, whereby people who had

experienced chronic pain for a shorter number of years had higher self-

compassion ($r(57)=-.28$, $p=.03$).

There were significant correlations between the psychological measures

and responses to the vignettes. Consistent with the findings of the MANCOVA and

ANCOVA, self-compassion was significantly negatively correlated with sadness

($r(58)=.37$, $p=.003$), anxiety ($r(58)=-.48$, $p<.001$), anger ($r(58)=-.46$, $<.001$),

embarrassment ($r(58)=-.52$, $<.001$), avoidance ($r(58)=-.33$, $p=.009$), rumination

($r(58)=-.37$, $p=.004$) and catastrophising ($r(58)=-.52$, $p<.001$).

Table 14: Significant correlations (r) between scores on the SCS, DAPOS, SRPQ, vignette responses, pain and demographic factors.

| | Measures | | | | | | | | Pain and demographic factors | | | | | |
| | SCS | DAPOS | | | | SRPQ | | | | | Pain intensity | | | |
	SCS	D	A	PO	RI	RD	RS	Age	Pain duration (yrs)	Age of onset	Highest	Lowest	Typical	Current
SCS														
Total SCS scale									-.28*	.42**				
DAPOS														
Depression	-.70**								.30*	-.38**		.31*	.31*	.26*
Anxiety	-.52**	.59**											.31*	
Positive Outlook		.52**	.48**											
SRPQ														
Role Importance				.32*										
Role Difficulty			.36**								.32*	.36**	.39**	
Role Satisfaction	.35**	-.29*	-.28*			-.59**						-.32*		
Vignette responses														
Sadness	-.37**	.35**	.28*											
Anxiety	-.48**	.49**	.45**											
Anger	-.46**	.39**	.34**								.31*	.25*	.27*	
Embarrassment	-.52**	.59**	.53**			.38**	-.27*						.32*	
Problem Solving				.28*										
Support seeking							.33*							
Distraction														
Avoidance	-.33**	.33*				.34**								
Rumination	-.37**	.44**	.39**	.33*										
Catastrophising	-.52**	.58**	.47**	.39**		.28*				-.28*				

* sig <.05; ** sig <.001

SCS = Self-Compassion Scale; D = Depression; A = Anxiety; PO = Positive Outlook
RI = Role Importance; RD = Role Difficulty; RS = Role Satisfaction

Depression and anxiety, as measured on the DAPOS, also correlated significantly with intensity of sadness (depression: r(57)=.35, p=.006; anxiety: r(58)=.28, p=.029), anxiety (depression: r(57)=.49, p<.001; anxiety: r(58)=.45, p<.001), anger (depression: r(57)=.39, p=.002; anxiety: r(58)=.34, p=.007), and embarrassment (depression: r(57)=.59, p=.002; anxiety: r(58)=.53, p<.001) in response to unpleasant self-relevant events. Depression and anxiety were also significantly positively correlated with the likelihood of rumination (depression: r(57)=.44, p<.001; anxiety: r(58)=.39, p=.002) and catastrophising (depression: r(57)=.58, p<.001; anxiety: r(57)=.47, p<.001). There was also a significant positive correlation between depression and likelihood of avoidance(r(57)=.33, p=.011). Positive outlook correlated highly with likelihood of problem solving(r(58)=.28, p=.029), rumination (r(57)=-.33, p=.010) and catastrophising (r(57)=-.39, p=.002).

With regards to the relationship between social role functioning and vignette responses the following responses were significantly correlated with reported role difficulty: intensity of embarrassment, (r(55)=.38, p=.004) likelihood of avoidance (r(55)=.34, p=.009) and catastrophising (r(54)=.28, p=.036). Intensity of embarrassment (r(55)=-.27, p=.040) and likelihood of support-seeking (r(55)=.33, p=.012) in response to unpleasant self-relevant events were significantly correlated with social role satisfaction (negatively and positively correlated, respectively).

Regarding the relationship between pain and response to unpleasant self-relevant events, there were weak but significant correlations between pain intensity and anger (highest: r(60)=.31, p=.014; lowest (r(55)=.25, p=.046; typical: r(60)=.27, p=.035), and typical pain intensity and embarrassment (r(60)=.32,

p=.011). There was also a weak but significant correlation between age of pain onset and embarrassment (r(58)=.30, p=.021) and catastrophising (r(57)=.28, p=.033) in response to unpleasant self-relevant events.

4.4. Social Participation, Self-Compassion and Chronic Pain

The following section will explore the relationships found between self-compassion and social role participation.

4.4.1. Role satisfaction

The mean score for total role satisfaction was 20.61 (SD: 6.73). Overall mean scores for satisfaction were low and across all social roles, participants were the most likely to report that they were not at all satisfied with their social participation. The area of social participation in which participants were the least satisfied was physical leisure (M: 1.34, SD: 0.54). However participants were more satisfied with ability to fulfil roles as parents and grandparents (M: 2.58, SD: 1.40), family members (M: 2.39, SD: 1.17) and partners (M: 2.35, SD: 1.52). Figure 9 shows the rates of social role satisfaction, together with the mean scores.

There was a moderate positive correlation between lowest level of pain and role salience (r (57) =.32, p=.016). However, there was no relationship with any other pain-related factor (highest, typical or current level of pain, pain duration or age of pain onset) and role salience.

Participants with higher self-compassion scores were significantly more likely to report higher rates of satisfaction in their social participation. Linear regression showed that self-compassion accounted for 13.6% of the variance

(R2=.14, F(1,55)=8.48, p=.005). Correlations on individual role areas showed that self-compassion was particularly associated with satisfaction in social roles which involved social contact with peers and relationships outside of a family context, (casual contact: r (57)= .36, *p* = .004; social events: r (57) = .40, *p* =.002) as well as travel (satisfaction with ability to travel: r (57)= .26, *p* = .045). There was also a strong negative correlation between the level of difficulty a person has in taking part in social activities and the degree of satisfaction they have in their social participation overall (r (57) =-.59, p<.001).

4.4.2. *Role difficulty*

The mean score for total role difficulty was 30.19 (SD 5.44). The frequencies revealed that overall, participants were the most likely to report having 'a lot of difficulty' in all aspects of social participation, with the exception of casual contact (phone calls, emails etc.) in which the majority reported having 'some difficulty'. Figure 10 shows the rates of social role difficulty, together with the mean scores.

No significant relationship was found between self-compassion and social role difficulty. However, social role difficulty was also found to have a significant, positive, moderate strength correlation with participants' levels of anxiety as measured on the DAPOS. There were also moderate, statistically significant, positive correlations between pain intensity and level of difficulty, whereby higher levels of pain were associated with higher reported level of difficulty participating in social roles and activities across reported typical intensity (*r*(57) = .39, *p* =.003) , highest intensity (*r*(57) = .32, *p* =.01), and lowest intensity(*r*(57) = .36, *p* <=.005.). Neither pain duration nor age of pain onset correlated significantly with role difficulty.

	M	SD
Physical Leisure	1.34	0.54
Work	1.67	0.97
All	1.48	0.72
School	1.50	1.22
Travel	1.65	0.89
Hobbies	1.69	0.89
Social events	1.77	0.86
Community/religious	1.96	1.11
Close relationship	2.35	1.52
Casual contact	2.32	1.14
Other family	2.39	1.17
Children	2.58	1.40

Degree of satisfaction (%)

■Not at all satisfied ◱A little satisfied ▨Somewhat satisfied ▤Very satisfied ▨Extremely satisfied

Figure 9: Proportionate representation of social role satisfaction by role area.

	M	SD
Work	3.35	0.78
Physical Leisure	3.28	0.80
School	2.42	1.72
Travel	3.04	0.74
Hobbies	2.82	0.76
Community/religious	2.82	1.16
Social events	2.83	0.72
All	2.89	0.58
Close relationship	2.73	1.10
Children	2.69	0.92
Casual contact	2.28	0.94
Other family	2.69	0.81

Degree of difficulty (%)

▱No difficulty ▨Some difficulty ▨A lot of difficulty ■Unable to do

Figure 10: Proportionate representation of social role difficulty by role area.

	M	SD
School	1.92	1.31
Community/religious	2.74	1.30
Casual contact	3.69	1.07
Hobbies	3.87	1.02
Physical Leisure	3.67	1.30
Social events	3.98	1.02
Work	3.60	1.51
Travel	4.15	0.97
All	4.37	0.69
Other family	4.21	1.11
Close relationship	4.34	1.01
Children	4.38	1.25

Degree of importance (%)

■Not at all important ◱A little important ▨Somewhat important ▤Very important ▨Extremely important

Figure 11: Proportionate representation of social role importance by role area.

4.4.3. Role importance

The mean score for total role importance was 44.49 (*7.81*). Figure 11 shows the rates of social role importance, together with mean role importance scores. Neither self-compassion nor pain-related factors had a significant influence on participants' perceptions of role importance. However, there was a significant, positive correlation between participants having a positive outlook as measured on the DAPOS and their perception of role importance.

4.4.4. The Relationship between Social Role Participation and Responses to Unpleasant Self-Relevant Events

Forward regression was used to explore whether the responses participants gave in relation to unpleasant self-relevant events depicted in vignettes were related to their social role satisfaction, importance or difficulty overall. The results showed that both intensity of embarrassment and support-seeking in response to unpleasant self-relevant events were related to social role satisfaction ($R2=.25$, $F(1,54)=8.70$, $p=.001$) and accounted for 25.1% of the variance, whereby lower levels of embarrassment, and higher levels of support-seeking behaviour predicted higher social role satisfaction. Social role difficulty was also significantly predicted by level of embarrassment in response to unpleasant self-relevant events, whereby higher levels of embarrassment predicted higher reported levels of difficulty ($R2=.18$, $F(1,54)=12.12$, $p=.001$). Embarrassment in response to unpleasant self-relevant events accounted for 18.6% of the variance in reported social role difficulty. No significant relationship was found between responses to unpleasant self-relevant events and perceived social role importance.

5. DISCUSSION

This study set out to examine whether trait self-compassion influenced social functioning and participation in a chronic pain population, and to document chronic pain patients' global social participation and functioning. The main focus of the research was the potential for self-compassion to influence affective, cognitive and behavioural responses to unpleasant self-relevant events occurring in a social context. An experimental vignette design was used in which events were manipulated across social context and pain relevance. Participants reported their perceptions of what their responses would be to these hypothetical scenarios, in terms of how strongly they thought they would respond affectively and how likely they thought they would be to utilise a range of coping responses in connection with each of the six scenarios. The results reported are therefore reflective of chronic pain patients' *perceptions* of their responses to adversity in a social context only, and do not provide specific evidence of responses to real life circumstances.

5.1. Main Findings

5.1.1. *The influence of self-compassion on affective responses to unpleasant self-relevant events*

The results demonstrated that people with higher levels of self-compassion reported they would experience significantly lower levels of negative affect in response to unpleasant self-relevant events. This effect occurred across sadness, anxiety, anger and embarrassment. Moreover self-compassion was consistently influential on responses, regardless of whether the event was depicted as being pain relevant (such as pain disabling a person's

capacity to perform occupational tasks) or non-pain relevant (such as being unable to perform at work due to poor personal organisation). It is particularly striking that the effect of self-compassion is maintained across pain versus non-pain context given the high attentional demands and interruptive function of pain, together with the additional stigma and threats to social standing often associated with chronic pain (Charmaz, 1983; Gatzounis *et al.*, 2014; Smith & Osborn, 2007). In addition, the results suggest that the effect of self-compassion on affect was also consistent across social contexts despite the likely variation in social and personal significance across the three contexts depicted (Dandeneau *et al.,* 2007; Grunewald *et al.*, 2004).

Overall the results are indicative of a robust and consistent attenuating effect of self-compassion on negative affect in response to difficult social situations. These findings are consistent with previous studies which have shown that self-compassion attenuates affective responses to distressing social situations and negative events in non-clinical populations (Brown & Ryan, 2003; Leary *et al.*, 2007) and is associated with lower levels of negative affect (including low mood/depression and anger) in response to physical health problems (Terry *et al.*, 2010, cited in Terry and Leary, 2010), and in a chronic pain population (Wren *et al.*, 2012).

5.1.2. *The influence of self-compassion on coping responses to unpleasant self-relevant events*

In terms of behavioural coping responses, the results demonstrated that people higher in self-compassion reported a lower likelihood of avoidance in response to unpleasant self-relevant events. As with negative affect, this effect was consistent regardless of social context or pain relevance. Previous studies

have shown that people higher in self-compassion are less avoidant in response to failure in both clinical (Krieger *et al.*, 2012) and non-clinical samples (Neff *et al.*, 2005).

With regards to cognitive coping responses, self-compassion significantly attenuated the reported likelihood of rumination and catastrophising in response to unpleasant self-relevant events. This is consistent with studies reporting an absence of, or reduction in negative cognitive processes associated with higher self-compassion in both the general population (Leary *et al.*, 2007; Raes, 2010; Samaia and Farahani, 2011; Wasylkiw *et al.*, 2012), clinical populations (Ferreira *et al.*, 2013; Krieger *et al.*, 2012;) and in studies looking at the effects of induced self-compassion (Gilbert & Procter, 2006; Leary *et al.*, 2007; Neff & Germer, 2013; Neff *et al.*, 2007) and suggests that the influence of self-compassion is equally beneficial within a chronic pain population.

The findings suggest that trait self-compassion universally attenuates negative affect and decreases maladaptive coping in response to unpleasant self-relevant events for people experiencing chronic pain, regardless of which social context the event occurs in, and whether pain is causal in the unpleasant event or not. Since the literature suggests that pain particularly captures attention and interrupts social functioning, the fact that self-compassion can be equally effective in a pain context is particularly notable (Eccleston & Crombez, 1999). However, the interaction effect found between self-compassion and context on likelihood of both catastrophic thinking and rumination were exceptions to the findings that the influence of self-compassion is consistent across context. These findings are not only inconsistent with the general pattern of results, they are

also not consistent with one another. Whilst both concern the likelihood of maladaptive cognitive response, one result suggests greater differentiation in likelihood of rumination between pain contexts for participants with *high* self-compassion, and the other result suggests greater differentiation in catastrophic thinking between pain contexts for participants with *low* self-compassion. These results also both had relatively small effect sizes. The inconsistency in these interaction effects renders it difficult to interpret their likely cause. It may therefore be of benefit to consider further research to look in more detail at the relationship between chronic pain, self-compassion and cognitive processes occurring in across social contexts in order to establish whether this is a replicable result and if so, consider the processes underpinning these differences.

The results showed that self-compassion was not linked to support-seeking, distraction or problem solving in response to unpleasant self-relevant events. Previous research has suggested that people high in self-compassion report greater feelings of social connectedness and relationship satisfaction (Baker & McNulty, 2011; Neff & McGehee, 2011) and this has been described by some as suggesting an increased likelihood for support-seeking in those with high self-compassion (Allen and Leary, 2010). However, despite the potential theoretical connection between self-compassion and support-seeking previous studies have also found no evidence to suggest that self-compassion is associated with seeking emotional support from other people in the face of difficulty or failure (Leary *et al.*, 2007; Neff *et al.*, 2005) and the findings of the present study concur with this.

In terms of the use of distraction as a coping mechanism, one previous

study has found evidence for its use by individuals with higher levels of self-compassion in response to negative events (Leary *et al.*, 2007). However, the previous evidence is scant, and our study does not provide support for a link between self-compassion and the use of distraction in response to adversity. It is possible that this is due to the mindfulness component of self-compassion, whereby individuals who are higher in self-compassion neither over-focus on, nor attempt to avoid, difficult experiences through mechanisms such as distraction (Neff, 2003a).

With regards to the use of problem solving, the research evidence for the influence of self-compassion on the use of problem solving is mixed, with some studies finding that higher self-compassion predicts motivation and action to correct interpersonal mistakes (Baker & McNulty, 2010; Breines & Chen, 2012) and others reporting no relationship between self-compassion and problem-focused strategies (Leary *et al* 2007; Neff *et al.*, 2005). The results of this study are in support of the latter.

5.1.3. *The influence of pain relevance of events on affect and coping responses*

The pain relevance of events had a significant and robust effect on participants' responses. Vignettes in which pain was depicted as interfering with participants' ability to fulfil a social contract had a much stronger influence on participants affect than did situations linked to intrapersonal factors which were not overtly linked to pain. Participants also reported a significantly higher likelihood of rumination, catastrophic thinking and avoidance and lower likelihood of employing problem solving strategies in response to events which were depicted as pain-relevant. There are a number of potential factors which

may have contributed to the relatively stronger reported response to pain-relevant as compared to non-pain relevant events depicted in the vignettes. First, the degree of perceived threat which is associated with pain is likely to have been high, and potentially higher, than that occurring for non-pain relevant events. This is consistent with research which suggests that pain in particular has the capacity to capture attention in a way which supersedes non-pain-related activities (Gatzounis *et al.*, 2014) and can lead to increased pain-related avoidance, catastrophising and ultimately increased functional disability (Crombez *et al.*, 2012). Secondly, the literature suggests the incorporation of a "self with pain" into one's identity and this is described as being associated with significant internalised stigma and shame (Charmaz, 1983; Smith & Osborn, 2007) and the imagined experience of pain causing the negation of a social contract might therefore cause participants to predict higher rates of distress in comparison with non-pain-related intrapersonal factors.

5.1.4. *The influence of the social context on affect and coping responses*

Social context was also influential on participants' predicted responses to unpleasant self-relevant events. Events which were depicted in an occupational context provoked highest intensity of negative affect, and had the highest ratings of likelihood of rumination, catastrophic thinking, avoidance, distraction and support-seeking. In connection with this, the results also showed that occupational social roles had the highest level of reported difficulty and one of the lowest rates of role satisfaction. This is consistent with findings that social context is an influential factor regarding the degree of distress experienced, as well as the likelihood of maladaptive coping strategies, in response to negative

events in a chronic pain population (Charmaz, 1983; Hadjistavropoulos *et al*, 2011; Osborn & Smith, 1998). The implications of failure in an occupational context may be perceived as significantly more severe, since they pose the largest threat to social image and standing, as well as financial security (Dandeneau *et al.,* 2007; Grunewald *et al.*, 2004). This combination of social and financial threat appears to be particularly pertinent to people with chronic health conditions. For example, McClelland (1987) posited a link between chronic health conditions and susceptibility to stress in situations occurring in contexts in which power or status is threatened. In addition, there is evidence to suggest that the magnitude of *"public mortification"* influences the degree of distress associated with socially discrediting encounters for people experiencing chronic health conditions (Charmaz, 1983, p.181).

Considering the combined influence of pain relevance and social context, it was found that there was a larger discrepancy in affect intensity between pain and non-pain relevant events depicted in a peer context than in events depicted in family or occupational contexts. In addition, participants were more likely to report a higher likelihood of avoidance in response to a pain relevant event occurring in a family context than to a non-pain relevant event. In contrast, in the occupational and peer domains very similar rates of avoidance were reported regardless of whether the event was pain relevant, although likelihood of avoidance was lower overall in a family context than an occupational one. There is no clear indication in the literature as to why these interaction effects may have occurred. Further research would be required to establish the mechanisms by which pain and social context may interact to influence responses to

unpleasant self-relevant events

5.1.5. *Resilience to unpleasant self-relevant events and overall social functioning*

With respect to social participation more generally, the study also found links between participants' reported reactions to hypothetical social events and their real life social participation. Participants who reported that they would seek support after an unpleasant self-relevant event occurred also reported higher rates of social role satisfaction. It is possible that people who are generally more satisfied socially feel this way because their relationships are closer or more supportive, which would better enable support-seeking in times of difficulty (Pierce, Sarason, Sarason, Joseph, & Henderson, 1996).

Self-conscious emotion also played a significant role. Participants who reported higher rates of embarrassment in response to unpleasant self-relevant events had lower rates of social role satisfaction and reported higher rates of difficulty in participating in social roles. The experience of embarrassment implies a cognitive evaluation against a personal, social or cultural standard and the perception of personal responsibility or failing against that particular standard (Lewis, 2000). It has been suggested that embarrassment "*incapacitates persons for continued role performance*" (Gross & Stone, 1964, p. 1; see also de Hooge, Zeelenberg & Breugelmans, 2011). It is therefore possible that those participants who predicted higher rates of embarrassment in response to socially difficult events may experience an additional degree of interpersonal difficulty in their interactions. This in turn may make them feel less satisfied in their capacity to fulfil social roles and perceive their participation in them as more difficult.

These findings are also connected with self-compassion, since the results showed that higher levels of self-compassion were also associated with higher rates of social role satisfaction as well as lower intensity of embarrassment in response to unpleasant self-relevant events. It is plausible that the non-evaluative feelings of self-worth associated with self-compassion (Neff, 2003a) allow individuals who are higher in self-compassion to hold less perfectionistic or unattainable standards in the face of chronic pain. Holding more realistic standards for oneself may in turn reduce embarrassment and enhance social satisfaction. This would be consistent with previous studies that have shown that self-compassion is positively associated with relationship satisfaction (Baker & McNulty, 2011) and negatively associated with loneliness (Akin, 2010) and perceived pain disability (Wren *et al.*, 2012). It has been suggested that, within the construct of self-compassion the active ingredient in reported differences in social experience, between those high and low in self-compassion, is the facet of common humanity. This aspect of self-compassion specifically emphasises social connectedness. Chronic pain is often a socially isolating experience (Cudney *et al.*, 2002; Hallberg & Carlsson, 2000; Geuskens *et al.*, 2007; Katz, 1995; Katz & Yelin, 2001; Liedberg & Henriksson, 2002; Mengshoel & Heggen, 2004; Mustafa *et al.,* 2012; Ozgül *et al.*, 2006; Söderberg & Lundman, 2001; Ward *et al.*, 2008) and thus the capacity to retain a sense that one is connected to others, and not alone in pain may have increased participants' ability to feel satisfied in their social participation generally.

People with higher level of self-compassion did not report less difficulty or perceive social roles as more important. Moreover, self-compassion also did not

influence participant's perception of pain intensity. This is consistent with research which has suggested that self-compassion does not influence peoples' perception of difficulty (Leary *et al*, 2007) or pain (Wren *et al*, 2012) but rather influences their responses to adversity (Neff, 2003).

It was also demonstrated that participants who had experienced pain for a lower number of years and where chronic pain pain had onset at an older age reported higher self-compassion. Age itself was not correlated with self-compassion which is in contrast to the findings of Wren and colleagues (2012). It is possible, given this finding that self-compassion may erode as chronic pain progresses over the years, however, the relationship between pain duration and self-compassion was weak in this study and further research would be needed to further clarify and conclusively establish whether pain progression has an impact on self-compassion.

5.2.   Alternative Explanations for the Findings

The following section will consider any alternative mechanisms which may underpin the findings.

The first potential alternative explanation is that the findings are associated primarily with levels of depression and anxiety because there were significant correlations between self-compassion, depression and anxiety as well as between depression and anxiety and the vignette responses. There are two potential flaws in this explanation. Firstly, since the measure used to assess depression predominantly employs items which depict self-critical and self-blaming cognitions, the high correlation could be explained by cross-item contamination since these are also items which would load highly when

measuring self-compassion (Nicholls, Licht & Pearl, 1982; Sanson, Prior & Kyrios, 1990). Secondly, the finding of a strong association between self-compassion and depression is consistent with previous research. However, this research is also suggestive of an attenuating influence of self-compassion on levels of depression and anxiety, mediated through lowered levels of depressive rumination, which is suggestive of a primary effect of self-compassion rather than vice versa (Raes, 2010).

The second potential alternative account of the findings would be through the effects of social desirability. Social desirability may have inflated participants likelihood of reporting positive coping strategies and/or underreport levels of negative affect or maladaptive coping. However, it is unlikely that this would have led to a differentiation, either within groups in terms of context specific differences, or between groups in terms of differences associated with levels of self-compassion.

The third possibility is that the findings are associated with a biased sample. However, comparing the patient demographics in this study with the national pain audit suggests that the sample was consistent with that found in pain services more generally in terms of age and gender (The National Pain Audit, 2012). Moreover, the levels of self-compassion found in the study are similar to that reported in other chronic pain populations (Costa & Pinto-Gouveia, 2011).

The final alternative explanation is that the results are associated with statistical artefact or error. However, the effects found for self-compassion and context were large sized and robust. In addition, sufficient power was

demonstrated for the analyses using *a priori* power calculation, suggesting the type 1 error is unlikely to explain the findings.

5.3. Limitations of the Study

With regards to the use of vignettes, there were three potential limitations in this study. Firstly, the potential for *"disjunctures between the actual experiences of research respondents and the vignette characters"* (Hughes & Huby, 2002, p.384), may have limited reliability and generalisability. In addition, no formal ratings of face validity were sought from participants. However, in informal discussions regarding the research participants reported high face validity. In addition steps were taken to ensure validity of the vignettes through clinician and patient ratings prior to commencing the research.

Secondly, the limited generalisability associated with the use of vignettes is important. Vignettes provide limited contextual factors and therefore limit the possibility of exploring real life complexities which may influence affective cognitive and behavioural responses. It is important to hold this in mind, when considering the results of this study. Additionally, as participants were asked to predict their emotional, cognitive and behavioural responses in relation to hypothetical scenarios rather than report any actual responses the results should only be interpreted to imply the potential likelihood of such responses in real life circumstances for patients with chronic pain. Whilst this study suggests responses to unpleasant pain- and self-relevant events are significantly influenced by self-compassion in a chronic pain population, this cannot be definitively generalised to real life circumstances.

Lastly, social desirability bias may have influenced participants' responses

to both the vignettes and questionnaires, since all measures used were self-report (Crowne & Marlowe, 1964). Social desirability bias has been reported as influencing some participant responses to vignettes (Miles, 1990) and this may have impeded participants from reporting likelihood of coping strategies which are recognised as maladaptive, such as avoidance, or conversely caused them to report an increased likelihood of strategies perceived to be more adaptive, such as problem solving. Strategies were employed to minimise this bias, including using character names in the vignettes to provide a level of externalisation, and asking participants to complete the vignette ratings independently rather than reporting them verbally to the researcher. Nonetheless, the potential that social desirability may have biased responses must be taken into account when generalising these findings to a wider chronic pain population. Future studies considering the relationships between self-compassion, social functioning and chronic pain may benefit from the inclusion of direct observations chronic pain patients' social behaviour and responses.

5.4. Implications of the Findings

This study was the first to experimentally examine the influence of self-compassion on affect specifically in response to negative events in a chronic pain population. Since high arousal of negative emotions can trigger, maintain, or exacerbate pain and are associated with poorer adjustment to pain overall (Keefe *et al.*, 2001; Lumley *et al.*, 2011), the potential for self-compassion to positively influence emotion regulation in response to negative events in a chronic pain population has significant implications for potential improvements in psychological wellbeing and adjustment. These are further supported in the

findings that self-compassion also reduces maladaptive coping. For example, avoidant responses to pain have been postulated as central to pain-related functional and social disability (Asmundson, Norton, & Jacobson, 1996; Crombez *et al.*, 2012; Vlaeyen & Linton 2000). The results of this study provides further support for the notion that self-compassion reduces avoidant coping strategies, and provides evidence to suggest that self-compassion can consistently attenuate this maladaptive coping strategy in response to unpleasant, pain and self-relevant events occurring across social contexts in a chronic pain population.

Similarly, negative cognitive styles are acknowledged to have a detrimental impact on pain-related coping and adjustment (Banks and Kerns, 1996; Eccleston and Crombez, 1999; Gil, Williams, Keefe, & Beckham, 1990; Lumley *et al.*, 2011) and the results of this study suggest self-compassion may be one mechanism by which the likelihood of maladaptive cognitions in response to unpleasant self, and pain relevant events can be significantly reduced in a chronic pain population.

Taken together, the implied reduction in negative affect and maladaptive coping suggested by this study potentially has significant implications for the social functioning, adjustment and psychological wellbeing of chronic pain patients. The findings are indicative of the need for further research into the generation, or enhancement, of self-compassion in a chronic pain population, given the potential benefits. Moreover, the fact that trait self-compassion was found not only to be associated with less maladaptive coping (such as rumination, catastrophising and avoidance) and lower negative affect, but was

also associated with higher rates of social role satisfaction, provides further evidence for self-compassion's role in resilience. These findings suggest that self-compassion may be an influential factor in maintaining positive psychological and social wellbeing and reducing functional disability in people experiencing chronic pain.

Third wave interventions such as ACT (McCracken, 2011) and mindfulness based interventions (Kabat-Zinn, 1985), which share a similar foundation in eastern philosophies and utilise mindfulness as a basis, have shown promise in terms of reduction in distress, adjustment and pain-related disability (Grossman *et al.*, 2007; Morone *et al.*, 2008; Pradhan *et al* 2007; Sagula & Rice, 2004; Veehof *et al.*, 2011; Vowles &Thomson, 2011). To date, however, there have not been any published studies documenting the effects of a compassion focussed intervention in a chronic pain population, although Carson and colleagues (2005) documented the effects of loving kindness meditation and the results were promising in terms of pain experience and pain adjustment factors. The results of this study suggest that the provision of compassion focussed therapeutic interventions as a means to improve adjustment and enhance coping in a chronic pain population, such as those described by Gilbert (2006) and Neff and Germer (2013) may be of benefit. Moreover, the findings suggest that compassion focussed interventions may be particular benefit for individuals experiencing high levels of negative affect or employing maladaptive coping strategies in response to intra- and interpersonal difficulties.

5.5. Recommendations for Future Research

Self-compassion appears to influence chronic pain patients' responses consistently across unpleasant self-relevant events, regardless of the social context or pain relevance of the event. This implies that self-compassion may attenuate negative affect and maladaptive coping in response to both chronic pain and general life stressors. Given these potential positive benefits, research is indicated to establish whether self-compassion can be generated, or increased, in chronic pain patients who lack this capacity. This would need to determine the mechanisms by which compassion can be reliably fostered such that it can be sustained. Should it be possible to reliably and sustainably generate or increase self-compassion in a chronic pain population, the research impetus would then fall to ascertaining whether the benefits indicated by the present study can be replicated in terms of resilience and coping with the social difficulties which are so often associated with chronic pain.

This research also provides early indications that self-compassion may not only impede maladaptive responses to social difficulty, but may also enhance positive cognitive construction of social participation in a chronic pain population. Further research is indicated to delineate the processes by which self-compassion positively influences social role satisfaction, both for this patient group and in general.

5.6. Conclusions

This study set out to examine whether self-compassion was influential on chronic pain patients' responses to unpleasant self-relevant events through the use of a vignette methodology. The main findings suggest that self-compassion

attenuates negative affect, as well as likelihood of rumination, catastrophising and avoidance in response to unpleasant self-relevant events. Both social context and pain relevance also influenced responses, whereby events in which pain caused the negation of a social contract, and events occurring in an occupational context were associated with stronger affective responses and a higher likelihood of maladaptive coping. Despite these robust context effects, the attenuating influence of self-compassion on both affective responses and likelihood of avoidance was consistent across pain relevance and social context.

Whilst the findings of this study are promising, it must be noted that these responses were predicted responses only, and whilst the literature suggests that vignette responses are typically consistent with real life responses, it cannot be considered conclusive proof that participants would have responded in the ways that they predicted. Nonetheless, there were also reported differences in terms of self-compassion being associated with higher "real life" social role satisfaction.

The findings are indicative of a universal influence of self-compassion in terms of its capacity to foster resilience to both inter- and intrapersonal difficulty, not only in terms of context, but also in terms of population group. Moreover, they suggest that self-compassion warrants further investigation in the chronic pain population both with regards to the extent of its influence as a trait, and in terms of the potential to foster self-compassion in a chronic pain population, with a view to its therapeutic utility in enhancing psychological wellbeing, adjustment and resilience.

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7. APPENDICES

Appendix A: Participant information sheet

Participant information

Study title: Self-compassion, social functioning and chronic pain

Lead researcher: Fiona Purdie

What is the study about?
Living with pain can have a knock on effect on people's social lives and relationships. This study aims to find out about how people think and feel when they experience difficult social situations, and what part pain plays in this.

This study is important because it could help us to better understand the barriers to social participation for people with chronic pain. It could also support new ways of helping people to get over these barriers.

What will I be asked to do?
If you decide to take part, the researcher (Fiona Purdie) will either visit you at home or you can have an appointment at the hospital. You will be asked to read six very short stories which are about social situations, and talk about how you might respond if you were in that situation. This will be audio recorded. You will also be asked to fill out some questionnaires. It is likely to take around an hour and should take no more than an hour and a half to complete. You will only need to be seen once.

Do I have to take part?
No, your participation is entirely voluntary. If you decide not to take part this will not affect your health care in anyway. You can also decide to withdraw from the study at any time which will also not affect your health care in any way.

Will the information I give in the study be kept confidential?
Yes. Only members of the research team will have access to it. The only exception to confidentiality is if you disclose criminal activity, or something which constituted a serious risk to yourself or another person. In this case the researcher would have a responsibility to contact the appropriate professionals.

What will happen to the results of the research study?
You are welcome to have a summary of the results once the study is completed. The results from this study will be also available in one or more of the following sources; scientific papers in peer reviewed academic journals; presentations at conferences; local seminars. No personally identifiable data will be used in any publication of the research.

If you are happy to take part,
please complete the attached consent form

Appendix B: Consent to be contacted form

Consent to be contacted form

Thank you for taking the time to read the information.

If you have any questions about the research before you decide whether to take part, please feel free to contact the researcher, Fiona Purdie, using the contact details below:

Email: umfpu@leeds.ac.uk

Address:
Fiona Purdie
c/o **Programme in Clinical Psychology**
Leeds Institute of Health Sciences
Charles Thackrah Building
Clarendon Road
Leeds
LS2 9LJ

Otherwise, please complete the information below:

I have read the information sheet and **I am happy for the researcher to talk with me** about taking part in the study.

Name   ……………………………………………………………………

Telephone number……………………………………………………………………

Signature   ……………………………………………………………………

Date completed   ……………………………………………………………………

Appendix C: Consent form

UNIVERSITY OF LEEDS

Leeds Institute of Health Sciences
Faculty of Medicine and Health
Charles Thackrah Building
101 Clarendon Road
Leeds
LS2 9LJ

Patient Identification Number:

CONSENT FORM

Title of Project: **Self Compassion, Social Functioning and Chronic Pain**
Name of Researcher: **Fiona Purdie**

Please initial all boxes

I confirm that I have read and understand the information sheet dated 24.07.13 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.	
I understand that relevant sections of my medical notes and data collected during the study, may be looked at by individuals from University of Leeds from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.	
I agree to my GP being informed of my participation in the study.	
I agree that my responses to the vignettes may be recorded, and that anonymised verbatim quotations may be used in subsequent publication from this study.	
I give permission for my individualised results from the questionnaires to be provided to me.	
I give permission for my results to be used in subsequent publication of the study in an anonymised form.	
I agree to take part in the above study.	

_____   _____   _____
Name of Participant   Date   Signature

_____   _____   _____
Name of Person   Date   Signature
taking consent.

Appendix D: Readability Test results of the Vignettes

The Readability Test Tool

Readability Test Results

Reading age:	9 to 10 years
Grade level:	4

Readability Indices

Flesh Kincaid Reading Ease:	97.3
Flesh Kincaid Grade Level:	2.4
Gunning Fog Score:	5
SMOG Index:	3
Coleman Liau Index:	6.6
Automated Readability Index:	1.9

Text Statistics

No of sentences:	45
No of words:	486
No of complex words:	8
Percent of complex words	1.65%
Average words per sentence:	10.80
Average syllables per word:	1.16

Appendix E: Vignette structure and content

Shared factor	Socially unpleasant event					
Context	Friends		Family		Occupational	
Pain/Non pain relevant	Pain	Non-pain	Pain	Non-pain	Pain	Non-pain
Vignette #	1	2	3	4	5	6
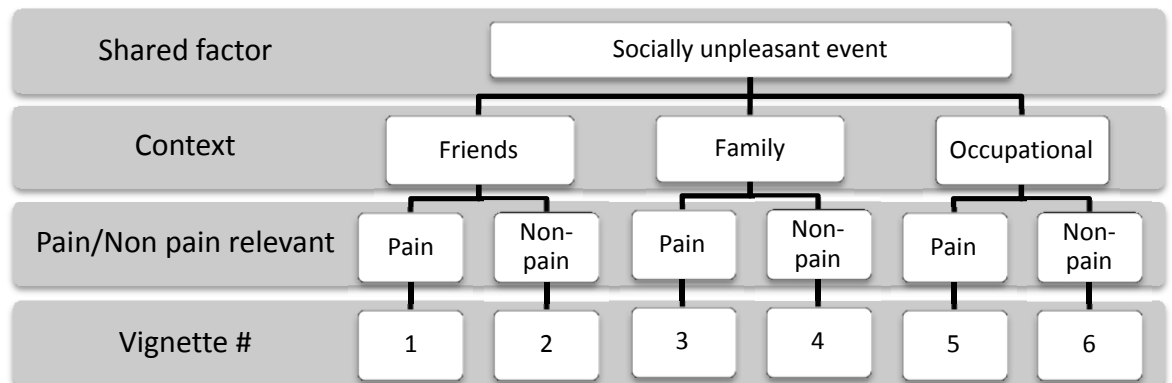
1. Sue has agreed to go to an important event with her friend Mandy. Mandy has been a big support to Sue over the past months. Mandy is very nervous about the event and wants Sue to come along and support her. But, as Sue is getting ready for the event her pain flares up. She calls Mandy to let her know she will be unable to attend. Mandy sounds really upset on the phone.

2. Jenny has agreed to help her pregnant friend, Kay by babysitting for her to give her a night off. Kay is a single mother and has been really tired recently. However, at the last minute Jenny is told she needs to work and so she can't help Kay out. She calls Kay to tell her. Kay tells her she is really disappointed because she really needed the break.

3. Mike and his wife are having friends round for dinner. Mike's wife has asked him to help her get the house ready by vacuuming. Mike has only been doing this for a few minutes when his pain begins to flare up. He tells his wife he needs to rest and she becomes very upset with him. She says she knows it isn't his fault but feels like she has to do everything these days.

4. Sarah's husband Will has been working away from home for a few days. She has told him she will cook him a special meal for when he gets back. Will works really hard to support their family. Sarah has been tired lately, so she decides to take a short nap before getting started. Sarah wakes up hours later to realise her alarm did not go off. Her house is untidy. She has not cooked any food. Her husband is due back any minute. Will walks through the door and looks really hurt. He tells her how much he had been looking forward to the meal.

5. Anne really likes her job, but it has become very difficult to keep up with it because of her pain. Her boss says she needs an easier role. This will be a step down from her last job. She has also heard her co-workers making unkind comments about her. They said that she is bone idle and that she has it easy now.

6. Mo has been trying really hard to do better at work. But he keeps missing targets because he takes too much on. The head of service says they need to drop some of his duties. As he leaves the meeting, he overhears his workmates saying he is bad at his job. They say that they could do much better.

Appendix F: Response sheets for the vignettes

Thinking about the scenario you have just read, try to put yourself in the place of the character and answer the following questions….

How much would you imagine you much would feel each of the following?	Not at all		Moderately			Extremely strongly	
Sad *(including feeling dejected, down or depressed)*	0	1	2	3	4	5	6
Nervous *(including feeling tense, worried, or anxious)*	0	1	2	3	4	5	6
Angry *(including feeling irritated, frustrated or hostile)*	0	1	2	3	4	5	6
Embarrassed *(including feeling humiliated, disgraced or ashamed)*	0	1	2	3	4	5	6

How likely do you think you would be to react in the following ways?	Not at all		Moderately likely			Extremely likely	
Find some way of solving the problem / making things better	0	1	2	3	4	5	6
Talk the situation through with another friend or family member	0	1	2	3	4	5	6
Do something to take my mind off the situation	0	1	2	3	4	5	6
Try to avoid them as much as I can	0	1	2	3	4	5	6
Replay the situation in my mind for a long time afterwards	0	1	2	3	4	5	6
Think of all the bad things which might come next	0	1	2	3	4	5	6

Vignette __

Appendix G: Demographic Information

Please circle to indicate the category which best describes your gender:

Male   Female   Other   Prefer not to answer

How old are you in years?

_____

Please circle the category which best describes your relationship status:

Single and never married

In a relationship

Married/civil partnership

Separated

Divorced

Widowed

Prefer not to answer

Other *(please specify)*_____

Which of the following best describes your ethnic background:

White British

White Irish

White Other

Black Caribbean

Black African

Black Other

Asian Indian

Asian Pakistani

Asian Bangladeshi

Asian Chinese

Asian Other

Arab

Mixed White and Black Caribbean

Mixed White and Black African

Mixed White and Asian

Mixed/multiple ethnic background (other)

Prefer not to answer

If you selected other please specify _____

Please circle the category which best describes you current occupational status:

Employed   Retired

Unemployed   In education or training

                                                          Prefer not to say

Other (please specify) _____

If you are employed, what is your current job title?

_____

If retired, unemployed or unable to work for health reasons, what was your previous job title?

_____

Appendix H: Pain demographics

Please complete the following questions about your pain

For approximately how long (in years) have you been experiencing chronic pain?

_____

How old were you when you first started experiencing chronic pain?

_____

Do you have a diagnosis which relates to your chronic pain?   Yes   No

If yes, what is the diagnosis?

_____

Please indicate from which of the following professionals you have had input over the duration of your chronic pain problem (you can circle more than one):

GP   Physiotherapist

Specialist Pain Consultant   Specialist Consultant (e.g. Rheumatologist, Neurologist)

Occupational Therapist   Clinical Psychologist

Counsellor or Therapist

Other *(please specify)*_____

For approximately how long, in total have you had medical input for your chronic pain condition?
_____

If you have seen a Psychologist, Psychological Therapist (e.g. CBT therapist) or Counsellor, for how many sessions did you see them for in total?
_____

Appendix I: Visual Analogue Pain Scale

Over the last week, please mark on the scale the point which best represents the level
your pain reached at its highest intensity:

|——|

no   most
sensation   intense
                                                                                    sensation
                                                                                    imaginable

Over the last week, please mark on the scale the point which best represents the level
your pain reached at its lowest intensity:
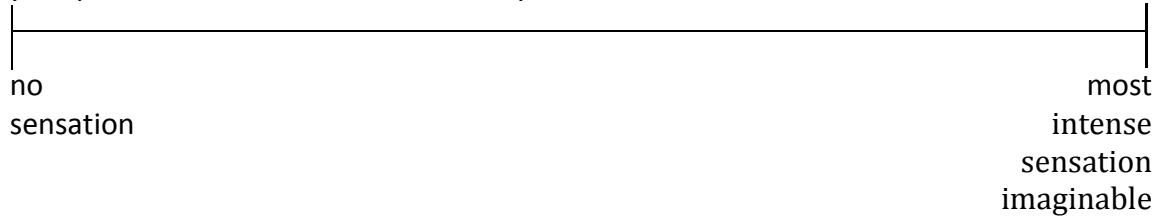
|——|

no   most
sensation   intense
                                                                                    sensation
                                                                                    imaginable

Over the last week, please mark on the scale the point which best represents the level
your pain has been at its typical intensity:

|——|

                                                                                    most
no   intense
sensation   sensation
                                                                                    imaginable

Please mark on the scale the point which best represents the level your pain is at
currently:

|——|

no   most
sensation   intense
                                                                                    sensation
135   imaginable
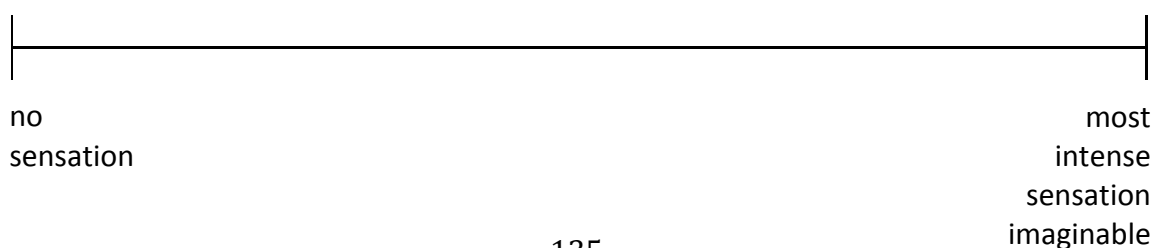
Appendix J: Social Role Participation Questionnaire

People spend their time in a variety of different ways. We're interested in learning about how your health has affected your life. For the next questions, we would like to ask you about various areas of your life and learn how important each one is to you, whether your health has created any difficulties for you participating in these areas of life and your satisfaction with your participation in different roles and activities. Please circle your answer.

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
1a. To what extent is participating in physical leisure (e.g., gardening, fitness, and sports) important to you?	1	2	3	4	5
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
1b. How much physical difficulty do you have participating in physical leisure pursuits?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
1c. How satisfied are you with your ability to participate in the types of physical leisure you would like?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
2a. To what extent is participating in hobbies (e.g., knitting, reading, woodworking, watching TV) important to you?	1	2	3	4	5
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
2b. How much physical difficulty do you have participating in hobbies?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
2c. How satisfied are you with your ability to participate in the types of hobbies you would like?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
3a. To what extent is participating in community, religious or cultural events (e.g., going to church, clubs, volunteering, concerts) important to you?	1	2	3	4	5
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
3b. How much physical difficulty do you have participating in community, religious or cultural events?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
3c. How satisfied are you with your ability to participate in the types of community, religious or cultural events you would like?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
4a. To what extent is being able to plan or attend social events (e.g., having friends/family at your home or dinner/coffee with friends, outings such as going to the cinema) important to you?	1	2	3	4	5
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
4b. How much physical difficulty do you have planning or attending social events?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
4c. How satisfied are you with your ability to plan or attend the types of social events you would like?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
5a. To what extent are other types of casual contact with people (e.g., talking on the telephone, chatting with neighbours, e-mail) important to you?	1	2	3	4	5

Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
5b. How much physical difficulty do you have maintaining casual contact with people?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
5c. How satisfied are you with the type of casual contact that you are able to have with others?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
6a. To what extent is participating in being able to travel or go on holiday (e.g., travel to visit family, friends, see new places, travel by car, plane, train, bus, etc.) important to you?	1	2	3	4	5
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
6b. How much physical difficulty do you have participating in travel or going on holiday?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
6c. How satisfied are you with your ability to have the type of holiday or travel experience that you would like?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
7a. To what extent is having a paid job at this time important to you?	1	2	3	4	5
7b. Are you currently working in a job for pay?	Yes *go to Q7d*	No *go to Q7c*			
7c. If No: Is your employment status related to your health?	Yes *go to Q7d*	No *go to Q8a*			
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
7d. How much physical difficulty do you have	1	2	3	4	NA

participating in paid employment?					
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
7e. How satisfied are you with the type of paid work that you are able to have (e.g., a job that uses your training/skills)?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
8a. To what extent is attending school or continuing education important to you?	1	2	3	4	5
8b. Are you currently in school (e.g., full or part-time, upgrading skills for work, working towards a diploma or degree)?	Yes *go to Q8d*	No *go to Q8c*			
8c. If No: Is your health one of the reasons you do not attend school?	Yes *go to Q8d*	No *go to Q9a*			
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
8d. How much physical difficulty do you have attending school or continuing education?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
8e. How satisfied are you with your ability to participate in your studies/education in the way that you would like?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
9a. To what extent is having a close relationship important to you?	1	2	3	4	5
9b. Are you currently involved in an intimate or close relationship with another (e.g., partner, spouse, significant other)?	Yes *go to Q9d*	No *go to Q9c*	Decline *go to Q10a*		
9c. If No: Is that because of your health?	Yes *go to Q9d*	No *go to Q10a*	Decline *go to Q10a*		

Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
9d. How much physical difficulty do you have in your intimate relationship with a partner, spouse, or significant other?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
9e. How satisfied are you with the type of relationship you are able to have with your partner/spouse?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
10a. To what extent is having children/ stepchildren/ grandchildren important to you?	1	2	3	4	5
10b. Do you have children, stepchildren, or grandchildren with whom you are in regular contact?	Yes *go to Q10d*	No *go to Q10c*	Decline *go to Q11a*	No children *go to Q11a*	
10c. If No: Is that because of your health?	Yes *go to Q10d*	No *go to Q11a*	Decline *go to Q11a*		
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
10d. How much physical difficulty do you have engaging in activities with children/ stepchildren/ grandchildren?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
10e. How satisfied are you with the type of relationship you are able to have with your children/stepchildren/ grand-children?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
11a. To what extent is your relationship with other family members important to you?	1	2	3	4	5
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
11b. How much physical difficulty do you have engaging in activities with other family members?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
11c. How satisfied are you with your ability to have the type of relationship you would like with your family members?	1	2	3	4	5

In general	Not at all important	A little important	Somewhat important	Very important	Extremely important
12a. Considering all things, to what extent is fully participating in all aspects of life (e.g., social events, paid work, family relationships, physical leisure, hobbies) important to you?	1	2	3	4	5
Thinking about your health:	No difficulty	Some difficulty	A lot of difficulty	Unable to do	Not applicable
12b. Considering all things, how much physical difficulty do you have participating in all aspects of your life?	1	2	3	4	NA
	Not at all satisfied	A little satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied
12c. Considering everything that you do in your life, how satisfied are you with your ability to lead the type of life you would like?	1	2	3	4	5

Appendix K: Self-Compassion Scale

Please read each statement carefully before answering; using the scale given below and indicate, to the right of each item, how often you behave in the stated manner:

	Almost never				Almost always
I'm disapproving and judgmental about my own flaws and inadequacies	1	2	3	4	5
When I'm feeling down I tend to obsess and fixate on everything that's wrong	1	2	3	4	5
When things go badly for me, I see the difficulties as part of life that everyone goes through	1	2	3	4	5
When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world	1	2	3	4	5
I try to be loving towards myself when I'm feeling emotional pain	1	2	3	4	5
When I fail at something important to me I become consumed by feelings of inadequacy	1	2	3	4	5
When I'm down, I remind myself that there are lots of other people in the world feeling like I am	1	2	3	4	5
When times are really difficult, I tend to be tough on myself	1	2	3	4	5
When something upsets me I try to keep my emotions in balance	1	2	3	4	5
When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people	1	2	3	4	5
I'm intolerant and impatient towards those aspects of my personality I don't like	1	2	3	4	5
When I'm going through a very hard time, I give myself the caring and tenderness I need	1	2	3	4	5
When I'm feeling down, I tend to feel like most other people are probably happier than I am	1	2	3	4	5
When something painful happens I try to take a balanced view of the situation	1	2	3	4	5
I try to see my failings as part of the human condition	1	2	3	4	5
When I see aspects of myself that I don't like, I get down on myself	1	2	3	4	5
When I fail at something important to me I try to keep things in perspective	1	2	3	4	5
When I'm really struggling, I tend to feel like other people must be having an easier time of it	1	2	3	4	5
I'm kind to myself when I'm experiencing suffering	1	2	3	4	5
When something upsets me I get carried away with my feelings	1	2	3	4	5
I can be a bit cold-hearted towards myself when I'm experiencing suffering	1	2	3	4	5
When I'm feeling down I try to approach my feelings with curiosity and openness	1	2	3	4	5
I'm tolerant of my own flaws and inadequacies	1	2	3	4	5
When something painful happens I tend to blow the incident out of proportion	1	2	3	4	5
When I fail at something that's important to me, I tend to feel alone in my failure	1	2	3	4	5
I try to be understanding and patient towards those aspects of my personality I don't like	1	2	3	4	5

Appendix L: Depression Anxiety and Positive Outlook Scale

We would like to know how you have been feeling in the last few weeks. Please circle a number for each statement indicating how often you feel that way, where 1, almost never and 5, almost all the time.

	Almost never				Almost all the time
I feel like a failure	1	2	3	4	5
I get a frightened feeling, as if something awful is about to happen	1	2	3	4	5
I feel guilty	1	2	3	4	5
I can laugh and see the funny side of things	1	2	3	4	5
I am disappointed in myself	1	2	3	4	5
I get a frightened feeling, like butterflies in the stomach	1	2	3	4	5
I feel cheerful	1	2	3	4	5
I blame myself constantly	1	2	3	4	5
I get a sudden feeling of panic	1	2	3	4	5
I look forward with enjoyment to things	1	2	3	4	5
I think about harming myself	1	2	3	4	5

Appendix M: End of study debrief letter

UNIVERSITY OF LEEDS

Leeds Institute of Health Sciences
Faculty of Medicine and Health
Charles Thackrah Building
101 Clarendon Road
Leeds LS2 9LJ

Email: umfpu@leeds.ac.uk

Dear …………,

Thank you very much for taking part in this study. Your time and effort is really appreciated, as is your contribution to a better understanding of the lived experience of chronic pain.

If you would like details of the overall results of the study, and have not already done so, please provide your contact details (ideally your email address) to me using the contact details above. Unfortunately it will not be possible to provide individualised results regarding the responses to the vignettes, however the results of the questionnaires together with a brief explanation of scores can be provided if you would like them. Please indicate when you contact me whether you would prefer to have a summary of the overall results, your individual scores on the questionnaires or both.

If you would like to withdraw your responses at any time prior to May 2014 please email or to me and include this code: [   ]. After this time responses cannot be withdrawn because they will already have formed part of the analysis of results.

If taking part in this study has raised any concerns for you, I have included with this letter details of telephone lines and support groups which may be of benefit. I would also encourage you to discuss any issues raised with your GP or health care provider at the pain service.

Thank you once again for your time and for your contribution to the research.

With kind regards,

Yours sincerely,

Fiona Purdie
Psychologist in Clinical Training
University of Leeds

Enc. 1

Appendix N: Participant information regarding support lines available.

Should you require any additional support, in response to the issues raised by the study or otherwise, the following telephone support lines may be of benefit to you.

The Samaritans

http://www.samaritans.org/

Email: jo@samaritans.org

Tel: 08457 90 90 90

Available 24 hours a day, 365 days a year, to provide confidential emotional support for people who are experiencing feelings of distress, despair or suicidal thoughts.

Guide-Line

www.mindinbradford.org.uk

Email: alex@mindinbradford.org.uk

Tel: 01274 594 594 Mon - Sun 12:00 to 21:00

Guide-Line is the telephone helpline of Mind in Bradford. Guide-Line offers confidential, non-judgemental support and information to those in mental and emotional distress, their carers, family and professionals. They also support those in crisis via the helpline.

Action-on-pain

www.action-on-pain.co.uk

Email: info@action-on-pain.co.uk

Tel: 0845 603 1593 Mon-Fri 10:00 to 16:00

A charity that aims to support those with chronic pain and their carers. Run by volunteers, the majority of whom have chronic pain. It operates a telephone help-line 'Painline' as well as a national network of support groups.

Patients Association Helpline

www.patients-association.org.uk

Tel: 0845 608 4455 Mon – Fri 9:00 to 17:00

Email: mailbox@patients-association.com or helpline@patients-association.com

The Patients Association provides advice and information for NHS and private sector health users. The Patients Association will listen to people's concerns and give details of health related self-help groups and associations.