



Title : Developing an integrated osteopathy and acceptance-informed pain management course for patients with persistent pain

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**DEVELOPING AN INTEGRATED OSTEOPATHY AND  
ACCEPTANCE-INFORMED PAIN MANAGEMENT COURSE  
FOR PATIENTS WITH PERSISTENT PAIN**

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## **ABSTRACT**

Title: Developing an integrated Osteopathy and Acceptance-informed pain management course for patients with persistent pain.

Purpose: This study explored therapeutic processes associated with developing a course for patients with persistent pain which integrated osteopathic treatment with Acceptance and Commitment Therapy (ACT). This 'third wave' cognitive behavioural approach is effective for a range of physical and psychological problems, including persistent pain, and congruent with osteopathic principles of holism, function and agency, which provided a theoretical basis for developing an integrated intervention to promote resilience and well-being. A qualitative case study was conducted as part of a developmental research programme to explore how ACT could be integrated with osteopathic treatment for individual patients, and with what effects on processes and outcomes.

Method: Linguistic ethnography was used to explore links between pain-related discourses, clinical decisions and responses to pain. Treatments were audio-recorded, transcribed, and coded. Extracts referring to discourses about pain experienced during manual therapy were subjected to micro-level conversation analysis, sociolinguistic analysis of participants' roles, and macro-level analysis of links to broader healthcare discourses. A reflective diary was used to explore experiential learning and integrate auto-ethnographic information.

Results: Two distinctive forms of mechanistic and facilitative pain discourse were identified. In predominantly mechanistic discourses, agency and expertise were located with the osteopath, and intention was focused on fixing 'broken' parts and relieving pain using 'familiar' osteopathic techniques.

In facilitative discourses, the osteopath adopted a more collaborative role, focused on developing the patient's body and self-awareness to promote more flexible, active pain responses. Practitioner challenges included learning how to shift intention between mechanistic and facilitative interventions, a process that was enabled by mindfulness and willingness to tolerate uncertainty.

Conclusions: In this study, ACT-informed osteopathy involved facilitative discourses, associated with increased patient agency and flexibility in response to pain. Further research is needed to explore whether this pattern of discourse is robust in other clinical settings; relationships between mechanistic and facilitative discourses and therapeutic outcomes; and effects of ACT training on practitioner mindfulness and attitude towards clinical uncertainty. Findings suggest that this integrated approach could expand the scope of osteopathic care for patients with persistent pain, and is worth further investigation.

Keywords: Acceptance and Commitment Therapy, chronic pain, Mindfulness, Osteopathy

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## **CHAPTER ONE: INTRODUCTION**

### **1.1 INTRODUCTION**

1.1.1 This thesis presents a critical analysis of findings from a qualitative research study which explored the development of an integrated physical and psychological treatment package to expand the scope of care for patients with persistent musculoskeletal pain. A new course was created to combine pain self-management interventions from Acceptance and Commitment Therapy (ACT) with routine manual therapy assessment and treatment practices in Osteopathy. This chapter outlines the rationale for developing the intervention in terms of the challenge of chronic pain, lack of effective pain management programmes, limits of current biopsychosocial models of care, and congruence between the evidence-based approach of ACT and osteopathic principles of function, agency and patient-centred care. No previous clinical studies or protocols were found to guide the intervention or research design, so the optimal process was unclear. A qualitative study was designed to explore how ACT-based pain management interventions could be integrated with osteopathic care for patients with chronic pain, and with what effects on therapeutic processes and outcomes.

1.1.2 The inter-disciplinary approach of Linguistic Ethnography was used to assess changes in pain discourses and participants' roles within the therapeutic relationship using data gathered from audio-recordings of treatment sessions. The researcher was the osteopath delivering the intervention, so this chapter describes the auto-ethnographic context to enhance transparency and concludes with a summary of work created as part of the doctoral process.

1.1.3 A recent systematic review and meta-analysis indicates that up to fifty percent of adults in the UK may suffer from chronic pain (Fayaz et al 2016), and it accounts for up to thirty percent of General Practitioner (GP) consultations in the UK (Jordan et al 2010). Twenty three percent of patients with musculoskeletal pain are referred to National Health Service (NHS) physiotherapists (Foster et al 2012), but many seek treatment from private therapists, including osteopaths, who provide over seven million consultations a year (GOsC 2016). Pain lasting more than twelve weeks is less likely to be prevented from progressing to chronic pain by physical therapy alone (Waddell 2004) and patients demonstrate better outcomes from multidisciplinary care (Kamper et al 2015).

The NHS Best Practice Statement for the Management of Chronic Pain states that successful management requires biopsychosocial pain assessments with adequate intervention and frequent re-evaluation (NHS 2006), but forty five percent of the 7.8 million people estimated to have chronic pain may have inadequate care (UK Pain Proposal 2011). Pain is invisible and there may be few behavioural clues about the extent of suffering or comorbid anxiety and depression (Pincus et al 2002). After three months, pain naturally appears to lead to avoidant behaviour (Vlaeyen and Linton 2000), when long-term attempts to control symptoms are futile and lead to restricted social roles, physical activity levels and reduced quality of life (Thompson & McCracken 2011).

1.1.4 Randomised Controlled Trials (RCTs) have demonstrated positive effects from Cognitive Behaviour Therapy (CBT) interventions in multidisciplinary pain management programmes. It has been shown to reduce emotional distress and medication use in patients with physical conditions including chronic pain (McCracken & Turk 2002), but fear-avoidance is persistent and even if cognitive beliefs change, they may not lead to behaviour change (Hayes 2004). Acceptance and Commitment Therapy (ACT) is a form of 'third wave' CBT, a model of normal human functioning that encompasses wellbeing, resilience and suffering.

It is underpinned by Relational Frame Theory (Torneke 2010), which proposes that language-based processes are strongly associated with human responses to pain and other experiences of discomfort (Hayes 2004). There is increasing, high quality evidence demonstrating ACT effects in varied populations and healthcare conditions, including chronic pain (Hayes et al 1999; Lundgren and Dahl 2006). ACT has been shown to be at least as effective as CBT and can result in longer-term improvements (Veehof et al 2011), with positive outcomes reported from brief ACT interventions (Ruiz 2010). Gaps in knowledge about underlying mechanisms of change (Williams et al 2012), however, have led to calls for more process-based ACT research (McCracken and Vowles 2014).

1.1.5 A core principle of functional approaches to change, like ACT, is the development of mindfulness skills to promote behavioural flexibility. Mindfulness can help people to develop new attitudes and abilities to accept unwanted physical sensations, thoughts and feelings which cannot be controlled (Kabat Zinn 1990). In ACT, mindfulness skills are developed through four core processes of present moment awareness, acceptance of present moment discomfort, defusion from habitual limiting thoughts, and awareness of multiple self perspectives. These processes constitute the theoretical framework of psychological flexibility, which also includes personal values and commitment to acting in accordance with these values (Dahl et al 2005). There is evidence that interventions which incorporate the flexible development of mindfulness skills in daily activities can improve mood and decrease physical and psychosocial disability in patients with chronic pain (McCracken and Gutierrez-Martinez 2011).

1.1.6 ACT interventions for chronic pain aim to promote psychological flexibility by reducing unhelpful habitual responses to pain such as resistance and guarding, and increasing values-based action. The aim of integrating ACT with osteopathic treatment was to engage more directly with patients' lived-body experiences, using musculoskeletal assessment practices to enhance patients'



awareness of body sensations, explore scope for regulating movement and action in a safe, tactile therapeutic environment, develop psychologically flexible responses to discomfort, and promote re-engagement with meaningful social roles and activities. Chapter One outlines the relevance of expanding pain management strategies for osteopaths, the value of combining physical and psychological interventions for patients, the potential to create new knowledge, and the rationale for conducting exploratory qualitative research.

## **1.2 Osteopathic relevance**

1.2.1 This section describes recent initiatives in physiotherapy to introduce ACT pain management interventions into mainstream care for patients with chronic pain and presents evidence relating to their effects on therapeutic processes and patient outcomes. In contrast to physiotherapy, osteopathy in the UK is typically provided in private practices with limited links to mainstream medical services. The rationale for developing an ACT-informed osteopathic course is outlined in the context of differences in philosophy and practice between physiotherapy and osteopathy, followed by a discussion of the challenges identified in previous attempts to expand the existing models of biopsychosocial healthcare.

1.2.2 Patients with chronic pain are often referred for physiotherapy (Foster et al 2012), but traditional mono-therapeutic approaches have been criticised for lacking a credible theoretical base, limited effectiveness, and potential to promote passive coping strategies (Zusman 1997; Pike 2008). Physiotherapists typically work separately from psychologists within multidisciplinary teams and are often working in different clinical locations. Initiatives to integrate physical and psychological care delivered by different practitioners working in shared sessions have demonstrated variable outcomes (Foster and Delitto 2011), but integrated models which divide tasks by job description sustain dualistic mind-body concepts when psychological interventions are simply 'added on' for

patients who are high risk or have not responded to standard biomedical care. Initiatives to train physiotherapists to deliver psycho-educational and CBT interventions themselves have demonstrated promising outcomes (Hill et al 2011), but challenges for practitioners include learning how to negotiate shifts between change-based treatment aims and facilitative interventions to promote patient learning and self-care (Bishop et al 2008; Lamb et al 2010); challenges which are similar for therapists in other clinical contexts (Lau and McMMain 2005).

1.2.3 Osteopathy is a form of manual therapy which developed outside mainstream medicine in the UK but gained formal recognition after the 1993 Osteopaths Act (Fielding, 1993). Although physiotherapy, osteopathy and chiropractic are sometimes considered under a manual therapy umbrella, each profession claims a different philosophy, therapeutic focus and practice context (NCOR 2016). Historically, osteopathic practice has been influenced by a biomedical focus on structural, anatomical causes of illness and disease and interventions have been based on practitioner-led management (Baer 1984; Gevitz 2009), exemplified by the commonly used osteopathic maxim 'Find it, fix it and leave it alone' (Parsons & Marcer 2005, p.190). This concept was relevant in the context of the medical knowledge of Still's era and may be a useful approach for managing patients with acute nociceptive pain. Advances in neurophysiology, however, indicate that simple biomechanical approaches are inadequate for managing chronic pain (Butler and Moseley 2003), although osteopathic textbooks often still focus on local structural problems, defined as 'somatic dysfunction', and treatments which aim to remove 'key lesions' (DiGiovanna et al 2004; Kuchera 2005; Parsons and Marcer 2005).

1.2.4 It has been argued that body-centred osteopathic care is obsolete as it lacks a convincing theoretical base (Tyreman 2006; Lucas 2008), and treatments based on somatic dysfunction, postural or positional lesions are not supported by robust evidence (Randell 1992; Lederman 2010). Biomechanical care alone is

no longer credible in light of pain mechanisms such as central sensitisation (Smart 2012; Nijs 2014), and is inadequate for addressing subjective experiences described in patients' body narratives (Gale 2010). In contrast, patient-centred care focuses on more holistic assessments of function and agency (Thomson et al 2012), which is required when patients are conceptualised as complex adaptive systems (Van Beurden et al 2011), and there is evidence that osteopathic care has psychological benefits (Williams 2007; Williams et al 2007a) (Section 2.6.4).

1.2.5 Post modern acknowledgement of complexity in healthcare and the inevitability of clinical uncertainty (Sweeney and Griffiths 2002; Tyreman 2015) has prompted medical interest in different approaches to evaluating complex problems. The Cynefin model of 'sense making' developed by Cognitive Edge (Kurtz and Snowden 2003; Snowden 2010) is based on the concept that different evaluation strategies are appropriate for differing levels of system complexity. Studies of mono-therapeutic interventions or traditional RCTs are gold standard research for simple systems that are characterised by causal relationships, but complex adaptive systems require pragmatic assessments of trends and patterns in data. These include realist RCTs, which include both outcome and process evaluations or 'n-of-1' single case design trials (Moore et al 2008; Kratochwill et al 2010). Cognitive Edge's approach may be a useful methodology for healthcare (Kurtz and Snowden 2003), especially chronic conditions (Sturmborg and Martin 2008; Sturmborg and Martin 2009), as a conceptual framework to guide developments in osteopathic care (Tyreman 2015).

1.2.6 Attempts to enact Engel's (1978) biopsychosocial principles in the stepped model of UK primary care have been criticised as providing a limited form of holism that is grounded in biomedical principles (Greaves 2002; Butler et al 2004). Many osteopaths use biopsychosocial approaches (Penney 2013) which can have physical and psychological effects (Bronfort et al 2010; Williams et al 2007a), but osteopaths typically have limited psychological training or links to

mainstream mental health services as they work in private practice and have few opportunities to liaise with multidisciplinary pain services.

1.2.7 Physical therapists report feeling challenged by patients whose symptoms are unlikely to be resolved by physical therapy (Foster and Delitto 2011; Abbey and Nanke 2013), and are cautious about addressing psychosocial problems beyond their perceived competence (GOsC 2012). In common with psychological therapists (Harris 2009a), osteopaths can also become enmeshed in the futile struggle to cure persistent symptoms and may continue ineffective treatments to avoid referring patients back into the 'therapeutic void' of biomedicine (Pincus et al 2006). These challenges provided a rationale for developing a psychologically informed osteopathic approach to more effectively address the complex needs of patients with persistent musculoskeletal pain.

### **1.3 Relevance to patient care**

1.3.1 Long-term musculoskeletal pain affects all aspects of an individual's life and incurs personal and social costs as it limits physical and social activity (Marley et al 2014). The incidence of pain-related disability is rising and there have been few advances in pain management in the last thirty years (McCracken and Vowles 2014). Care which focuses on diagnostic tests and treatments which aim to control pain often fails to acknowledge the impact of pain on individuals. Multidisciplinary programmes that typically deliver separate physical and psychological components to groups of patients (Kamper et al 2015) limit opportunities to work with an individual patient's inter-dependent physical, cognitive, affective and behavioural reactions. This section outlines the rationale for developing an integrated biopsychosocial approach to promote wellbeing, resilience and quality of life in patients for whom a permanent cure is unlikely.

1.3.2 An integrated model of physical therapy and psychological self-care could enable patients to learn about embodied experiences, develop new mindfulness-informed skills to enhance resilience, and promote willingness to lead more active, fulfilling lives despite pain. The challenges of using ACT, however, include being willing to explore new ways of responding to discomfort and committing time to developing new skills. Noticing, rather than avoiding, uncomfortable sensations typically leads to temporary increases in pain, anxiety and distress, which in other interventions might be considered as adverse reactions (Carnes et al 2010). This requires careful communication around consent but there is evidence that repeated exposure can enhance patients' tolerance for discomfort (Vlaeyen et al 2001; Vlaeyen et al 2002), and willingness to tolerate exposure to pain may be increased by trust developed in tactile therapeutic dyads (Pike 2008; Zusman 2010; Oberg et al 2015).

1.3.3 Developing a course that could be delivered by one practitioner was also considered to be a valid research endeavour because of other potential benefits. It can be frustrating for patients to recount complex illness narratives to practitioners who are interested in fragments of the whole, and being managed in multiple departments can promote passive coping, reliance on expert advice, disempowerment and loss of agency. An integrated approach therefore offered potential benefits for osteopaths, patients and health service providers.

## **1.4 Relevance to healthcare services**

1.4.1 It is estimated that 7.8 million people in the UK suffer from moderate to severe pain of more than six months duration (IASP 1994) and the prevalence of chronic pain is rising, accounting for approximately five million GP appointments per year (HSE 2011). Chronic pain is associated with physical, psychological and social impacts which include functional impairment, depression, unemployment, and reduced quality of life. The full cost of chronic pain is difficult to calculate but

economic estimates for back pain are £12.3 billion per year (Maniadakis and Gray 2000) and financial, social and personal costs for chronic pain are higher (HSE 2011). Many patients consult General Practitioners (GPs) for medical advice but the first point of contact can also be physical therapists (Foster et al 2012). There are concerns about health service capabilities to manage exponential rises in chronicity and pain-related disability, and anticipated costs as the population ages (Fayaz et al 2016). New guidelines (NICE 2016) recommend manual therapy as part of a combined approach for patients with low back pain, so multimodal interventions that can be delivered by a single practitioner are of relevance.

1.4.2 Practitioner beliefs and communication about pain influence patient behaviour (Darlow et al 2012), and initiatives to promote patient self-care and activity by teaching empowering communication strategies to physiotherapists have demonstrated some benefits (Lonsdale et al 2012), but there are no studies about osteopaths' communication and patient behaviour. This study aimed to transform personal clinical praxis into propositional knowledge through rigorous communication analysis (Fish and Coles 1998; Rycroft-Malone et al 2004).

1.4.3 Multidisciplinary pain management programmes produce more sustained patient outcomes in terms of wellbeing than mono-disciplinary interventions (Kamper et al 2015) but incur higher delivery and training costs. Programmes which deliver parallel strands of physical and psychological care to groups of patients limit opportunities to respond quickly and appropriately to individuals' embodied experiences as they arise (Abbey and Nanke 2013). The parallel strand model also reinforces the concept of managing cognitive, affective and physical impacts of persistent pain as separate entities if group facilitators respond primarily to issues in their own domain (e.g. physiotherapists refer psychological issues to psychologists and vice versa). Services where individual patients are managed by practitioner pairs, including a psychologist and a physiotherapist with additional psychological training, have been proposed (Pincus et al 2013).

In this protocol, physiotherapists do not address psychological issues directly but would share information with psychologists between staggered appointments, but this type of paired model could be challenging and costly to implement.

1.4.4 Another pain management approach is to integrate psychology and physiotherapy within group sessions (Rovner 2014), when practitioners develop skills to transcend traditional professional boundaries (i.e. psychologists lead movement practices and physiotherapists work with psychological aspects of movement). This approach enables facilitators to model integrated mind-body care but success relies on training practitioners who are able to cross boundaries. Even if effective physiotherapist-psychologist dyads can be created, the limits of group work remain and there is insufficient evidence so far about effectiveness.

1.4.5 Issues for developing psychosocial skills in physical therapists include:

- choosing a practical, philosophically congruent approach from a range of psychological models
- committing time and effort to developing new knowledge, clinical skills and personal awareness while maintaining existing practice routines
- finding appropriate, supervised healthcare environments in which to practice a new approach
- developing a reflective, acceptance-based stance to accommodate the clinical uncertainty that inevitably increases when psychological and socio-cultural factors become part of pain assessment and management
- managing dynamic transitions between psychological and physical interventions that embody different therapeutic aims

## **1.5 Originality and innovation**

1.5.1 This section outlines how the intervention designed for this study aimed to address the challenges identified above. Many multidisciplinary pain management programmes incorporate psychological interventions based on Cognitive Behaviour Therapy (CBT) with physical therapy activities managed by physiotherapists. There is an increasing body of evidence for ACT interventions (Veehof et al 2011; 2016) and moderate evidence for Osteopathy and chronic pain (Bronfort et al 2010), but no previous studies combining osteopathy and ACT, so the design of a six week course for individual patients which could be delivered by one osteopath, not a multidisciplinary team, was innovative.

1.5.2 The choice to use Linguistic Ethnography (LE) as an inter-disciplinary, principles-based methodology (Snell et al 2015), was original. LE aims to broaden the limited context of Conversation Analysis and ground the broad ethnographic claims of Discourse Analysis. The 'slow and small' aesthetic of Conversation Analysis which explores unfolding meaning in specific, brief interactions (ten Have 2007) was congruent with the present moment focus of ACT. Discourse Analysis was an appropriate method for analysing the biomedical and biopsychosocial discourses that enable and constrain different patient and practitioner roles and behaviours (Wooffitt 2005).

1.5.4 Discourse analysis has previously been used to explore data from medical interviews (Roberts and Sarangi 2005; Swinglehurst et al 2012; Swinglehurst 2014) but analysing communication during active treatment procedures appears to be new. Randomised Controlled Trials (RCTs) analysing the effectiveness of protocol-based or pragmatic 'black box' pain management programmes support both CBT and ACT interventions, but little is known about their active ingredients or factors mediating behaviour change. The study was aligned with McCracken and Vowles' (2014) recommendations to explore underlying processes, meaning



and mechanisms, and aimed to analyse communication processes using a social constructionist methodology to explore communication-as-action *in action* in shared physical therapy activities (Rampton 2010). In summary, the intervention and data analysis strategy were innovative approaches for Osteopathy, ACT and Linguistic Ethnography, and combining all three was equally original.

## **1.6 Personal position**

1.6.1 This study was based on beliefs that multiple perceptions of reality exist and that knowledge is provisional and constructed in a cultural and historical context (Crotty 1998), and acknowledging my influence on the data was an auto-ethnographic challenge. From the philosophical stances of social constructionism and phenomenology, I was not a value-free observer. Personal and professional experiences inevitably influenced the research aims, design and interpretations but subjectivity, unconscious influences and limited transferability were balanced by choosing methods that could incorporate emic insider knowledge and an etic research perspective (Lambert and McKeivitt 2002). Auto-ethnography involved analysing interactions with patients with whom I worked for a six week period, so my aim was to be transparent about my relationship to the research process.

1.6.2 I was previously trained in a positivist research model where researchers are considered to be neutral observers, so an auto-ethnographic challenge was acknowledging my influence on the data. Interpretation has been described as a creative process (van Manen 1990). My choice to highlight some perspectives mean that others are less emphasised but I have attempted to be clear about when I am prioritising the perspective of osteopath, researcher or participant.

1.6.3 I qualified as an osteopath in 1979, at a time when osteopathy was not officially recognised in the UK and before the pervasive hegemony of evidence-based medicine. I later supplemented my osteopathic education with training in

psychology, sociology, education and research and worked in healthcare in the UK, Africa and Asia. With each career diversion I continued or returned to osteopathy as the profession where I feel most at home, but often stopped to ask myself if I am a 'real' osteopath. Uncertainty about the validity of biomedical theories I was taught prompted me to train as a social worker and counsellor and supported my work with complex patients. My inability to help some patients as much as I would have liked led to a non-practising period where I focused on teaching and research, as this was less painful than the discomfort of feeling helpless in the face of insoluble pain (Brandon 1987).

1.6.4 For several years I worked solely in osteopathic education as a research supervisor and clinic tutor at the British School of Osteopathy (BSO), but was unhappy promoting biomechanical approaches in which I no longer believed. In 2010, an opportunity arose to work with a colleague who was a Clinical and Health Psychologist: Dr Lorraine Nanke, my Professional Doctorate supervisor. I helped Lorraine to develop a new group course for BSO patients with persistent pain (Section 4.2). It was based on ACT and the secular mindfulness approach developed by Kabat-Zinn (1990), which gave me opportunities to develop a personal mindfulness practice and to explore the psychological aspects of osteopathic practice in more depth. As co-facilitator, I had to embody openness and flexibility, which challenged my 'expert' identity and required a more collaborative stance (Dahl et al 2005). Outcomes from the group were promising but mixed (Abbey and Nanke 2013), and raised questions about how to work more effectively with individuals with chronic pain, and I started the Professional Doctorate course to explore these challenges. With hindsight, conflicts between my altruistic upbringing and internal motivation to help others (Miller 1995), academic scepticism and professional experiences of 'failure' fed my curiosity about whether osteopathy 'works' and how I could learn to be more effective.

1.6.5 My additional training created a patchwork CV but also provided me with physical, psychological and social healthcare knowledge and skills, which were useful for designing research into ways to expand the current biopsychosocial model of osteopathy. I have used auto-ethnographic knowledge as an osteopath to guide the data analysis process, and have enhanced the trustworthiness and transferability of these findings using an 'etic' research perspective (Lambert and McKeivitt 2002; Dahlberg et al 2009) based on a commitment to reflexivity and willingness to share interpretations with supervisors and peers. I am typically over-ambitious and want to create a 'theory of everything', and I feel frustrated by the limitations of written texts for illustrating the dynamic complexity of clinical practice. I have therefore included metaphorical language from Acceptance and Commitment Therapy (Stoddard and Afari 2014) to illustrate a sense of meaning as embodied, where possible (Lakoff and Johnson 2003).

1.6.6 Familiar personality traits which inevitably influenced this study are my need to know the 'right' answer, to avoid feeling inadequate, and to rescue people (Miller 1995). I used to believe that a good osteopath needed to have propositional anatomical knowledge and technical 'know how' but this did not help me to get patients 'better'. In counselling training I learned about my automatic reactions to 'solve' other people's distress, and the habitual thoughts and feelings that influence my responses. My actions to 'help' people changed from *doing things for* patients to *being with* them and facilitating self learning (Brandon 1987:42). It is now more important for me to know "what sort of patient has a disease than to know what kind of disease a patient has" (Osler, cited in Sturmberg and Martin 2009, p.544), and I trained as a counsellor to learn how to create better therapeutic environments. Training expanded my scope of practice and my psychological awareness, which made it possible to create and deliver this intervention but this has implications for the transferability of these findings to manual therapists with less psychological training or experience.

1.6.7 This thesis presents a new approach about which I have strong opinions. I have tried to maintain a critical perspective throughout and to describe the developmental learning process using information from field notes and a reflective research diary. I have also contextualised my interpretations of this data on the basis of what I have also learned from the OsteoMAP project, a parallel three year cohort study that I helped to design, deliver and evaluate during the process of completing this Professional Doctorate (Section 6.6).

## **1.7 Thesis structure**

1.7.1 This thesis includes an Introduction, Literature Review, Methodology, Method, Results, Discussion, Conclusions and Reflections on the research journey, followed by References and Appendices. Each chapter starts with an introduction and overview, followed by description and critique of literature and research findings, and ends with a summary of the key points, their relevance to the study's aims, and the implications for osteopathic practice and research.

## **1.8 Publications and presentations**

### Publications

- Mars T and Abbey H (2010). Mindfulness meditation practise as a healthcare intervention: A systematic review. *International Journal of Osteopathic Medicine* 13(2); 56–66
- Abbey H and Nanke L (2013). The development of a chronic pain self-management course within the British School of Osteopathy Clinic. *International Journal of Osteopathic Medicine* 16 e5-e6.
- Abbey H and Nanke L (2014). Developing OsteoMAP: A new programme to expand the scope of care for patients with persistent pain. *Bone Joint J* 96-B: (SUPP 4) 44.

- Nanke L and Abbey H (2015). A brief introduction to Mindfulness. *The Osteopath*, July 2015.
- Abbey H and Nanke L (2016). Developmental stages in the evolution of mindfulness and acceptance-informed osteopathic practice for patients with persistent musculoskeletal pain. Submitted to the *International Journal of Osteopathic Medicine*, under peer review.
- Carnes D, Mars T, Plunkett A, Nanke L and Abbey H (2016). Third wave cognitive behavioural therapy and osteopathic treatment programme for chronic pain in primary care (OsteoMAP): an evaluation. Submitted to the *International Journal of Osteopathic Medicine*, under peer review.

#### Presentations

- November 2013: *Beyond the structural model: developing a new programme to expand the scope of osteopathic care for patients with persistent pain*, International Osteopathic Conference, Milan.
- November 2013: *Developing OsteoMAP: an integrated Osteopathy, Mindfulness and Acceptance-informed Programme for people with persistent pain*, 1st UK and Ireland ACT/ACBS Conference, London.
- October 2014: *An introduction to integrating mindfulness and acceptance-based pain self-management skills into osteopathic practice*. Institute of Osteopathy Convention, Egham (with P. Simpson).
- December 2014: *Embodying ACT as a manual therapist: the first year of an integrated treatment and self-management programme for patients with persistent pain*. 2nd UK and Ireland ACT/ACBS Conference, Dublin.
- March 2015: *Exploring the potential role of affective touch in grounding manual therapy interventions for patients with persistent pain*, Inaugural conference, International Association for the Study of Affective Touch.

- August 2015: *Mind the (Cartesian) gap: discourse analysis of subjective and objective experiences of the body in manual therapy*, 29th European Conference on Philosophy and Medicine and Health, Ghent, Belgium.
- October 2015: *Integrating Mindfulness and Acceptance-based pain management skills into osteopathic practice: learning from the OsteoMAP project*, Osteopathy Australia Conference, Adelaide (with Dr. L Nanke).
- October 2015: *Psychological issues in osteopathic practice: re-evaluating professional roles and boundaries in clinical work with patients who are depressed or distressed*, Osteopathy Australia Conference, Adelaide (with Dr. L. Nanke).
- October 2015: *Talking about chronic pain: how we communicate with patients during treatment influences outcomes*, Institute of Osteopathy Convention, Egham.
- April 2016: *Developing the OsteoMAP programme*. OsteoMAP Conference, BSO, London.
- August 2016: *Reinforcing the social determinants of chronic pain: disempowering discourses in physical therapy consultations*. 30th European Conference on Philosophy and Medicine and Health, Croatia.
- October 2016: *Exploring the effects of mindfulness informed osteopathic treatment for patients with chronic pain*. COME Quantum Conference, Centre for Osteopathic Medicine Collaboration, Mechelen, Belgium.
- November 2016: *Exploring the effects of mindfulness informed manual therapy*. Therapy Expo, NEC, Birmingham.

## Workshops

- November 2013: *Integrating mindfulness into osteopathic practice*, BSO Faculty Weekend, Woking, Surrey (with Dr. L. Nanke).

- October 2015: *Integrating mindfulness and mindful movements into osteopathic evaluation and treatment practices*, Osteopathy Australia Conference, Adelaide (with Dr. L. Nanke).
- April 2016: *Creative bodywork: integrating mindfulness and acceptance-based interventions into osteopathic assessment and treatment practices*. OsteoMAP Conference, BSO, London.

#### Poster presentations

- May 2014: *Developing a new approach to expand the scope of osteopathic care for patients with persistent pain*, University of Bedfordshire Student Research Conference, Luton.
- October 2014: *Embodying ACT in manual therapy: learning from the first year of an integrated treatment and self management programme for patients with persistent pain*, International ACT Workshop, Brussels.
- November 2014: *Developing an integrated physical and psychological pain management course for patients with chronic pain: a summary of the first year*, 10th International Conference for Advancing Osteopathic Research, Brazil (Presented by Dr D. Carnes).

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. Introduction**

2.1.1 This review presents a critical appraisal of research into the causes and consequences of chronic pain and the effectiveness of current pain management programmes. The aims are to analyse challenges identified in the management of musculoskeletal pain that cannot be fully resolved by physical therapy, and to present the rationale for developing an integrated pain management course for use by osteopaths in primary care settings. The review is divided into eight sections, which are: the aetiology and impact of chronic pain; effects of medical, psychological and physical therapy interventions; and the outcomes from multidisciplinary and mindfulness-informed management programmes. This is followed by a summary of key findings and their implications for the design of this study. Literature searches were conducted throughout the three year study and details of the key search strategies are attached in Appendix 1.

### **2.2 Aetiology of chronic pain**

2.2.1 This section presents an appraisal of the philosophical concepts that underpin definitions of chronic pain and an analysis of the theories and neuro-physiological evidence that differentiate acute and sub-acute pain from chronic conditions. This is followed by estimates of prevalence, an overview of risk factors and predictors of recovery, and the estimated burden on the National Health Service (NHS). This section concludes with a summary of biomedical and biopsychosocial pain management approaches and their implications for patients and practitioners.



### 2.2.2 Philosophical concepts and definitions

The population is ageing in Western societies, the prevalence of chronic conditions is increasing and healthcare service demands are changing (Foster et al 2012). Although there have been some advances in understanding relationships between biological, social, psychological and environmental influences on health, many of the neuro-physiological and psychosocial mechanisms involved in chronic pain-related disability remain unclear (Pincus and McCracken 2013). National Health Service guidelines acknowledge the impact of physical and mental health co-morbidities, and strategies for closing gaps in health and wellbeing and promoting patient activity and self-care have been proposed (NHS 2015). The Kings Fund (2015) also outlined ten priorities for healthcare, including an emphasis on self-care, which could be promoted in pain management programmes (Kamper et al 2015).

Approaches to chronic pain management are grounded in differing ontological concepts about the nature of the body and causes of pain (Nicholls and Gibson 2010), which guide different epistemological approaches to pain assessment and management (Marcum 2004; Lima et al 2014). Practitioners' beliefs about what pain is, and how it should be measured, influence communication about pain and the management strategies chosen to influence patient behaviour (Darlow et al 2015). Western healthcare has traditionally been based on the dualistic Cartesian philosophy of logical positivism, which involves assumptions about mind-body separation, the possibility of linear, uni-directional cause-and-effect processes, and beliefs that discrete causal factors of pain can, and should, be eradicated or controlled (Greaves 2002; Bourke 2014). These beliefs implicitly include evaluative dimensions that pain is bad and represents a deviation from an expected state of 'normality', which leads to moral expectations about appropriate behavioural responses and prescribes particular social roles for patients and practitioners (Giordano 2006).

Practitioner communication influences patients' understanding of their condition and informs their reactions to pain (Barker et al 2009; Darlow et al 2015).

Relational Frame Theory (RFT) is a theory of human language developed from Contextual Behavioural Science (Hayes 2004), which proposes that words are not neutral conveyors of fixed messages simply passed from speaker to listener. RFT posits that intended and interpreted meanings are contextualised by historically and experience-based expectations and the communication environment (Torneke 2010). Social, cultural and medical pain discourses are therefore important as words that are often used interchangeably (e.g. chronic or persistent; degeneration or wear and tear) are linked to different expectations about meaning and consequences (Barker et al 2009). Medical literature uses the terms chronic and persistent pain interchangeably, which suggests differences are semantic, but persistent pain may be a more accurate term as chronicity is often conflated with severity, as well as duration (Know Pain 2014). This thesis refers to chronic pain when discussing work by authors who used the term themselves but persistent pain when describing this study, as it is more congruent with the ACT focus on function (Dahl et al 2005; Harris 2009a).

Biomedical models of pain are based on Cartesian assumptions that it is a nociceptive input stimulus, and that neurological signals about damage in peripheral body tissues are transmitted to the brain to stimulate protective reactions (Smart et al 2012c). Pain perception is now known to be a more complex perceptual phenomenon (Smart et al 2012a; 2012b), as reports of pain intensity and behavioural reactions vary widely between patients and are often not directly linked to tissue damage or symptom duration (Marley et al 2014). A recent revision of the 1986 International Association of the Study of Pain (IASP) definition classified pain as a distressing experience which was associated with actual or potential tissue damage and involved sensory, emotional, cognitive and social elements (Williams and Craig 2016).

Waddell (2004) categorised acute pain as less than six week's duration, sub-acute lasting for six to twelve weeks, and chronic pain as persisting for three months or longer. These categories are in widespread use (Arthritis Care 2010), although some studies define pain in terms of duration and frequency. The ASA Taskforce (1997) expanded the definition to include functional impact, defining it as attributable to a non-malignant aetiology and with a duration or intensity that adversely affects function and well-being. The Clinical Standards Advisory Group added a normative dimension and defined chronic pain as persisting beyond 'expected' healing times (CSAG 2000), which involves estimating what is normal for different conditions, patient ages and health status.

Variability in pain definitions is illustrated by research study inclusion criteria, which range from pain that persists beyond three months or longer than the time expected for tissue healing after injury (Arthritis Care 2010), to pain occurring on most days for more than six months (Bhana et al 2015). Definitions of chronic pain which primarily refer to tissue damage and duration are still used, despite important advances in pain science knowledge (Butler and Moseley 2003), and research into distinctive neuro-physiological characteristics in nociceptive and neuropathic pain, and for peripheral and central sensitisation (Smart et al 2012a; 2012b; 2012c).

Biomedicine has made significant contributions to public health in many areas, including acute traumatic injuries and infectious conditions, but has been less effective for long-term, lifestyle-related illnesses and symptoms (Bourke 2014). Defining chronic pain in terms of duration and tissue damage fails to account for variability in perception and behavioural responses, which are influenced by biological, psychological, socio-cultural and environmental factors and life context (Lima et al 2014). Biomedical limitations contributed to the development of Engel's biopsychosocial model (Engel 1978), which has been adopted with various levels of enthusiasm and integrity (Greaves 2002; Penney 2013).

Healthcare models are evolving to fit changing environmental needs (Anjum et al 2015), and there is evidence of a phenomenological shift from biomedical to biopsychosocial discourses for conditions like chronic pain (Lima et al 2014), but the extent of this potential paradigm shift remains unclear (Butler et al 2004). Clinical interventions need to be based on credible theories, which account for biological and neuro-physiological mechanisms and the psychosocial factors that influence behavioural reactions, and on adequate pilot studies (Craig et al 2006). Positivist theories need testable hypotheses about the mechanisms by which chronic pain and disability develop, and the processes by which their impact may be ameliorated. Biopsychosocial theories need to account coherently for complex interactions and the dynamic relationships between multiple health factors that may explain individual illness experiences. The evolution of pain theories and limits of current pain science knowledge are explored below.

### 2.2.3 Neuro-physiological factors

Cohen et al (2013) reviewed the evolution of pain theory and outlined three models which attempted to explain the underlying mechanisms. The first model was based on the Cartesian metaphor of 'the bell in the brain' (Neilson 2015), in which the neurological system channels signals from peripheral tissue damage to the brain for central processing. Some approaches are still based on this model and it originally provided a useful structure for exploring pain fibre functions and pathways. In this hard-wired model, chronic pain was defined as persisting beyond 'normal' healing times (IASP 1986), which raised the issue of assessing biological social, cultural expectations of normality. This nociceptive model failed to explain the unpredictability of patients' pain reports and was recognised as flawed when research demonstrated that tissue damage was not a necessary or sufficient cause for pain perception (Smart et al 2012a).

This led to the development of the Melzack and Wall's (1965) Gate Control Theory, which evolved into the theories of central sensitisation, neuroplasticity and the pain matrix (Melzack 1999). The concept of a soft-wired system accounts for unpredictable responses through the cumulative influences of factors interacting on peripheral (bottom up) and central (top down) processing and modulation of nociceptive information. Functional Magnetic Resonance Imaging (fMRI) studies showed that processing occurs in the pain matrix in response to varied sensory experiences, so Iannetti and Moraux (2010) recommended using the term neuromatrix. Neuro-physiological models have contributed to increased understanding about pain processing in the cingulate gyrus, insula, temporal lobe and dorso-lateral prefrontal cortex (Tracey and Bushnell 2009; May 2011), but their impact on clinical practice is unclear. New areas for investigation include affective dimensions of pain perception and the role of tactile stimuli via C tactile fibre afferent pathways (Olausson et al 2008), which is relevant to therapists who use light and gentle forms of touch in their assessments and treatments.

Chronic pain cannot be understood using linear cause-and-effect models as it affects multiple aspects of life, including physical capacity, body awareness, sense of self, embodied engagement with the world, social identity, self-esteem and agency (Marcum 2004; Lima et al 2014). It is often unresponsive to treatments that aim to control symptoms, and patients who continue to seek a permanent cure often experience repeating cycles of avoidance which are maintained by depression, anxiety and rumination (Dahl et al 2005; Vowles et al 2009). Attempts to make sense of patients' experiences and develop effective management strategies have led to extensive research into biomedical, genetic, psychological, socio-cultural and environmental factors. Analysing factors separately, however, ignores relationships between overlapping variables (Foster et al 2010) or cumulative effects on an individual's functional balance within an ecological model of health (Anjum et al 2015).

There have been attempts to define chronic pain as a specific disease in its own right (Siddall and Cousins 2004; Dickenson et al 2010), where disease is described as deviation from normal structure and function identified by characteristic signs and symptoms. This positivist model assumes that chronic pain is abnormal, and is caused by identifiable pathological processes or complex homeostatic adaptations to changes in a patient's internal or external environment (Anjum et al 2015). This contrasts with Eastern and Buddhist beliefs that pain is a normal and inevitable aspect of human experience (Kabat Zinn 1990), and that problems are caused by the suffering which results from attempting to avoid pain and other unwanted inner experiences (Hayes et al 2012). There is increasing interest in the Eastern beliefs that provide a theoretical basis for ACT and mindfulness-informed pain management approaches (Sections 2.7 and 2.8).

Siddall and Cousins (2004) proposed that pain was a primary pathology with observable brain changes that led to secondary pathologies, including depression and fear-avoidance behaviour. Their theory was supported by a neuro-imaging study which demonstrated decreased grey brain matter in participants with chronic pain (Apkarian et al 2004). The American Academy of Pain Medicine (AAPM) later developed two disease categories: eudynia for pain caused by detectable noxious stimuli which promote healing and repair; and maldynia for pain occurring without detectable stimuli that is unresponsive to medication. A category of secondary maldynia was defined as pain which arises when eudynia persists beyond the expected healing time.

This model of chronic-pain-as-a-disease assumes that management programmes aim to return patients to a normal state and reinforces social expectations about traditional patient and practitioner roles. Cohen et al (2013) argued that this theory represented attempts to "retreat to the false sanctuary of biomedical certainty" (p.4) to avoid acknowledging unpredictable, un-measurable factors.

Cohen et al (2013) stated that, although Tracey and Bushnell's (2009) analysis of 108 functional MRIs confirmed that patients with chronic pain had abnormal brain function, convincing uni-directional causal links were not yet established. They concluded that the theory of chronic-pain-as-a-disease represented a circular argument that simultaneously conflated pain as an experience, a symptom, a pathological entity or a cause of pathology. Secondary maldynia also led to re-attribution to social causes or individual psychological characteristics when objective physical causes could not be identified. Re-attribution of medically unexplained pain has been associated with blame and shame for patients, damaged patient-practitioner relationships, and has demonstrated limited benefits in clinical practice (Dowrick et al 2008; Burbaum et al 2010).

Cohen et al (2013) also stated that psychological and social pain factors could not be located in the body, but this does not appear to acknowledge the embodied nature of human experience. Associations between cognition, affect and physiological processes are expressed somatically (Blickenstaff and Pearson 2016), and provide non-verbal cues of arousal and avoidance that could be observed interoceptively by aware patients or palpated by manual therapists. This suggests that some psychosocial aspects of pain and distress may be accessible but conflicting opinions about the nature of pain also indicate that the development of evidence-based biopsychosocial theories would be helpful.

Critics of some models of biopsychosocial healthcare (Greaves 2002) contend that dualistic mind-body concepts still form the basis of linear theories that physical behaviour is motivated by cognition, and that the body simply provides a source of sensory information. Recent research into embodiment and the phenomenological theory of perception of Maurice Merleau-Ponty (Romdenh-Romluc 2011) propose that the body is both a subjectively lived experience and a tangible biological object (Wilson 2002; Wilson and Golonka 2013). This position offers a more holistic framework for exploring mind-body relationships and

expands previous theories about embodied cognition. Merleau-Ponty's concept that we do not simply have a body but we are a body too implies that physical dysfunction automatically affects the sense of self and being-in-the-world (Tyreman 2011b). This may be linked to the sense of 'unhomelikeness' associated with pain and illness (Svenaus 2000), and could be a useful philosophical concept for manual therapists.

Biomedical and biopsychosocial healthcare models identify aetiological factors for chronic pain which focus on disease or dysfunction (Williams et al 2008), and contain different assumptions about the weighting of separate factors and relationships between factors. There is increasing awareness of the need to develop models that can account for complexity in healthcare (Sweeney and Griffiths 2002). The Cynefin model of sense-making (Kurtz and Snowden 2003) has been used to address the concept of patients with chronic illnesses as complex adaptive systems (Martin and Sturmborg 2009; Martin et al 2011). Ecological models focus on complex inter-relationships within and between health domains to explain the cumulative impact of factors that move individuals towards the threshold for dysfunction and the protective factors that maintain health status (Anjum et al 2015). There is limited evidence about practices based on complexity science or ecological principles, so evidence about factors assessed in traditional biomedical or biopsychosocial models is discussed below.

Factors that indicate higher risks for developing chronic pain or predicting poor outcomes have been categorised using the 'flag system': red for pathologies, yellow for psychosocial issues, orange for mental health, blue for occupational factors and black for non-modifiable environmental issues (Waddell 2004). Pink flags are factors promoting wellbeing that counter-balance negative effects on physiological compensations (Fawkes and Carnes 2012).



Biomedical factors investigated as risk factors include genetic predispositions, developmental factors, age, height, weight, morphology, diet and nutrition, patho-anatomical structural factors and particular conditions. Psychological factors associated with high risks and poor outcomes include anxiety and depression, maladaptive health beliefs, external locus of control, passive coping strategies, rumination and catastrophising (Pincus et al 2002). Social factors include gender, marital status, education, occupation, socioeconomic status, ethnicity, climate, isolation, social roles (Chrouser Ahrens and Ryff 2006; Mallen et al 2007) and occupation. Environmental factors include financial problems, poor housing and pollution (Fransen et al 2002; Ramond et al 2011). Salutogenic factors include self-efficacy, resilience, sense of coherence, and psychological flexibility (Foster et al 2010; Flensburg-Madsen et al 2005; Hayes 2004).

Studies assessing poor outcomes in musculoskeletal pain often focus on separate anatomical sites but Mallen et al (2007) conducted a systematic review to explore generic factors. They found eleven prognostic criteria which included severity, duration, multiple sites and previous episodes, pain, mood disorders, somatic distress, maladaptive coping strategies, social isolation, age, degree of disability and restriction of movement. They concluded that heterogeneity meant that further research was needed before firm conclusions could be drawn about their predictive value.

The bewildering array of factors that may influence the transition to chronic pain or limit treatment outcomes led to attempts to identify high-risk subgroups, especially in common, costly conditions like chronic low back pain (Breivik et al 2006; van der Windt et al 2008). This was prompted by the need to target limited resources at patients who were most likely to respond to a specific intervention (Viniol et al 2013), based on assumptions that targeting subgroups would be more effective and cost-effective (Wand and O'Connell 2008).

In the 1990s, attempts to subgroup patients by symptom type, level of dysfunction, personality traits, pain expression and causal beliefs in common chronic pain conditions found few consistent or clinically useful patterns. Recent studies explored potentially modifiable cognitive and affective risk factors (Nicholas et al 2011), including pain-related fear, fear-avoidance behaviour (Boersma and Linton 2006) and psychological distress (Pincus et al 2007), but relatively few studies have addressed protective factors like resilience, active coping and self-efficacy (Viniol et al 2013).

Viniol et al (2013) conducted a cross sectional cluster analysis on a cohort of 634 primary care patients over a 12 month period. They concluded that participants could be split into three groups: older, retired people who reported moderate pain levels due to age-related degenerative conditions, who were optimistic and coping well (28%); middle aged patients with high levels of pain and distress, low resilience and poor coping skills (32%) and middle-aged patients who were less affected by pain and had better mental health (40%). This sample may have been unrepresentative, however, as 78% were living with a partner and 51% were employed, where other studies found that patients with chronic pain were often unemployed and living alone. Turk (2005) identified three groups of patients with dysfunctional coping strategies, adaptive copers, and those with inter-personal distress. Hill et al's (2008) primary care study also identified low, medium and high risk groups, but further studies are needed before firm conclusions can be drawn about varying risk factors.

Some patients may have poorer coping strategies because of their health beliefs and understanding of pain. Foster et al (2008) explored the impact of cognitive illness perceptions in a prospective cohort of 810 patients with low back pain. The majority (52%) reported poor Roland Morris Disability Questionnaire (RMDQ) outcomes at six months, despite low to medium median baseline disability scores of 8.6 (IQR 6.0).

Responses from the Revised Illness Perception Questionnaire (IPQ-R) indicated poor outcomes for individuals who believed their pain would have serious consequences, would last a long time, and would be beyond their control. Using the same data, Foster et al (2010) analysed the effects of twenty common psychological obstacles to recovery. Multiple linear regression analyses, adjusted for baseline measures, demonstrated that 57% of variance could be explained by four factors: perception of personal control; illness identity; self-efficacy; and position on transitional timeline from acute to chronic pain. In contrast to previous research (Pincus et al 2002), depression, catastrophising and fear avoidance were not predictive and Foster et al (2010) concluded this was due to overlapping variables, as many factors could be subsumed under the concept of self-efficacy. This suggests that patients' sense of identity and beliefs about their ability to control pain are an important focus for future research.

Many demographic and pain-related variables are predictive but cannot be changed (e.g. age, intensity and duration) so, while they are useful for identifying risk, opportunities to increase intervention effects may lie in psychological variables which are modifiable, even if their impact is thought to be relatively small. According to complexity theory, a minimal change in one variable may have significant effects in other domains and overall function (Kurtz and Snowden 2003; Van Beurden et al 2011). If positive outcomes are un-related to intervention dose, this theory offers an alternative explanation for unexpectedly transformational changes reported after brief interventions, as functional contextual approaches that focus on changing relationships between factors or relationships between patients and their problems, rather than the severity of specific factors (Hayes et al 2012). Prioritisation of biomedical theories, however, continues to influence how pain factors are quantified, which affects estimates of pain prevalence and incidence.

#### 2.2.4 Prevalence

The ways in which pain is conceptualised influences what, and how, intervention outcomes are measured. Pain perception is subjective and reported severity and behavioural consequences are influenced by psychological and socio-cultural factors. Self-reports rarely correlate strongly with functional assessments and researchers use multidimensional measures to enhance reliability by summing multiple outcomes. The development of quantitative measures parallels the evolution of pain theories, where focus has shifted from simple pain levels to measures of physical and psycho-social function and disability. Recent studies have focused on identifying how patients' functional capabilities are affected in daily life, and behavioural measures include acceptance and willingness to remain active despite pain (McCracken et al 2004; McCracken and Yang 2006).

In epidemiological studies, prevalence is a measurement of the percentage of cases with a particular condition in a given population at a given time, which provides an estimate of the widespread nature of the condition. Incidence is the rate of occurrence of new cases within a specified time frame, usually one year, which provides information about the risk of developing the condition. Estimates of chronic pain prevalence vary from 5–10% in the UK (UK Pain Proposal 2011), 20% of the population in Europe (EFIC 2010) and 11% to 64% globally in countries with higher incomes (Landmark et al 2012). As well as geographical factors, variance may be due to pain definitions, measurement tools, and socio-cultural influences on the way that patients report pain.

Overall estimates indicate that chronic pain is widespread and the risk of developing chronic pain is increasing, especially in an ageing population (EFIC 2010). Total costs are difficult to estimate but the cost to the UK economy of back pain alone was estimated at £12.3 billion per year in 2000 (Maniadakis and Gray 2000), and approximately 9.3 million working days were lost from 2008 to

2009 due to musculoskeletal disorders (HSE 2011). Chronic musculoskeletal pain accounts for approximately 25% to 30% of GP consultations in the UK (Jordan et al 2010; DH 2006), and is the second largest cause of work absence (Lonsdale et al 2012). In the UK it is also claimed that 45% of the estimated 7.8 million people with chronic pain do not have adequate management (UK Pain Proposal 2011).

### 2.2.5 Summary

Chronic pain management is a challenge for health services as pain is complex and unpredictable, the individual and social costs of pain-related disability are increasing, and practitioners struggle to find effective ways to support patients whose symptoms cannot be resolved by medical interventions. Research is being conducted into the neurophysiological mechanisms and psychosocial processes that influence variations in individual's pain perceptions. Assessments have also shifted in focus from intensity, duration and disability to multiple biopsychosocial risk factors, with studies aiming to identify which interventions work best for which patient subgroups (van der Windt et al 2008). The next section describes research exploring the physical, psychological and social impacts of chronic pain.

## 2.3 The impact of chronic pain

### 2.3.1 Introduction

Chronic pain is costly for society, challenging for healthcare professionals and can be a disabling experience that affects all aspects of life (Marley et al 2014). Musculoskeletal pain is one of the most common conditions, with low back and neck pain the most frequent (Parsons et al 2011), and many patients report multiple pain sites (Carnes 2011; Andersen et al 2012). Co-morbidity in physical and psychological health conditions is also common (Pincus et al 2002). Chronic pain creates challenges in maintaining normal social roles and activities, but

interventions often focus on physical and psychosocial issues as separate domains. This review of current evidence is presented in three sections, which separates biophysical, psychological and socio-cultural factors into discrete domains. The choice to present them separately in this order was guided by the decision making pathways of physical therapists who use holistic biopsychosocial theories of evaluation but are often trained primarily in biomechanical treatment approaches (Foster and Delitto 2011; Sanders et al 2013). The biophysical domain is usually the focus of assessment for primary care practitioners, typically followed by a linear, sometimes fragmented, progression from biological to psychological and, less often, to social considerations (Butler et al 2004; Harding et al 2010). This is the basis of stepped primary care pathways for chronic pain (NICE 2009), rather than more costly, but potentially more effective, stratified pathways which target patient characteristics from the start (Sowden 2012).

### 2.3.2 Physical impact

Patients often believe that pain is a sign of physical damage and limit activities that may provoke discomfort to minimise perceived risks of further injury (Butler & Moseley 2003). Limiting movement for a prolonged time has been associated with physical de-conditioning (Verbunt et al 2003; Eccleston and Crombez et 2007), and can reinforce hypervigilance and anxiety about the need to avoid pain (Darlow et al 2013). Each time a person attempts an avoided movement, they may feel weaker and movement may be more difficult or painful. This can raise anxiety and leads to self-perpetuating cycles of avoidance of unwanted experience which maintains maladaptive responses (Hoffman et al 2010).

Human motivation has been described in terms of three basic systems: 'threat', the system that protects people from danger and is physiologically associated with the production of adrenalin and cortisol; 'let', the rest and relaxation phase, associated with oxytocin; and 'get', the drive to gain resources, associated with

dopamine (Gilbert 2010). With persistent pain, the threat/protect motivational system becomes the primary driving force. This drains energy and attention from the get/approach system so the person is less likely to engage in positively rewarding activities. It also drains energy from the let/rest system, so people become exhausted due to permanent sympathetic nervous system arousal.

Long-term attempts to control chronic pain by doing less activity are usually ineffective after normal healing times have elapsed and often lead to decreasing quality of life (Thompson & McCracken 2011). Physical inactivity and postural adaptations place stress on other body parts, which is challenging for patients with multiple musculoskeletal symptoms (Lederman 2010; Carnes 2011). Lack of movement also affects cardiovascular, respiratory and motor control function, especially in older patients (Williams et al 2015). Physical activity and sport are important stress management mechanisms, so reductions in oxytocin and dopamine can have significant psychological impacts. Unfortunately, avoidant reactions are reinforced by healthcare practitioners who advise rest and remaining off work until pain-free (Darlow et al 2013). These were previously common, but now discredited, approaches (Butler & Moseley 2003) as passive coping strategies, fear-avoidance behaviour and lower expectations of recovery are associated poorer treatment outcomes (Ramond et al 2011).

There are links between cognitive health beliefs and psychological pain reactions. Darlow et al (2013) interviewed twelve patients with acute low back pain and eleven with chronic pain and found that patients' understanding of symptoms and self-management behaviour was influenced by practitioners' advice. Key messages were that the spine was vulnerable and needed protection, which created worry and vigilance about potential threats, as well as guilt and frustration when pain levels fluctuated or patients believed they had failed to protect their body effectively. This influence endured for years, even if patients only heard 'off-hand statements on a single occasion' (ibid. p.533).

These findings were consistent with other studies about advice, information that patients remembered, and independently observed interactions (Jeffrey and Foster 2012; Dean et al 2005; Briggs et al 2010; May 2007; Daykin and Richardson 2004). Clinicians can also contribute to poor outcomes via patho-anatomical explanations that patients interpret as irreversible damage or by failing to advise patients to remain active (Barker et al 2009; Darlow et al 2013).

When patients are advised to maintain normal activities, historical lay beliefs and cultural discourses about pain often means that this seems counter-intuitive and is met with scepticism and resistance (Petursdottir et al 2010; Holden et al 2012; McPhail et al 2012). Physical activity in planned exercise programmes can be effective in managing pain and maintaining function in chronic musculoskeletal disorders (Marley et al 2014) but, despite evidence that activities like walking are valuable (Airaksinen et al 2006), many patients do not adhere to exercise programmes (Williams et al 2011). This may be due to fear or catastrophising (Marley et al 2014), and practitioners may also ignore referral guidelines based on perceptions that some patients will not comply (Williams et al 2007).

Low adherence rates and varied outcomes in rehabilitation programmes suggest that exercise advice does not always lead to sustained behaviour change in patients with chronic disability. Williams et al (2015) identified that effective components included tailoring interventions to individual needs, promoting regular practice in daily activities, strengthening psychological beliefs about recovery, providing motivation and a sense of ownership to promote long-term engagement, and coordination of course delivery. Their protocol for a feasibility study of enhanced rehabilitation included patient information workbooks, goal-setting diaries, and individual sessions to increase self-efficacy and the quantity and quality of physical activities.



These findings have implications for assessing practitioner communication about risk, prognosis, self-management, and the discourses about chronic pain that are perpetuated in traditional biomedical consultations. There is convincing evidence from systematic reviews and other studies that the advice given to patients is strongly influenced by the practitioner's attitude to pain and activity (Darlow et al 2012; Vlaeyen and Linton 2006) but, unfortunately, practitioners may be unaware of their own beliefs (Daykin and Richardson 2004; Pincus et al 2006). Research into outcomes from a communication based intervention to empower patient autonomy and self management reported positive short-term improvements in physiotherapists' abilities to support patients' needs (Lonsdale et al 2012; Murray et al 2015). Communication that focuses on disability can have serious consequences, as withdrawing from valued social activities affects patients' sense of agency, autonomy and interpersonal relationships. These findings suggest a need to explore in more depth how communication strategies and pain discourses can frame pain in mechanistic or functional terms which may empower or limit patients' physical activities and self-care behaviour.

### 2.3.3 Psychological impact

Patients with chronic pain are at a higher risk of developing co-morbidities such as depression and anxiety (Marley et al 2014). It is estimated that 50% of patients with chronic pain are depressed, but a uni-directional causal pathway has been deemed unlikely (Pincus et al 2002). Relationships between physical responses, mood disorders and cognitive reactions are linked by intra-personal mechanisms which include: the physiological effects of generalised autonomic nervous system stress responses to anxiety (Butler & Moseley 2003); cognitive reactions to perceived threats arousing increased vigilance, rumination and anxiety (Hofmann et al 2010); and physical disruption of patients' embodied sense of self, leading to loss of agency and depression (Bullington 2009; Lima et al 2014). Studies have attempted to identify factors that precede or predict

chronic pain, those that are a consequence of pain and predict poorer outcomes, and those that are involved in both processes.

A prospective, population-based survey (n=3000) found that participants who developed a new onset of chronic widespread pain over a period of 15 months were likely to report poorer mental and physical health-related quality of life, compared to participants without pain (Nicholl et al 2009). Mental quality of life scores were associated with psychosocial risk markers at baseline, but poor physical scores appeared to follow the onset of pain. The authors acknowledged their inability to draw firm conclusions due to confounding variables and lack of baseline scores, but concluded the data suggested different interventions were needed to address separate risk factors for health-related quality of life.

In contrast, Foster et al (2010) proposed that research efforts should move away from evaluating separate psychological factors to overarching concepts like self efficacy, which is said to account for depression and fear-avoidance behaviour. Foster et al's (2010) study assumed that low self-efficacy could be resolved by expert interventions, but it may be difficult for practitioners working in expert led models of care to engage patients' internal motivation and sustain behaviour changes after a programme ends (Michie et al 2011). Studies which aim to empower patients' self-care abilities and increase physical activity levels are also often framed in language which aims to enhance adherence to practitioners' advice (Lonsdale et al 2012; Murray et al 2015), which can increase compliance but may perpetuate patient activation via an external locus of control.

Alternatively, the psychological perspective offered by Contextual Behavioural Science (CBS) suggests that people are internally motivated to change their behaviour through committed connections to activities and relationships that have personal value and meaning (McCracken and Velleman 2010). Intrinsic motivation has been linked with dopamine (Daw and Shohamy 2008), as have

the values-based interventions of ACT. These physiological responses may provide a counter-balance to the negative effects associated with chronic pain conditions like Fibromyalgia (Wood et al 2007; Gilbert 2010). Physiological impacts occur when local adaptive stress responses to acute pain, modulated by the sympathetic autonomic nervous system, are prolonged and lead to a generalised adaptive response (Butler and Moseley 2003). The central nervous system becomes hypersensitive to stimulation by sensations below the usual pain threshold or not normally nociceptive (Smart et al 2012a). Impacts include increased anxiety, which can influence the 'top down' processing of body sensations via central sensitisation, and create cycles of pain, anxiety and hyper-vigilance (Campbell and Edwards 2009).

The cognitive effects of prolonged physiological stress and pain-related anxiety include catastrophising and rumination (Hofmann et al 2010). Vlaeyen and Linton's (2000) fear-avoidance model outlined a progression from cognitive beliefs that pain was a threat to catastrophising and anxiety about future consequences. Fear-avoidance has psychological consequences involving the sense of self and social relationships, as avoiding activities can lead to dependence on others for basic needs and loss of agency, which has been defined as the capacity to achieve personal goals (Seedhouse 1986).

The loss of meaningful activities such as paid or voluntary work can also lead to suffering when people struggle to accept that their life is no longer the way it was or they wish it to be (Harris 2009a), and isolation is associated with poorer psychological health and cycles of pain, disability and depression (Mallen et al 2007). The psychological impact of chronic pain is sometimes only acknowledged when biomedical treatments fail to resolve symptoms, and psychological interventions are the second tier in a stepped care process. Multidisciplinary approaches that account for inter-related biological, psychological and social risk factors when pain starts are costly.

New approaches are being developed on assumptions that early, targeted interventions are the best way of managing steadily increasing levels of pain-related disability (Foster et al 2010), but it is not clear which factors should be targeted, in which patient subgroups, and at what point in the patient's pain journey (Sowden et al 2011; Foster et al 2011).

Approaching this challenge from a different philosophical stance, chronic pain management based on Contextual Behavioural Science (CBS) distinguishes between the perception of physical sensations that could be described as painful, cognitive evaluations of their meaning, and the act of choosing an appropriate active response (Hayes et al 2012). This approach is rooted in Buddhist philosophy which proposes that pain is a normal aspect of human existence, and that suffering is a separate experience caused by failure to accept inner experiences as they are (Kabat Zinn 1990). Psychological experiences such as anxiety and depression are considered to be caused by resistance to present moment discomfort and beliefs that pain must be eliminated, controlled and avoided. Unfortunately, when avoidant beliefs are shared by patients and practitioners, the fact that chronic pain is typically resistant to control interventions can lead to frustration, anger and hopelessness for both parties. Persistent efforts to find the 'right diagnosis' and 'right cure' have consequences for practitioners but a much greater impact on the person in pain.

Research studies exploring the impact of chronic pain have examined patients' beliefs and expectations, and their perceptions of practitioner competence and treatment credibility. Verbeek et al's (2004) review of eight quantitative studies and twelve qualitative papers found that patients with low back pain expected to receive adequate physical examinations, clear diagnoses and prognoses, effective pain relief, sickness certificates when needed, practical information about self-management, and to be referred for diagnostic testing and other forms of treatment if primary care was ineffective.

A recent ethnographic study found that patients' expectations included the desire to understand the cause and consequences of their condition and management advice to enable them to regain a sense of normality (Bhana et al 2015). Descriptions of normality were split between participants who had 'unrealistic' expectations about living a pain-free life and those who accepted of the probability of persistent pain but wanted to live a more meaningful life. In common with other patient groups, they also expected to be listened to, treated with respect and involved in joint decisions about treatment (Verbeek et al 2004), supporting the rationale to explore a more patient-centred approach.

Musculoskeletal pain management guidelines emphasise that practitioners should focus on explaining causes and diagnoses with patients, but this can lead to dissatisfaction as chronic pain is multi-factorial, so simple cause-and-effect explanations are often inappropriate or unconvincing (Verbeek et al 2004). Lack of a specific diagnosis or failure to be referred for further tests can leave patients feeling under-diagnosed, which fuels a quest for a second opinion and heightens anxiety and distress (Dirkzwager and Verhaak 2007). Expectations of significant improvements are frequently unfulfilled, as half the patients receiving treatment gain only a 30% reduction in pain (Bhana et al 2015). Underlying chronic pain mechanisms involve abnormal hypersensitivity in central and peripheral neural processing, and practitioners face challenges in explaining pain (Butler & Moseley 2003) and encouraging 'acceptance' of discomfort in ways that patients do not reject as meaning they have to 'give up' on living their life (Harris 2009a).

Lack of correlation between satisfaction with care and treatment outcomes has been found in physical therapy research (Pincus et al 2000; Nyiendo et al 2001). Satisfaction may be influenced by factors including therapeutic alliance and congruent beliefs, but this has not been fully investigated in osteopathic practice. Despite knowledge about neuro-physiological differences between acute and chronic pain, and guidelines that advise against patho-anatomical diagnoses,

studies suggest that GPs and physical therapists continue to use biomedical language that can foster unrealistic expectations and increase disappointment and frustration when anticipated cures do not occur (Crowley-Matoka et al 2009). Patients options are then to continue seeking a cure, to become frequent attenders or those that GPs categorise as difficult patients (Dowrick et al 2008; olde Hartman et al 2009), or to pay for long-term support from therapists who are willing to continue treatment with limited effects (Zusman 1997; Pincus et al 2006). As a consequence, these patients can become marginalised members of society whose care is a shared responsibility for health and welfare services.

#### 2.3.4 Social and global impact

Studies have explored some social factors separately, as well as in global outcome measures, although they are the least frequently addressed aspects of biopsychosocial pain management models (Harding et al 2010). Blind spots may be maintained by a primary care focus on patients as individuals, and health and social welfare services which are delivered in fragmented care packages. Relationships between physical and psychological impacts can be linked to social factors including poor inter-personal relationships with family, friends and community; loss of paid employment or meaningful voluntary work; altered social roles and status; and financial and housing problems, which exacerbate anxiety, depression, isolation and increase vulnerability to other health problems.

Some practitioners may chose to focus on events in the consulting room, rather than the complex, messy domains of the patient's life, especially when social factors do not seem modifiable from the perspective of their healthcare role. Lack of confidence in addressing psychosocial issues also leads to over-emphasis on biomedical discourses (Jeffrey and Foster 2012), reinforcing messages that 'it is important to keep fighting pain'; an attitude which is a strong predictor of poor outcomes (McCracken and Ecclestone 2004; McCracken et al 2007a).

Chronic pain impacts on patients' social identities and personal relationships can be affected by psycho-emotional responses to pain, changes in self-image and decreased ability or willingness to maintain valued roles. This can lead to isolation and influence coping strategies, as some patients are reluctant to share their pain with family and friends as they fear it will damage important relationships. Therapists like osteopaths often offer lengthy appointments and extended courses of treatment, which provide opportunities to develop close therapeutic relationships in which patients may disclose experiences of pain that they do not share with others (Osborn and Smith 2008; Toye et al 2013). Some patients become fixated on analysing differences between themselves and 'normal' people (Campbell and Cramb 2008), which fuels their desire to regain control and not let pain 'beat them' (McCracken and Ecclestone 2004), assuming that they can only get on with their lives once the pain has gone. Campbell and Cramb (2008) proposed shifting the focus of interventions and balance of power from the pain to the person, and efforts to promote sustained behaviour change have been based on models which consider relationships between individual and social factors on global health and wellbeing outcomes (Michie et al 2011).

Multidisciplinary interventions have been based on self determination theory, social learning theory (Carnes 2013), self efficacy (Foster et al 2010), sense of coherence, and psychological flexibility (McCracken and Morley 2014). These programmes aim to engage participants' internal motivations and address maladaptive beliefs, typically involving sets of self-report outcome measures to gain holistic data about intervention effects. Many behavioural programmes, however, remain grounded in an expert practitioner, or expert patient, model in contrast with the collaborative stance of acceptance approaches (Section 2.9).

### 2.3.6 Summary

The dominance of biomedical beliefs means that the physical, psychological and social impacts of chronic pain are usually considered separately, even though evidence suggests they are an inter-linked aspect of a global health experience. Impacts include reduced activity due to fear-avoidance of movements, physical de-conditioning, functional adaptations and vulnerability to injury in other body areas. Psychological impacts include anxiety, depression, despair and loss of hope, and social consequences are increased vulnerability, isolation, withdrawal from meaningful social roles and loss of employment, often with financial and housing consequences. Impacts in these domains are linked through experiential avoidance and mediated through physiological changes, including prolonged sympathetic nervous system arousal and blurring of sensory perceptions and affective reactions. Complex links between domains illustrate the difficulty of managing patients with chronic pain using linear cause-and-effect healthcare models. Section 2.4 below explores the ways in which chronic pain is currently assessed and managed in primary care, including a critical appraisal of the limited outcomes that have prompted moves towards a more holistic approach.

## **2.4 Medical interventions**

### 2.4.1 Introduction

The section explores the influence of General Practitioners' (GPs) beliefs about chronic pain on strategies for identifying problems and choosing appropriate interventions. GPs act as primary care gatekeepers for assessment and treatment of musculoskeletal pain, which accounts for 30% of GP consultations (Foster et al 2012). They are the main point of contact for patients with functional pain syndromes and 'medically unexplained' symptoms that are often associated with long-term conditions in which pathological disease processes cannot be clearly



identified (Williams et al 2008), and which can become a source of conflict in the therapeutic relationship (Kristiansson et al 2011).

Primary care options typically include medication, advice about self-care, lifestyle changes and exercise, and information about prognosis (Bishop et al 2008). NICE guidelines recommend that patients can be referred to secondary care for physiotherapy, exercise programmes, Trans-cutaneous Electrical Nerve Stimulation (TENS), acupuncture, exercise therapy programmes, psychological support, as well as tertiary interventions such as nerve blocks, surgery and multidisciplinary pain management programmes. Recent guidelines (NICE 2016) recommend the use of manual therapy as part of a multimodal package that includes exercise and/or psychological interventions. This thesis is focused on developing a pain management approach for use by manual therapists, which aims to promote behaviour change as well as pain reduction or control.

#### 2.4.2 Advice, education, reassurance and exercise programmes

Many adults in the UK fail to achieve recommended weekly levels of physical activity and the proportion is higher in people with chronic pain (CMO 2004). Practitioners are expected to promote lifestyle changes (NICE 2006) but GPs sometimes provide only limited information about prognosis for musculoskeletal problems (Bishop et al 2008) or the need to remain active (Din et al 2015). Only a few patients in Darlow et al's (2013) interview study, however, remembered reassuring information from practitioners who encouraged them to remain active, advice which they reported acting on for years, and Pincus et al (2013) also identified the value of cognitive, rather than affective, reassurance.

Encouraging patients to adopt more active lifestyles and engage in specific exercises is sometimes limited by GPs' perceptions about their role, lack of time, competing priorities, lack of expertise, or perceptions of patient motivation

(Breen et al 2007; Armit et al 2009), underpinned by beliefs that "those that desperately need it won't go" (Din et al 2015, p.750). GPs who are active themselves see their role as providing advice, rather than coercing change, and are more likely to discuss exercise with patients (Lobelo et al 2009). Their positive personal experiences of exercise are thought to strengthen the authenticity and credibility of their advice (Din et al 2015).

Exercise Referral Schemes (ERS) have been developed to provide GPs with accessible referral routes to local programmes (Williams et al 2007), especially for patients who have had a recent health crisis which may motivate a lifestyle change (Din et al 2015). The uptake of ERS referrals has been variable but the benefits are that programmes can be tailored to the needs of particular groups, and patients can gain confidence to exercise from peer support. This aim is also to encourage patients to continue activities when professional support stops, but concerns have been raised about access to local facilities and cost implications for disabled or low income patients when their free course ends (Din et al 2015). A systematic review by Williams et al (2007) demonstrated that exercise-referral schemes were effective at promoting moderate physical activity in sedentary people but identified a number of implementation challenges. Approximately a third of the patients referred did not attend a programme, and only 12-42% of patients completed a ten to twelve week programme, so ERS costs were high but overall impact was low.

#### 2.4.3 Physical therapy referrals

Musculoskeletal pain accounts for 30% of GP consultations in the UK and 23% of these patients are referred for physiotherapy (Foster et al 2012). The burden of managing musculoskeletal pain is increasing as the UK population ages (DH 2006), and recommendations have been to spread the assessment load and establish more effective care pathways by increasing the role of allied healthcare

providers like physiotherapists (CSP 2004; Foster et al 2012). Concerns have been raised about whether these practitioners have sufficient training to fill GPs' roles competently, and whether the evidence-base for physical therapy interventions is sufficiently robust (Foster et al 2012), so interventions have been developed to expand physiotherapists' skills in managing psychosocial aspects of pain (Sowden et al 2011) (Section 2.5).

#### 2.4.4 Summary

GPs may struggle to manage patients with chronic musculoskeletal pain and conditions that cannot be causally explained (Dowrick et al 2008). Biomedical models of primary care typically focus on attempts to control symptoms, but limited outcomes can create difficulties in the therapeutic relationship (Dirkzwager and Verhaak 2007; olde Hartman et al 2009). It is difficult for practitioners working in an expert-led model to engage patients' internal motivation to choose active self-care, and patients often resist attempts to re-attribute physical symptoms to psychosocial factors (Salmon 2007). Expectations about interventions influence outcomes (Smeets et al 2008), and patients with musculoskeletal pain usually expect a physical intervention. In stepped care, referrals for musculoskeletal triage and physiotherapy are for patients who do not improve, as access to multidisciplinary programmes is limited and costly.

## 2.5 Physiotherapy

### 2.5.1 Introduction

Approximately 6.7 million patients per year attend physiotherapy services for musculoskeletal pain (Foster et al 2012). Common sites are low back, shoulder, neck, knee and widespread areas (Carnes 2011), and chronic pain often spreads to other areas (Andersen et al 2012). Musculoskeletal physiotherapists provide

varied treatments for patients with chronic pain, which include rehabilitation programmes and interventions to promote activity and to reduce symptoms. These approaches can, but do not always, involve manual therapy. This section explores how physiotherapists' beliefs about chronic pain and clinical guidelines influence management strategies and outcomes from treatment that involves body work. It also explores recent initiatives to enhance physiotherapists' effectiveness in assessing and managing pain-related psychosocial distress and promoting patient autonomy and self care (Sowden 2011; Lonsdale et al 2012).

### 2.5.2 Exercise therapy

Physical activity is a key component in rehabilitation and self-management for persistent pain (Airaksinen et al 2006; Lonsdale et al 2012). It is recommended either as an increase in day-to-day activities, such as walking or cycling, or participation in specific exercise programmes (Frih et al 2009). The National Exercise Referral Scheme reported small, significant, short-term increases in physical activity which were, unfortunately, not maintained in the long-term (Williams et al 2007; NICE 2013). Participation in specific schemes did not necessarily promote increased day-to-day activities, leading to attempts to improve adherence through motivational interviewing and more effective goal setting (Din et al 2015). Chronic pain was previously thought to lead to disuse de-conditioning (Verbunt et al 2003; Crombez et al 2007), but Bousema et al (2007) stated evidence demonstrating measurable changes was lacking which may undermine the theoretical basis of some physical rehabilitation programmes.

Jordan et al (2010) found that supervision, individualisation and self-management techniques enhanced adherence to exercise therapy but that randomised trials with long-term follow up and standardised measures were needed because of conflicting findings between adherence and outcomes.

Adherence has been defined as the degree that patient behaviour corresponds with recommendations from their healthcare provider (WHO 2003). It includes behaviour during a course of therapy, such as attendance at exercise sessions, and longer term adherence to exercise behaviour after therapy ends. Adherence to exercises or physical activity is usually measured as the proportion of participants engaging in the activity and frequency of sessions attended per week. Patients may struggle to start or continue with exercise programmes because of physical dysfunctions or their health beliefs. Some studies have assessed changes in activity beyond programmed sessions, but did not identify whether participants were more likely to continue with activities that had some meaning for them, so there is scope for further research.

Graded exercises which target weaker muscles, and get increasingly challenging improve adherence, as do supervised sessions and taped exercises for home use (Jordan et al 2010). Interventions to promote adherence are often expert-led, delivered within a limited time frame, and based on extrinsic motivation. Strategies to strengthen motivation include education (e.g. about causes of pain), positive reinforcement, goal setting, skill building, diaries, behavioural contracts and certificates of completion. Strategies with a more explicit focus on an individual's life include counselling to explore their readiness to change, self monitoring tools and ways of sustaining exercise in future (Jordan et al 2010).

There is moderate evidence to indicate that exercise type does not affect adherence but supervised exercises are more effective for promoting training frequency than unsupervised ones. Individual programmes are more effective for improving attendance, and including both home and group exercise components may increase overall engagement. Participants are more likely to do exercises accurately if they have refresher sessions or are provided with exercise tapes (Jordan et al 2010). Performing exercises as instructed, however, to please the

practitioner may not engage intrinsic motivation or link exercises directly to patients' body awareness or sustainable activities in their daily life.

A Cochrane review by Foster et al (2005) concluded that interventions with ongoing support were more effective in encouraging participants to start physical activities, but they did not report associations between amount of supervision and degree of behaviour change, so it is possible that brief targeted interventions may be as effective. Jordan et al (2010) concluded that exercise type did not affect adherence, but aligning activities with patients' preferences increased motivation and educational strategies including supervision, written materials, feedback, contracts and follow-ups also increased adherence. Group sessions promoted activity but attendance was influenced by convenience, suggesting that group effects must be balanced with practical considerations. A systematic review of exercise schemes also found that stated reasons for poor adherence were inconvenient timing, poor facilities and staffing levels, problems with access and transport, and discomfort in the gym environment, as well as personal psychological barriers (Williams et al 2007).

Darlow et al (2013) recommended further studies to investigate ways of presenting diagnostic information and advice that encouraged patients to use painful body parts more freely to minimise the risks of developing fear-avoidant disability. Some studies provide information booklets for patients with specific musculoskeletal conditions (Roland et al 2002; Waddell et al 2004; Williams et al 2011) or self-help books for generic chronic pain (Dahl and Lundgren 2006; Burch 2008; Burch and Penman 2013).

### 2.5.3 Motivation

Healthcare programmes often include advice about increasing physical activity (Williams et al 2007) but poor adherence often limits long-term benefits (Jordan

et al 2010), so new methods are needed to promote physical activity in patients who may need it most. Patients often ignore recommendations from GPs or physiotherapists (Fruh et al 2009) and may object to being given lifestyle advice (Lobelo et al 2009), especially if it is not linked to their own beliefs and goals. Participants who were less active at baseline were found to be less likely to complete an exercise programme (Moore 2013), although initially less active participants sometimes reported greater increases in autonomous motivation (Moore et al 2011a). This suggests that motivation is a complex concept and that practitioner prompts may influence some patients more than others.

Research into the theories underpinning motivational advice has identified different ways in which patients' interest can be engaged. Theories underpinning interventions that aim to promote physical activity include Self Determination Theory, which proposes that practitioners can engage patients' autonomous motivation by the way that they communicate advice and support (Lonsdale et al 2012). According to Self Determination Theory, autonomous motivation is characterised by perceptions of future benefit and positive behaviour changes based on autonomous motivation lead to greater sense of well being and more sustained changes than those motivated by guilt or coercion (Ng et al 2001).

Interventions to promote autonomy have also been based around the '5A' framework - ask, advise, agree, assist, arrange (Fortier et al 2007). They aim to take account of patients' views, provide relevant information and encourage patients to take responsibility for their choices, without practitioner judgement or coercion, which contrasts with paternalistic approaches where practitioners make decisions on their patients' behalf. Autonomy has been linked with greater adherence to clinical and home-based rehabilitation programmes (Fortier et al 2007; Chan et al 2009), but practitioners may default to control approaches when faced with clinical uncertainty or challenges to their competence (Slade et al 2009).

Two recent initiatives aimed to expand physiotherapists' scope of care through communication skills training. Lonsdale et al (2012) conducted a clinical trial to assess the effects of an intervention to help physiotherapists promote patient autonomy and adherence to activity and exercise recommendations. The study was based on Self Determination Theory and the three expected behaviour change stages were from doing exercises because of practitioner pressure and guilt about non-compliance, to anticipation of future benefits congruent with personal goals, to exercising for enjoyment. The internal enjoyment position may be similar to ACT principles of committed action aligned with personal values (Hayes et al 1999). Lonsdale et al's (2012) results demonstrated differences in patient-reported adherence for the trained physiotherapists at twelve weeks, which was no longer significant at twenty four weeks, so the '5A' stages may not have linked the 'agreed' exercises as effectively as anticipated with patient goals.

The IMPaCT back trial targeted minimal GP interventions for patients at low risk of poor outcome, physiotherapy for pain and disability in those at medium risk, and cognitive-behavioural approaches to address psychosocial issues in high-risk patients (Sowden et al 2012). This approach differed from standard 'one-size fits all' practice as patients were grouped according modifiable risk factors for chronicity. Physiotherapists managing the high risk group received additional training in communication skills, motivational interviewing and facilitating biopsychosocial and cognitive behavioural interventions. At six months, small, significant benefits in disability were demonstrated in the medium risk group with larger, clinically important differences in the high risk group (Foster et al 2014). High risk patients received more healthcare resources overall but also reported greater improvements in pain, depression, and time off work, so the IMPaCT programme was reported as a promising innovation for expanding physiotherapists' traditional scope of care.



#### 2.5.4 Manual therapy

Physiotherapists use a range of physical approaches in chronic pain management but only some of these include manual treatment. Options include patient education, behaviour therapy, laser therapy, traction and massage (van Middelkoop et al 2011). The UK Back Pain Exercise and Manipulation (BEAM) trial compared low back pain treatment options and found that spinal manipulation delivered by a mixed sample of physiotherapists, osteopaths and chiropractors, added to GP care, was a clinically effective and cost-effective option (UK BEAM Trial Team 2004). The Department of Health later advocated establishing multidisciplinary clinical assessment services (DH 2006). The National Institute for Health and Clinical Excellence (NICE 2009) used to recommend manipulation, mobilisation and massage for the early management of persistent non-specific low back pain but new guidelines for low back pain (NICE 2016) now recommend it only as part of a multimodal treatment package.

Although clinical trials have demonstrated the effectiveness of physiotherapy interventions (Moseley 2002), the BEAM Trial intervention was combined with education which made it difficult to assess the impact of hands-on treatment in isolation. Increasing numbers of physical therapy consultations are being conducted without touch-based interventions, which some practitioners feel is a lost opportunity to achieve neurophysiological changes using mechanical techniques (Zusman 2010). A systematic review by van Middelkoop et al (2011) reported moderate evidence to support the use of physiotherapy as part of a multidisciplinary programme, low level evidence for behaviour change and exercise therapy, and recommended discontinuation of massage and traction.

#### 2.5.5 Summary

The burden of managing persistent musculoskeletal pain is increasing (Foster et al 2012), so increased access to effective care pathways is needed (CSP 2004). Expanded roles for allied healthcare practitioners would involve greater

autonomy in assessment, treatment, psycho-education and psychological interventions (Bishop et al 2008; Hill et al 2011), but changing traditional practice boundaries would have both benefits and challenges. There is evidence that allied healthcare professionals, like physiotherapists, can deliver clinically effective, psychologically-informed interventions using CBT principles (Hill et al 2011) but practitioners trained in a biomedical model also report struggling to make the transition to more facilitative roles (Bishop et al 2008). Interventions to address physical symptoms are gradually shifting their focus from treatment to behaviour change and self-care but, until recently, these changes have mainly occurred in physiotherapy. Other manual therapists, like osteopaths, typically practice in parallel to the NHS, so their potential to contribute to chronic pain management services has been largely unexplored and is worth further study.

## **2.6 Osteopathy**

### **2.6.1 Introduction**

Osteopathy has been described alongside physiotherapy under the umbrella term of manual therapy, but the rationale for discussing them separately in this thesis is their differing educational and practice contexts. In March 2016, there were eleven training schools accredited by the General Osteopathic Council (GOsC) and 5,113 registered osteopaths in the UK (GOsC 2016). Educational institutions recognised by the General Osteopathic Council offer four year full-time or five year part-time degree courses. About 30,000 people consult osteopaths every day, mostly in private practice, and more than 90% of patients fund their own treatment (Leach et al 2013). A public awareness survey showed that 88% of participants (n=1,003) believed the NHS should include osteopathy but only a few osteopaths work directly in the NHS (GOsC 2016).

Osteopaths and physiotherapists both treat patients with long-term musculoskeletal pain but osteopaths working outside mainstream NHS services may have more scope to offer extended courses of treatment (GOsC 2001). This section analyses the evidence base for osteopathic treatment for chronic musculoskeletal pain.

Osteopathy originated as a distinctive healthcare discipline in the USA in the 1870s (Baer 1984), as an amalgamation of magnetic healing, lightning bone-setting and religious beliefs in response to the ineffectual, and sometimes lethal, allopathic medical practices of that time (Gevitz 1994). At the start of the 20<sup>th</sup> century, osteopaths focused on anatomical asymmetry described as an 'osteopathic lesion' (DiGiovanna et al 2004), which was thought to represent the physical aetiology of illness and disease. This approach, based on the scientific knowledge of the day (Lucas and Moran 2007), continues in the traditions of Osteopathic Manipulative Therapy (OMT) and Osteopathic Medicine (OM) in the USA (Gevitz 2009). Structural anatomical causes of disease have not been supported by convincing evidence, prompting moves to develop biopsychosocial theories (Penney 2010), particularly in the UK and Australasia.

There are ongoing professional debates about the scope of osteopathic practice and concerns about the feasibility of sustaining osteopathy as a credible, distinctive mono-therapeutic healthcare profession in the climate of evidence-based medicine. In the UK, osteopathy is practised as a manual therapy in primary care settings, although osteopaths are not fully trained primary care practitioners. Professional development has been influenced by a historical focus on practitioner-led diagnosis and treatment for physical dysfunctions (Parsons and Marcer 2005). Osteopathic textbooks continue to focus on identifying structural causes of pain (e.g. Sammut and Searle-Barnes 1998; DiGiovanna et al 2004; Kuchera 2005), even though biomechanical approaches lack a strong evidence base and are inconsistent with current evidence (Pike 2008).

The scope of osteopathic practice in the UK includes conditions such as back and neck pain, headaches, postural problems related to pregnancy, driving or work strain, arthritis and minor sports injuries. Osteopaths also treat general health problems with musculoskeletal components (GOsC 2016), provided interventions are supported by evidence (Bronfort 2010) and comply with Advertising Standards Authority guidelines (GOsC 2015). Osteopaths typically work with individual patients, spending a large percentage of thirty to sixty minute consultations performing manual treatment, with less focus on formal exercise programmes than physiotherapy (Zamani et al 2008). Most osteopaths work outside the NHS, so treatment is rarely rationed and it is not unusual for patients to attend for treatment for months or years (Pincus et al 2006).

The intervention in this study evolved from my experience of working in the Outpatient Clinic at the British School of Osteopathy (BSO), which provides supervised training for student osteopaths and treatment for approximately 800 patients per week. Patients usually present with musculoskeletal symptoms and about 45% report long-standing illness, disability or infirmity (London 2010). A survey of 584 patients showed that 44% of these patients reported chronic pain and the majority reported multiple pain sites (Brownhill 2011).

### 2.6.2 Osteopathic practice

Osteopathic practice has been associated with four historical principles and five models of intervention that include biomechanical, neurological, circulatory or respiratory, biopsychosocial and bioenergetic concepts (Digiovanna et al 2004). The model is claimed to be holistic but, in practice, is often enacted in a limited form as a primarily biomechanical approach with psychosocial factors addressed only when usual interventions fail (Butler et al 2004). Somatic dysfunction is considered to be an objective structural entity that can be identified by osteopaths with specialised palpation skills (Digiovanna et al 2004; Comeaux 2005), and the current concept is aligned with a biomedical model of disease.

Some osteopaths are confident that somatic dysfunction is a valid disease category (Sun et al 2004), but there are conflicting opinions about whether positional patterns of dysfunction are consistent and predictive, if they can be reliably palpated, and whether treating these dysfunctions improves objective health outcomes (Naim et al 2003; Fryer et al 2008). Critics propose that the concept of somatic dysfunction leads to diagnoses that are de-contextualised and inhibits more complex, integrated evaluations of illness experience. Linear biomedical reasoning is no longer aligned with current knowledge about complex pain pathways (Butler and Moseley 2003; Smart et al 2102) and biopsychosocial models of care. It also leaves little room for clinical uncertainty, which is now considered to be an inevitable aspect of healthcare (Sweeney and Griffiths 2002).

In the UK, biomechanical theories of somatic dysfunction were developed into the 'pathological sieve' model, which was a more flexible concept that enabled osteopaths to consider the aetiology of pathophysiological processes (Smith 1984). Latey (1983) added psychosocial and chronological factors but critics of his model contend that it still offers little scope to assess social, cultural or environmental health factors. There have been calls to focus osteopathic evaluation on the assessment of function and agency (Fryer 2011; Tyreman 2008), and to re-examine osteopathic principles in the context of concepts such as patient-centred care (Nash and Tyreman 2005; Thomson et al 2012).

At the British School of Osteopathy (BSO), the curriculum includes information about pain pathways, triage processes, and staged patient management strategies but this has had a variable and limited impact on clinical practice so far. Tissue-based diagnoses appear to be entrenched and osteopaths report struggling to work without a body-based theory, even if it is inconsistent with current evidence. Lack of a coherent philosophy underpinning osteopathic practice has led some authors to suggest that there are structured models of

praxis at best (Tyreman 2013) and flawed theories at worst (Randell 1992), but these are the models on which much osteopathic research has been based.

### 2.6.3 Osteopathic treatment

Osteopathic treatment for chronic musculoskeletal pain typically includes a mixture of manual techniques, including spinal and peripheral joint manipulation, mobilisation or articulation, soft tissue massage techniques, and a range of specialised routines to address specific dysfunctions (DiGiovanna et al 2004). Osteopaths typically offer advice and generic exercises but use specialised exercise programmes less frequently (Zamani et al 2008).

There are conflicting views about the effectiveness of osteopathic care, which is often assessed in the form of trials of spinal manipulation techniques. Posadzki and Ernst's (2011) controversial systematic review claimed that there was still insufficient favourable evidence, as the methodological quality of the sixteen trials they reviewed was variable and only five studies demonstrated significant benefits. In contrast, Bronfort et al (2010) reported moderate evidence for the effectiveness of spinal manipulation, mobilisation and massage for chronic low back and neck pain, moderate evidence for manipulation and joint mobilisation with exercises for hip and knee arthritis. Spinal manipulation was also supported by the findings of the BEAM Trial (2.5.4) but evidence is inconclusive for manual techniques for peripheral joint problems and systemic general health conditions, such as fibromyalgia.

### 2.6.4 Psychological effects of osteopathic treatment

The majority of osteopathic research focuses on physical outcomes, such as pain reduction and functional changes (Licciardone et al 2005; Bronfort et al 2010), but it has been suggested that osteopaths can influence psychological processes

via the effects of touch in therapeutic relationships (Latey 1983; Randell 1992), pain science education (Butler and Moseley 2003), cognitive reassurance (Pincus et al 2013) and spinal manipulation (Williams et al 2007a). There is also increasing interest in the effects of touch on somatic awareness and interoception (Pike 2008; Farb et al 2013) and neurophysiological theories describing the potential to promote psychological changes through physical interventions (Calsius et al 2013). These may represent new directions for research exploring the psychological impact of osteopathic treatment itself, as well as manual therapy integrated with interventions such as CBT or ACT.

The comprehensive systematic review by Williams et al (2007a) reported that thirty five out of 129 RCTs of spinal manipulation included psychological measures, but only thirteen of these trials reported before-and-after changes. Twelve presented sufficient data for a meta-analysis of short-term (one to five months) and long-term outcomes (six to twelve months). The psychological outcomes assessed included back pain beliefs, fear-avoidance, self-efficacy, depression and anxiety, and psychological scores from general health questionnaires such as the SF-36 (Ware and Sherbourne 1992). Pooling data from six trials indicated that spinal manipulation improved standardised mean differences in psychological outcomes compared to verbal interventions such as advice, but similar benefits were not found in comparison with other physical interventions such as exercise programmes. The UK BEAM trial (2004a) reported improvements in mental scores from the SF-36 questionnaire and in back pain beliefs but not fear-avoidance. Fear-avoidance beliefs were also less likely to improve after manipulation compared to exercise (Williams et al 2007a), suggesting that outcomes vary when patients play a more active role.

Psychological factors including anxiety and depression influence the transition from acute to chronic pain and can maintain pain disability (Waddell 2004; Pincus et al 2002). Williams et al (2007a) proposed that the potential for

osteopathic manipulation to affect psychological outcomes in comparison to CBT or ACT was worthy of further investigation. Multidisciplinary programmes combine physical and psychological interventions (Kamper et al 2015; Veehof et al 2016) and demonstrate better outcomes from intensive courses (Guzman et al 2001). These findings support the idea that integrating ACT with Osteopathy may optimise existing psychological benefits that may be associated with standard manipulative interventions for patients with persistent pain.

#### 2.6.5 Summary

As in mainstream medicine, the majority of osteopathic research is primarily biomedical, with relatively few studies conducted into patients' experiences of treatment processes, practitioners' values and aims (Tyreman 2011; Woodbridge and Fulford 2004), or the underlying physiological and psychological mechanisms (McCracken and Vowles 2014), which suggests that further research into osteopathic praxis is needed. Osteopathy differs from physiotherapy in setting and style, and osteopaths working outside the NHS may be able to offer extended treatment courses in which patients can be guided towards self-care, although limited psychological training and a focus on biomechanical dysfunction may limit current scope of practice. Studies that have aimed to strengthen physiotherapists' psychological skills suggest that multimodal interventions can be difficult to enact in practice, so the following section describes psychological approaches that are commonly used by clinical and health psychologists.



## **2.7 Psychological approaches**

### **2.7.1 Introduction**

This section presents evidence about the psychological approaches that are commonly used to conceptualise psychosocial aspects of healthcare and help patients cope with chronic pain. Theoretical approaches have been categorised into three 'waves'; Operant Behaviour Therapy (OBT), Cognitive Behavioural Therapy (CBT) and, recently, 'third wave' CBT, which developed from Contextual Behavioural Science (CBS). This includes Acceptance and Commitment Therapy (ACT), which formed the basis for the intervention designed for this study.

### **2.7.2 Operant Behaviour Therapy and Cognitive Behaviour Therapy**

Operant Behaviour Therapy (OBT) aims to disrupt natural human drives to avoid pain by using graded exposure techniques to extinguish maladaptive behaviours (Sturgeon 2014). Goals are to decrease patients' tendencies to react to pain sensations as a threat by reducing fear-avoidance reactions and encourage more adaptive behavioural responses (Gatzounis et al 2012). Techniques involve providing positive reinforcement when patients demonstrate a new response, and discouragement or neutral responses when maladaptive patterns return.

Cognitive Behaviour Therapy (CBT) is a widely used psychological approach, developed from OBT, which focuses on cognitive responses to pain. Practitioners aim to change patients' maladaptive thoughts and strengthen strategies for controlling pain through psycho-education about pain physiology, cognitive restructuring, and relaxation techniques (Sturgeon 2014). If medical or physical treatments fail to resolve pain, CBT can be used to help patients live with their symptoms and manage the consequences of pain (Sturgeon 2014).

Chronic pain is frequently associated with depression (Pincus et al 2002), through the linked mechanisms of catastrophising, fear of pain and pain avoidance. Catastrophising involves thoughts that magnify the potential negative effects of pain and predictions of future consequences. It is associated with rumination, passive coping strategies and feelings of helplessness and often leads to anxiety, depression, disability and decreased quality of life (Campbell and Edwards 2009). There are debates about whether catastrophising is related to personality traits or life context, whether it is maladaptive or protective, and whether thoughts are modifiable through CBT or mindfulness (de Boer et al 2014). Catastrophising has also been linked to pain-related fear, avoidance of painful movements, and activities the patient fears could exacerbate symptoms (Leeuw et al 2007). This can lead to physical de-conditioning (Werneke et al 2009), and subsequent muscle weakness may exacerbate anxiety and experiential avoidance.

CBT interventions can result in significant short-term improvements but decreased longer-term effects, possibly due to poor adherence (Williams et al 2012). Interventions are often managed by psychologists but can be delivered by other practitioners, such as physiotherapists and nurses (Lamb et al 2012; Brunner et al 2013), although effectiveness varies. There is limited evidence about associations between outcomes and changes in process measures (Longmore & Worrall, 2007) and few new CBT methods have been generated in the last thirty years, so Acceptance-based approaches are replacing CBT in some pain management programmes (Pincus et al 2013; Godfrey et al 2016).

### 2.7.3 Acceptance and Commitment Therapy

Contextual Psychology has developed a trans-diagnostic model of suffering, based on the Relational Frame Theory of language and the normal language-based processes involved in responses to unwanted experiences (Hayes 2004). 'Third wave' psychological approaches like Acceptance and Commitment Therapy

(ACT) represent a principles based model of functioning and adaptation which is relevant to all human beings (McCracken & Vowles 2014). The ACT model proposes that psychological flexibility is central to wellbeing and quality of life (McCracken and Morley 2014), and is based on awareness of present moment experiences and action choices based on personal values (Hayes et al 2011). The ACT model differs from CBT in its premise that thoughts and behaviours cannot be categorised as maladaptive unless they are assessed in the context of their function and meaning in an individual's life (Hayes et al 2012). This approach focuses not on pain itself but on the patient's relationship to their pain and the 'workability' of their habitual reactions to pain. Psychological flexibility is based on six, inter-linking core processes which are illustrated in the Hexaflex diagram (Fig. 1). They include acceptance of accept uncomfortable experiences without trying to control them; defusion from fixed thoughts; awareness of present moment experiences; multiple self-perspectives; clarity of personal values; and committed action based on those values (Hayes et al 2012).

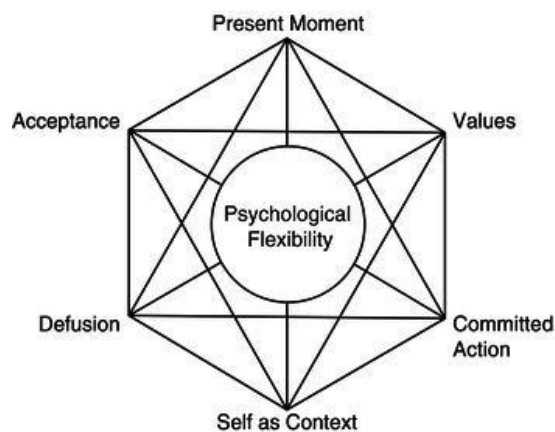


Figure 1: The ACT 'Hexaflex' (<https://contextualscience.org/acbs>)

Pain acceptance is the opposite conscious response to experiential avoidance, and is associated with willingness to remain active despite discomfort (Pincus and McCracken 2013). ACT interventions aim to promote flexibility by reducing the impact of maladaptive thoughts by reframing them; limiting futile attempts

to control unwanted internal experiences; developing the capacity for non-judgemental awareness of sensations of discomfort; and promoting willingness to experience discomfort in the service of living a richer life by engaging actively with personally valued social roles and activities.

There is increasing evidence illustrating the effects of ACT interventions in a wide range of populations and physical and mental health conditions, including chronic pain (Hayes et al 1999; Dahl et al 2005; Lundgren & Dahl 2006). Medium to large effect sizes have been demonstrated for anxiety, distress, pain disability, physical performance, medical visits and work (McCracken et al 2007; Vowles & McCracken 2008; McCracken & Velleman 2010; Vowles et al 2011; Veehof et al 2011; Vowles et al 2014; Dahl et al 2004), with smaller improvements in intensity (Veehof et al 2011). It can reduce emotional distress associated with persistent pain and the use of healthcare consultations and medication (McCracken & Turk 2002). Non-judgemental awareness and psychological flexibility have also been associated with improvements in physical and psychosocial disability, depression and anxiety (Jha et al 2007; McCracken & Gutierrez-Martinez 2011).

Ruiz (2010) conducted a review of ACT studies and concluded that experiential avoidance and cognitive fusion were related to a range of psychological disorders and acceptance-based protocols demonstrated better outcomes than those based on control. Ruiz (2010) suggested that promising outcomes in correlational studies were congruent with the theoretical ACT processes of change. There is increasing evidence of similar effects from interventions based on ACT compared to CBT, sometimes with longer term effects, but there is limited understanding about underlying psychological mechanisms. Williams et al (2012) recommended ending clinical trials which report group averages and mask individual responses, in favour of studying change mechanisms in sub-groups. McCracken and Vowles (2014) subsequently recommended conducting further process evaluations of the specific ACT components that contribute to psychological flexibility.

ACT principles are congruent with osteopaths' aims to promote health, function (Franke et al 2014) and agency (Tyreman 2013), and also have the potential to be integrated with existing physical therapy practices more easily than procedural approaches like CBT. Mindfulness is an integral part of psychological flexibility as it promotes present moment awareness, and willingness to make space for unwanted experiences without attempting to control them (Harris 2009).

Mindfulness can be used by healthcare practitioners at three levels which involve increasing levels of formal training (Shapiro and Carlson 2009). Firstly, personal mindfulness practice has been shown to develop qualities such as empathy and therapeutic alliance (Beckman et al 2012; Stafford-Brown & Pakenham 2012). At the next level of mindfulness-informed practice, therapists use mindfulness principles to actively guide their usual interventions (Mars & Abbey 2010). Finally, there are formal mindfulness-based programmes, such as Mindfulness Stress Based Reduction (MSBR) and Mindfulness Based Cognitive Therapy (MBCT), where practitioners teach mindfulness meditation, typically in structured six to eight week group-based programmes. This level of intervention requires the most intensive psychological training and supervision (McCracken & Gutierrez-Martinez 2011). In ACT, formal meditation is not seen as the only way of developing awareness, and informal methods include mindfulness in daily activities (Harris 2009). The ACT approach is therefore situated as mindfulness-informed practice in the middle level of Shapiro and Carlson's (2009) model.

#### 2.7.5 Summary

There is increasing evidence demonstrating that ACT is as effective as CBT and sometimes achieves longer-term benefits. ACT is based on assumptions that pain is an inevitable aspect of human existence, and it aims to promote psychological flexibility, which enables patients to engage in valued activities despite pain. The benefits of ACT for osteopaths are that these aims are congruent with concepts

of holism, function and agency, and a principles-based model is more agile and easier to integrate with other treatment approaches than traditional procedural psychological therapies. Challenges include the need for practitioners to develop a practical understanding of the ACT principles, which normally includes applying the principles to personal experiences and challenges in their own lives. They also need mindfulness skills to support present moment awareness, which enables them to respond flexibly to issues arising during the course of treatment.

## **2.8 Mindfulness**

### **2.8.1 Introduction**

This section outlines the principles of mindfulness and explores its effects on the range of physical and mental health outcomes associated with chronic pain. This is followed by a review of evidence about theoretical mechanisms of meditation and mindful movement practices and a summary of their implications for manual therapists. Mindfulness meditation has a long history in spiritual, religious and cultural traditions and its principles have been translated for use in healthcare (Mars & Abbey 2010), psychological health (Keng et al 2011), education (Meiklejohn et al 2010) and workplace environments (Flaxman & Bond 2010). It was first introduced into healthcare in the form of eight week Mindfulness-Based Stress Reduction (MBSR) courses, to help patients with long-term illnesses to develop compassionate, transformational approaches to managing their own problems by healing from within (Kabat Zinn 2011). Secular mindfulness is defined as paying purposeful attention in a particular non-judgmental way to all experiences in the present moment (Kabat Zinn 1990).

The first MBSR programmes for patients with chronic pain were created in 1992 and were adapted more recently into Mindfulness-Based Cognitive Therapy (MBCT) to prevent relapses in patients with depression (Segal et al 2002).

In the UK, Mindfulness was recently the focus of an All-Party Parliamentary Group (MAPPG) which advocated exploring applications in healthcare, education, employment and the criminal justice system (MAPPG 2015). Healthcare initiatives supported by the government focus on MBCT programmes, and MBSR to a lesser extent. These approaches require significant training and post-training commitment from practitioners to maintain a personal mindfulness practice, receive regular supervision, continue their learning and skills development, and conform to the UK mindfulness community's guidelines for teaching mindfulness in groups (Crane et al 2012).

### 2.8.2 The mindful practitioner

In the first level of Shapiro and Carlson's (2009) three-tiered model for healthcare, the mindful practitioner, mindfulness is considered not just a tool to be used for patients but as an innate attitude and way of relating to personal experience. Personal practice has been shown to improve practitioners' well-being, reduce stress and burnout (Shapiro et al 2005), enhance physical and mental health (Irving et al 2009), and strengthen non-specific factors associated with positive patient outcomes, including empathy (Krasner et al 2009), focussed attention (Jha et al 2007) and self-compassion (Shapiro & Carlson 2009).

### 2.8.3 Mindfulness-informed interventions

At the second level, mindful practitioners integrate approaches from Buddhism, the mindfulness literature, which currently relates mainly to psychotherapy (Davis and Hayes 2011), and from personal experience into existing therapeutic practices without explicitly teaching meditation to patients (Shapiro and Carlson 2009). This can be helpful when it is inappropriate to teach mindfulness formally but also means that this work is less likely to be formally supervised.

It may also increase the need for patient risk assessments, as mindfulness is contraindicated for some patients (e.g. with severe psychosis or post-traumatic stress disorder). Physical therapy applications are relatively unexplored, although likely to be aligned with mindful movement practices such as yoga, Tai Chi, Qigong or the 'Breathworks' approach ([www.breathworks-mindfulness.org.uk](http://www.breathworks-mindfulness.org.uk)). This level of mindfulness practice provided a rationale and feasible method for exploring the effects of mindfulness-informed manual therapy.

#### 2.8.4 Mindfulness-based practice

This is the most stringently governed level of mindfulness-based practice in the UK and involves teaching mindfulness formally to patients, typically in eight week MBSR and MBCT group courses. Assessment criteria have been developed to assess competence and adherence to training protocols in accredited teaching courses (Crane et al 2012), but practical guidelines for practitioners who are primarily physical therapists, and those working with individual patients, are currently under-developed. There is also limited evidence about differences in outcome between formal teaching programmes and more flexible approaches to mindfulness, including those used in ACT-informed interventions.

Meditation techniques in MBSR programmes include observations of breathing, body scans and mindful movements (Kabat Zinn 1990), which aim to increase awareness by noticing autopilot reactions to unwanted experiences. It is thought that observing discomfort without reacting to urges to avoid or control creates opportunities for more flexible, conscious responses, and effects have been assessed using self-report measures of depression and quality of life. Hofmann et al's (2010) meta-analysis showed moderate effects for decreasing anxiety and mood symptoms in several clinical populations. This was supported by Mars and Abbey's (2010) systematic review which also reported improvements in positive health measures and decreases in depression and psychological distress.



Body-based mindfulness exercises have been found to help enhance somatic perception (Mirams et al 2013), manage bodily distress (Fjorback 2012) and empower self-care (Pike 2008). Mindfulness has demonstrated modest effects on pain, which may be mediated by changes in pain-related anxiety, and mindful movement practices improve both physical and psychological outcomes (Jahnke et al 2010). Body-based mindfulness has been proposed as a way of integrating the 'body as machine' and psychosocial concepts in physiotherapy (Pike 2008), and associated with increased interoception, emotional processing and sense of self (Morone et al 2008). Interoception has been defined as the sense of signals originating in the body, and is thought to be an essential aspect of embodiment, motivation and well-being (Farb et al 2015).

#### 2.8.5 Mechanisms of effect

Meditation has been found to improve neurological functioning (Tang et al 2015; Ivanovski & Malhi 2007), and involves developing abilities to maintain, and move between, focused attention and open awareness of the wider environment (Lutz et al 2008; Vago and Silbersweig 2012). Many practices begin by focusing on a target, such as somatic sensations of breathing, and then broaden to a more open state of awareness (Cahn and Polich 2006). Other practices, like the Three Stage Breathing exercise, start with broad awareness and narrow the focus before opening up again. The body scan meditation has been shown to improve interoception (Mirams et al 2012), which may be beneficial for patients whose somatosensory perception has been affected by prolonged pain or inactivity.

Spatiotemporal aspects of neural activity have been measured using Electroencephalography (EEG), a non-invasive technique that assesses synchronisation between large-scale neural networks (Cacioppo et al 2007). Research into brain changes that occur in meditative states and after prolonged practice has demonstrated varying results with increases, decreases

and no differences in EEG measurements comparing meditation to resting states or other activities. Lomas et al (2015) conducted a systematic review of 56 EEG studies of mindfulness meditation to identify common effects and factors, such as length of practice, which might influence these effects. The sample included 1,358 healthy participants and 357 patients with psychiatric conditions. Results were assessed for power outcomes in EEG bandwidths, differences between mindfulness and control states (e.g. rest or other activities), asymmetrical neural activity between hemispheres and sudden changes in potential related to specific events. The main findings were that mindfulness was most commonly associated with increased power in alpha and theta bandwidths when compared to resting states with eyes closed in healthy individuals and patient groups, but this was not a consistent finding.

Lomas et al (2015) concluded that rises in alpha and theta bandwidths indicated a state of 'relaxed alertness', which was conducive to mental health as this type of neural activity signifies increased attention processing (Shaw, 1996). Fell et al (2010) also reported increased power and synchrony in alpha and theta activity in mindfulness and transcendental meditation. In contrast, focused attention mindfulness showed increased gamma activity, and other meditation practices showed decreased alpha and beta activity (Hinterberger et al 2014), which suggests different neural patterns are associated with specific practices. Mindfulness may help people who meditate to develop their capacity for self-awareness, self-regulation and self-transcendence; capabilities controlled and integrated through a fronto-parietal neural network (Vago and Silbersweig 2012). Meditators need motivation to sustain a regular practice and conscious ability to focus and regulate attention at will. De-centering has been defined as the ability to observe thoughts, feelings and physical sensations as temporary perceptual events, rather than fixed objective truths about reality or the self (Fresco et al 2007; Kerr et al 2011), and is aligned with ACT concepts of defusion and the observer self (Lundgren and Dahl 2006).

In clinical practice, mindfulness requires patients and practitioners to be willing to engage actively with experiences that have previously been labelled as negative (e.g. pain sensations, distressing thoughts and emotions). In ACT, the aim of mindfulness practice is to develop acceptance for present moment discomfort that cannot be controlled (Shapiro et al 2005). Lomas et al's (2015) review was unable to identify consistent neurophysiological patterns, so they recommended that further studies to explore differences between mindfulness and other meditation practices.

#### 2.8.6 Summary

Chronic pain is a complex phenomenon with interacting influences from the biological, psychological and social domains which affect individual responses to pain. Mindfulness meditation has been shown to strengthen self-awareness, the ability to focus, states of relaxation and more open attitudes to experiences.

Critics of secular mindfulness claim that extracting elements from Buddhist philosophy leads to fragmented and philosophically conflicting techniques, especially if it is conceptualised simply as a tool to manage unhelpful cause-and-effect thinking (Sauer et al 2011). Buddhist meditation is 'non-striving' and practised without goals, other than to develop non-judgemental awareness of present moment experience. Healthcare programmes, however, imply that meditation is practised in order to gain something, such as reduced stress, anxiety, depression, rumination or increased creativity (Penman 2015). Emerging challenges include exploring the philosophical basis of different approaches, comparing outcomes from formal and flexible mindfulness teaching, ways to train practitioners effectively, and developing guidelines for working with individuals and integrating mindfulness and physical therapy practices.

## **2.9 Multidisciplinary pain management programmes**

### **2.9.1 Introduction**

Patients with chronic pain demonstrate better outcomes from multidisciplinary care (Guzman et al 2001), as physical or psychological therapy alone can fail to prevent the transition from acute pain to chronic disability, especially in high risk patients (Waddell 2004). The Best Practice Statement for Management of Chronic Pain in Adults suggests successful management requires biopsychosocial interventions (NHS 2006), often delivered by teams of psychological and physical healthcare practitioners. This section analyses the effects of multidisciplinary pain management programmes in comparison to mono-therapeutic approaches.

### **2.9.2 Multidisciplinary pain management programmes**

Bio-psychosocial interventions target factors linked to higher risk of developing chronic pain but are usually delivered by tertiary care teams and are costly to run and resource intensive. Kamper et al (2015) conducted a systematic review of 41 Randomised Controlled Trials (RCTs) to assess whether multidisciplinary care demonstrated better outcomes than usual care or physical treatment alone. Chronic low back pain was defined as persisting for more than three months, and severity was categorised as high if patients reported more than 60% of the maximum pain or disability score. Programmes contained physical, psychological and/or socio-occupational interventions which were delivered by at least two healthcare professionals. Physical interventions included manual therapy, stretching, strengthening and aerobic exercises, and educational back school programmes. High intensity interventions included more than 100 hours of face-to-face contact. Primary outcomes were pain severity, disability and work absence at three months, up to twelve months, or more than twelve months.

The studies included 6,858 participants with an average age of 40 to 45 years and mean pain duration of more than one year. Seven trials comparing outcomes with usual care showed that multidisciplinary rehabilitation decreased pain scores by 0.5 points on a ten point pain scale (95% CI 0.04 to 0.37), and disability scores in six trials decreased by 1.5 points on the Roland-Morris scale (CI 0.06 to 0.40). Nine trials showed that multidisciplinary rehabilitation decreased pain levels (CI -0.01 to 1.04) and decreased disability in ten trials (CI 0.16 to 1.19), compared to physical interventions. Intensity and duration were not significant variables, so Kamper et al (2015) could not draw conclusions about dose effects.

They stated there was moderate quality evidence that multidisciplinary care was more effective in reducing pain and disability than usual care but weaker evidence compared to physical interventions, which suggests that physical treatments also provided some benefits. Guzman et al's (2002) systematic review evaluated multidisciplinary rehabilitation for chronic low back pain and reported better outcomes from intensive, multidisciplinary programmes with a functional restoration component compared to less intensive, less costly mono-disciplinary interventions. There was moderate evidence for pain reduction but contradictory findings about occupational outcomes such as sick leave and return to work rates, and limited data about improvements in quality of life.

### 2.9.3 Mindfulness-informed pain management programmes

For some patients with chronic pain, significant or sustained pain reductions may not be achievable so functional psychological approaches aim to change patients' relationship to their pain. Pain reduction often does occur but is thought to be a consequence of changes in mechanisms like psychological flexibility (Ruiz 2010). Studies have compared treatment as usual with multidisciplinary care involving formal mindfulness approaches, such as MBSR and MBCT, and psychological approaches, such as ACT, which include the introduction of exercises to develop

mindfulness skills in less formal and more flexible ways. MBSR and MBCT have shown substantial benefits in psychological outcomes and some physical and disease-related improvements (Carlson 2012), although changes arising from MBSR for patients with low back pain were related to pain acceptance rather than pain intensity or level of disability (Cramer et al 2012). Veehof et al's (2016) meta-analytic review of twenty-five trials of acceptance and mindfulness-based interventions demonstrated small to medium effect sizes on anxiety and pain intensity and disability with larger effects on pain interference.

ACT interventions were reported to have stronger effects on depression and anxiety than MBSR and MBCT. Type of pain or control group did not moderate the effect (Veehof et al 2016) but larger trials with active comparison groups have been recommended to assess dose effects and varied responses (Carlson 2012). McCracken and Vowles (2014) have recommended research to analyse the mechanisms of behaviour change but few recent studies have measured psychological flexibility directly (Wicksell et al 2013; Trompetter et al 2015), or used multiple regression to assess whether psychological flexibility and mindfulness are significant mediators of behaviour change.

Patients who score more highly in their desire to control pain demonstrate poorer outcomes (McCracken and Ecclestone 2004). Methods for assessing scope for change and readiness to engage in self-care include the Chronic Pain Acceptance Questionnaire (McCracken et al 2004), Pain Stages of Change Questionnaire (Carr et al 2006), and self-report measures which assess motivation and self-efficacy (Carnes et al 2013). Prochaska and DiClemente's (1984) trans-theoretical model of behaviour change includes Pre-Contemplation, Contemplation, Planning, Action and Maintenance stages (Carr et al 2006). It was used in conjunction with the CPAQ to assess ninety six patients interested in participating in an Expert Patient Programme (EPP) (Carr et al 2006).

Perhaps unsurprisingly, 43% of patients in the Contemplation group and 37% in the Action stage were interested in participating, compared to only 20% of the patients in the Pre-Contemplation stage. There was a significant negative correlation between contemplation and acceptance scores ( $\rho = -0.47, p < 0.001$ ) and positive associations between action and maintenance with acceptance ( $\rho = 0.29, p < 0.05$ ). Participants who were still contemplating whether to make changes recorded lower levels of acceptance but those who could accept and make space for painful sensations were already likely to be living more physically active lives. The researchers concluded that gradual changes from negative to positive correlations in the continuum from Pre-Contemplation to Action and Maintenance illustrated cognitive shifts and increased readiness to change. Negative correlations in Contemplation, however, suggested that these patients were not yet willing to start engaging with activities. It was not clear whether the interested participants 'accepted' self management in the hope of controlling pain, or if they experienced shifts in understanding which made space for pain in the non-judgemental mode of 'acceptance' conceptualised in ACT (Harris 2009).

Participants who are most fearful at the start of Behaviour Therapy may have more scope for change from in vivo exposure, although studies using hybrid treatments with CBT showed modest effects but high drop-out rates (Tang et al 2012), which suggests that combined interventions can be effective but are challenging. Combining in vivo graded exposure with ACT can be effective for pain-related fear and anxiety (Bailey et al 2010), which supported this study's rationale to combine ACT with manual therapy to explore in vivo experiences.

#### 2.9.4 Summary

Enabling patients with persistent pain to remain physically active and re-engage with avoided activities can promote physical health and mental wellbeing, but enacting this in practice is challenging (Marley et al 2014).

There are gaps in knowledge about the active ingredients of effective behaviour change techniques and strategies that can sustain changes after interventions end (Jordan et al 2010). Guidelines for individual behavioural change recommend that interventions should include goal setting, self-monitoring, feedback from professionals and social support (NICE 2104). Rehabilitation programmes demonstrate better outcomes in pain and pain-related disability but team work raises issues regarding cost and the availability of competent, trained staff. The lack of sustained behavioural improvements from current interventions indicates the need to support practitioners using biopsychosocial models of care, and new, theoretically-coherent interventions guided by empirical evidence are needed.

## **2.10 Summary of the literature review**

### 2.10.1 Summary of key findings

Practitioners can struggle to find effective ways of supporting patients with pain that cannot be fully resolved by traditional medical care, and acknowledging the lack of a patho-anatomical disease-based diagnosis for some complex long-term conditions can be challenging. Neuro-physiological, social and psychological factors are known to influence transitions from acute to chronic pain but optimal strategies for managing individual patients remain uncertain. The focus of pain assessment is shifting from severity to functional impact, and rehabilitation interventions are being targeted at high-risk groups using communication strategies to promote autonomy and self-care. Better outcomes have been demonstrated from multidisciplinary rehabilitation programmes, including ACT-informed approaches, but expanding physical therapists' scope of care requires a shift in assumptions about the nature of pain and therapeutic aims, as well as assessments of practitioner training needs, and research to assess the effects of new chronic pain management programmes.



### 2.10.2 Strengths and limitations of the evidence-base

Rycroft-Malone et al (2004) identified four types of valid evidence which include (arguably in order of weighting) research data, practitioner experience, patient experience and information from local social and healthcare contexts. Medical Research Council guidelines state that new interventions should be based on substantive theories and empirical evidence, and accompanied by assessments of change processes and intervention fidelity (Campbell et al 2000). Chronic pain management programmes based on second wave CBT theories have produced limited average outcomes, with little progress in increasing effectiveness. McCracken & Vowles (2014) recommended further research into the processes that mediate therapeutic change, based on the third wave CBT theory of psychological flexibility which has shown positive outcomes in varied health conditions. There is evidence that osteopathic treatment positively influences psychological outcomes (Williams et al 2007), but no clear model for assessing the underlying mechanisms. In psychological research, there is also a lack of knowledge about how particular interventions influence outcomes.

Medical research has been criticised as privileging scientific concepts of evidence based on externally validated knowledge, rather than intuitive craft knowledge that is grounded in practice (Rycroft-Malone et al 2004). Problems have been identified in the ways that evidence is generated and implemented (Ostelo et al 2010), as settings, samples and resources in RCTs may differ from standard care in terms of therapists' empathy and caring effects (Williams et al 2007). This raises problems in interpreting the validity of trial results for patient populations in other clinical contexts. RCTs are considered to be the 'gold standard' for assessing efficacy and have demonstrated positive outcomes in ACT pain management programmes. From a functional contextual perspective, however, research also aims to assess the processes by which an intervention may influence the six core processes associated with psychological flexibility.

Traditional RCTs may therefore not be an appropriate design for evaluating principles-based ACT programmes, where a standardised protocol would be inconsistent with a functional contextual approach (Hayes 2015). Walach et al (2006a) argued that the hierarchical model of evidence which privileges meta-analyses and systematic reviews is appropriate for analysing pharmacological efficacy but not the processes of complex behaviour change interventions. Blinding participants to placebo interventions is a valid research strategy as it aims to strengthen internal validity by minimising bias, but it can weaken external validity and limit assessment of process and mechanisms of interaction as behaviour changes are influenced by patient and practitioner beliefs, expectancy theory, and meaning or placebo responses (Moerman 2002).

These criticisms have been countered by the development of 'pragmatic' and 'realist' RCTs (Campbell et al 2000), and single case designs (Kratochwill et al 2010). Other trial designs aim to model causal chains of effect in an intervention, assess patients' preferences in comprehensive cohort studies (Moore et al 2008), or assess the effects of specific interventions components in a modular design (Villatte et al 2016). It has also been suggested the evidence-base would be enriched by more qualitative studies (Greenhalgh 2014) or pluralistic designs to enable data triangulation within and between studies (Frost et al 2010). A range of neurophysiological and phenomenological studies will be needed to assess processes and outcomes in embodied physical therapy dyads (Oberg et al 2015).

### 2.10.3 Rationale for the design of this study

Osteopathic treatment alone does not provide complete relief from persistent pain for all patients, although it has been shown to have some beneficial physical and psychological outcomes. In mainstream pain management programmes, there is increasing interest in the effects of third wave CBT. A previous study (Section 4.2) indicated that an ACT-based course was acceptable to osteopathic

patients but the groups provided limited opportunities to address individual needs. This study was therefore designed as a preliminary exploration of the therapeutic processes associated with developing a new pain management course for individual patients. It aimed to assess the feasibility of integrating psychological ACT-informed interventions directly into osteopathic manual therapy treatment practices, and explore the effects on processes and outcomes.

Higgs and Titchen (2000) described knowledge as a fundamental requirement for effective clinical reasoning and propositional knowledge derived from scientific research has occupied a privileged position in the development of theory and practice (Loughlin 2009). There has been limited acknowledgement of the role of tacit personal knowledge (Eraut 2000), even though healthcare approaches which are evidence-based *and* person-centred need both types of knowledge (Rycroft-Malone et al 2004).

There have been calls to revive Schon's (1995) epistemological emphasis on the role of embodied, experiential knowledge in vocational education and research, including Professional Doctorates (Claxton et al 2010; Boyce-Tillman 2013). An individual's craft knowledge is not usually considered to be transferable, but can become propositional if experiences are verified within a community of practice to create socially constructed knowledge which is provisional, contextual and evolving. Stetler et al (1998, cited in Rycroft-Malone et al 2004, p.84) described 'affirmed experience' as a state of knowledge in which experiential observations from varied sources are recorded for exploration with others. The relevant methodological issues for this study of affirmed experience are described below.

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Introduction**

'As researchers, we have to devise for ourselves a research process that serves our purpose best, one that helps us more than any other to answer our research question.' (Crotty 1998, p. 216)

3.1.1 Method, methodology, and epistemology are defined in conflicting ways in research literature (Carter and Little 2007), but a detailed description of a coherent design strategy is necessary for establishing a study's context and credibility. Crotty (1998) outlined four levels of decision-making that linked philosophical perspective and epistemology with theoretical perspective, methodology, and practical data collection and analysis methods. The motivation for this study arose from clinical challenges that led to a qualitative approach and initial design was influenced by existing knowledge and skills. Chapter Three describes how methodological choices were based beliefs about the ontology of the body and chronic pain, the epistemological principles of ACT (Hayes 2012), limited knowledge about osteopathic praxis (Tyreman 2000), and describes how the researcher's learning process informed a pluralistic design (Clarke et al 2015).

3.1.2 Interventions based on Acceptance and Commitment Therapy (ACT) have demonstrated beneficial outcomes, but there is limited knowledge about the processes of developing psychological flexibility and how this influences patient behaviour (Hayes et al 2012; McCracken and Vowles 2014). This study aimed to explore how integrating ACT and Osteopathy influenced discourses about the body and responses to pain.

This chapter explains the challenge of locating research about the body within a primarily objectivist or subjectivist ontology and describes the rationale for choosing social constructionism, phenomenology and Linguistic Ethnography.

## **3.2 Ontology and epistemology**

3.2.1 Ontology and epistemology are often merged in research literature (Crotty 1998). In this study, ontology was defined as the study of being and the nature of existence, and epistemology was defined as the theory of knowledge that guides decisions about research methodology. Crotty argued that the term ontology was often misunderstood, for example, when realism is equated with objectivism even though it is equally compatible with constructionism, and he suggested that 'theoretical perspective' was more a useful term. Carter and Little (2007) also excluded ontology from their qualitative review and proposed that it was unnecessary, as social concepts are often treated in research as if they are as real as physical objects. In this study, however, meanings relating to the physically 'real' body-as-object compared to the phenomenological 'reality' of lived-body experience required careful thought. The next section explores the effect of ontological and epistemological perspectives on the design of this study.

3.2.2 Objectivist philosophers propose that the external world is made up of material objects that are knowable and exist separately from human perception. Others believe that phenomena exist only as constructions within the human mind, and there are varying opinions about the existence of different types of 'object'. For example, joints and muscles are often the focus of manual therapy and may be considered to be straightforward physical entities but chronic pain can also be said to 'exist' but in a more abstract way (Shaw and Connelly 2012). Objectivism is typically associated with positivism and forms the foundation of biomedical healthcare and the evidence-based medicine (EBM) approaches that dominate physical therapy and research (Marcum 2004; Nicholls et al 2010).

EBM has been the guiding principle in UK healthcare since Sackett et al's (1996) description of scientific evidence which supports best practice decisions about patient-care. Systematic Reviews and Randomised Controlled Trials (RCTs) are considered to provide stronger evidence than qualitative research or experiential evidence (Greenhalgh 2010; Rycroft-Malone et al 2004), even though clinicians' judgements are part of the original definition (Miles et al 2008). Alternatives to this hierarchy of evidence have been proposed (Walach et al 2006a), and there are concerns that EBM has been 'hijacked' by biomedicine but has failed to develop effective interventions for long-term conditions which are influenced by multiple interacting factors (Greenhalgh et al 2014).

EBM has also been criticised as failing to account for the influence of beliefs, expectations and past experiences on patient outcomes (Shaw and Connelly 2012) and on healthcare practitioners' approaches to intervention (Darlow et al 2012; O'Keefe et al 2016). Critics contend that EBM fails to acknowledge the meaning of illness (Loughlin 2008) or non-specific treatment responses, previously disregarded as placebo effects (Moerman 2002). These criticisms have been countered by the development of varied approaches to RCTs, which aim to address process as well as outcome, within and between participant variability, and retention issues related to patients' preferences (Moore et al 2008). Designs can also include nested qualitative studies to explore counter-intuitive results and modular designs that analyse components separately (Villatte et al 2016).

Systematic reviews and RCTs demonstrate convincing evidence supporting pain management interventions based on CBT and ACT (Veehof et al 2011; Williams 2012), but their underlying mechanisms are unclear (McCracken and Vowles 2014). This study aimed to explore therapeutic processes and communication interactions, so a primarily objective epistemology was not appropriate.

3.2.3 Subjectivism is the epistemological stance that underpins much qualitative research, based on assumptions that meaning is created by individuals and imposed onto objects of experience. Osteopaths' claims to provide patient-centered, biopsychosocial care (Thomson et al 2013; Penney 2010; Penney 2013) imply that subjective health experiences are as relevant as the quantitative outcome analyses that are the focus of much research (Petty et al 2011a; Shaw and Connelly 2012). Subjectivism is appropriate for exploring individual's experiences but cannot effectively illustrate interactional processes, as language is not a simply static representation of inner reality so the meaning of dyadic experiences is co-created (Sarangi 2004). The inter-subjective nature of communication used in a particular context (Miczo 2003) required an epistemology that could accommodate interactional experiences.

3.2.4 The limitations of primarily objective or subjective approaches provided the rationale for adopting a social constructionist epistemology, where meaning is created through active engagement between human consciousness and objects in the external world (Crotty 1998). In a relativist epistemological stance meanings are agreed within groups, and held lightly as culturally and historically influenced 'truths', especially for concepts such as illness and disease (Brown 1995). Constructionism was also consistent with the pragmatic stance of ACT, grounded in the philosophy of Functional Contextualism, which evolved from behaviourism where stimuli and responses are contextually defined (Hayes 2004) and truth represents the 'workability' of actions to achieve intended outcomes.

### **3.3. Theoretical perspective**

3.3.1 In Crotty's (1998) model, theoretical perspectives provide the context for methodological choices. Interpretivism is congruent with social constructionism and the distinctive approaches of phenomenology and symbolic interactionism.

Theoretical perspectives sometimes imply a neutral, value free stance, but I was the researcher and osteopath in this study and not a dispassionate or objective observer, so auto-ethnography meant including my own voice to enhance transparency. I was familiar with phenomenology at the start of the study, and Table 1 illustrates the approaches explored in my doctoral training journey.

Table 1: Research methodology training courses

2010	2011	2012	2013	2014	2015	2016
Thematic Analysis	Thematic Analysis	Interpretative Phenomenology	No method training	Discourse Analysis	Phenomenology and Ethnography	Linguistic Ethnography

3.3.2 Phenomenology is the philosophical study of the nature and meaning of human experience, and the term encompasses both a broad philosophical movement and the empirical research methods derived from different philosopher's perspectives (Romdenh-Romluc 2011). These focus on describing experiences in the context of the embodied, inter-subjective life world (Miller 2003). Phenomenology provides a critical perspective on culture and methods for exploring tacit influences that enable or constrain action and experience (Crotty 1998). Husserl developed a deductive, descriptive phenomenological approach. This was adapted by later philosophers including Heidegger and Merleau-Ponty, whose concepts of perception and embodiment are relevant to manual therapists and offer theoretical frames for exploring object-body and lived-body experiences (Bullington 2009; Calsius et al 2016).

3.3.3 Principles of intentionality, bracketing and 'phenomenological reduction' remain important, despite conflicting opinions about meaning (Shaw and Connelly 2012). Intentionality suggests that human consciousness is always conscious of something, and links mind, body and the external world of experience which creates a sense of self and meaning (Romdenh-Romluc 2011). Husserl believed human consciousness was projected onto an external world, but Heidegger thought individuals created unique meanings from experience and coined the term 'being-in-the-world' to emphasise this inseparable unity.



Heidegger's concept of temporality emphasised the transience of meaning created in the context of an anticipated future (Shaw and Connelly 2012), which in this study was congruent with the concept of 'discourse trajectories' (Scollon 2001). Inductive approaches to Interpretative Phenomenological Analysis (Smith et al 2009) methods are based on Heidegger's approach (Section 3.4.5).

In physical therapy, the body is often described as an object but beliefs about the nature of the body and its functions are constructed and vary between cultural groups (Shaw and Connelly 2012). Chronic pain also 'exists' as a more obvious social construct, and pain beliefs and behaviour differ significantly in Eastern and Western healthcare (Marcum 2004), which prescribe and proscribe what is visible about pain phenomena (Crotty 1998). This is illustrated by the biomedical focus on pain and disease and limited acknowledgement of the impact of illness and suffering in patients' lives (Marcum 2004; Nicholls and Gibson 2010). A phenomenological perspective was appropriate for exploring the impact of integrating mindfulness, derived from Buddhist concepts about the body, into a primarily biomedical model of osteopathic practice. Phenomenology addresses differences between the reality of an experience and pre-existing assumptions. This was congruent with the intervention aim to enable patients to learn how to differentiate between physical sensation and automatic evaluations of 'pain'.

It has been argued that the philosophical basis of osteopathy is confused, as historical texts and some approaches adopt bioenergetic health principles which seem congruent with essentialism (DiGiovanna et al 2004), where structural practices are based on objectivist assumptions. Some authors have explored osteopathic praxis and clinical decision making (Esteves 2015; Thomson et al 2014), but studies analysing how osteopaths' beliefs influence clinical practice are scarce. This gap justified the study of one osteopath's praxis using auto-ethnography to enrich understanding through 'emic' knowledge contextualised in an 'etic' anthropological research perspective (Lambert and McKeivitt 2002).

### 3.4 Methodology

3.4.1 Methodology needs to be congruent with a study's epistemological and theoretical position but research methods can be quantitative, qualitative or both (Crotty 1998) and pluralist approaches are increasingly common (Frost et al 2010). Options for this study included Thematic Analysis, Grounded Theory, Phenomenology, Discourse Analysis and Linguistic Ethnography (Table 2).

Table 2: Comparison of qualitative research methodologies

Methodology	Epistemology	Perspective	Focus of analysis	Research questions
Thematic Analysis	Objectivist	Positivist	Content of themes in an experience	What are patients' experiences in therapy?
Conversation Analysis	Objectivist	Positivist	Linguistic features in conversation extracts	How do participants talk about pain?
Discourse Analysis	Construction	Interpretive	Language influences and social structures	How do pain discourses influence outcomes?
Grounded Theory	Construction	Symbolic interaction	Creating a new theoretical model	What theories explain responses to pain?
Interpretative Phenomenology	Construction	Interpretive	Individual meaning of lifeworld phenomena	What is it like to live with chronic pain?
Linguistic Ethnography	Construction	Interpretive, interactive	Socially meaningful interactions	How do participants make sense of pain?

Adapted from Crotty (1998) and Starks and Trinidad (2007).

3.4.2 Thematic Analysis (Ziebland and McPherson 2008) and Grounded Theory (Charmaz 2006) were initially considered, as they have previously been used to explore patient-practitioner dialogues (Tveiten and Knutsen 2011), descriptions of chronic pain (Clarke et al 2012), osteopaths' clinical reasoning (Thomson et al 2014) and therapists' inner conversations (Rober et al 2008). They were not congruent, however, with the study's social constructionist stance, as Thematic Analysis incorporates objectivist assumptions about pre-existing patterns which are said to 'emerge' from data. Grounded Theory aims to generate new theories but this study was based on the existing theory of psychological flexibility (Hayes et al 2012), so an interpretive phenomenological approach was then explored.

3.4.3 Empirical methods are derived from different philosophical perspectives (Romdenh-Romluc 2011), which describe and/or interpret life-world experiences (Miller 2003). It can be challenging to choose an appropriate model (Garza 2007) and various approaches have been used to study chronic pain patients' sense of identity and social roles (Snelgrove and Lioffi 2009; Snelgrove et al 2013). Husserl's deductive concepts underpin research that aims to set aside cognitive preconceptions and create rich descriptions of the 'essence' of a phenomenon without the judgements that are subsequently added (Romdenh-Romluc 2011), but Heidegger later developed an interpretative approach that incorporates the researcher's roles in creating meaning in particular contexts (Finlay 2008).

3.4.4 Merleau-Ponty subsequently developed a radically different approach that focused on sensory perception as the primary mode by which humans make sense of themselves and their external world. His concepts challenged Husserl's beliefs about an objective external world and transcendental consciousness, and contested Heidegger's beliefs in an immaterial consciousness inhabiting a body. Merleau-Ponty proposed that the body itself was a source of consciousness and experiences in the external world. His theories expanded the concept of intentionality by explaining how embodied consciousness is associated with physical engagement with the external world (Shaw and Connelly 2012).

Husserl's realism assumed that the gap between consciousness and reality was bridged by the mind, making the body a 'phenomenological anomaly', as it was not located entirely in subjective consciousness or the external environment (Carman 1999, p206). Merleau-Ponty argued that mind and body occupied the same conceptual space, as distinctions between the conscious mind and objective body are often 'blurred'. He also proposed that it was impossible to locate internal bodily sensations without having a prior sense of ownership, or to be conscious of 'self' without a bodily orientation, as thoughts are grounded in precognitive bodily awareness developed in infancy.

From this perspective, people do not have a body, they are a body, and being-in-the-world is an ongoing, largely preconscious process of orientation to maintain a stable self-perspective in relation to internal and external change (Carman 1999). This sense of self is therefore based on interactions that are guided by pre-established, embodied neurophysiological circuits functioning below the threshold of consciousness. Heidegger suggested that a habitual sense of embodiment enables people to feel 'at home' in the world (Romdenh-Romluc 2011). Chronic pain and illness create discomfort and the body may feel both familiar and unfamiliar as normal biological processes change beyond the person's control (Svenaus 2000). When the body is dysfunctional, the normal sense of being-in-the-world is disrupted and disrupted intentionality affects the individual's capacity to engage normally in life world activities (Tyreman 2011).

Manual therapy may provide a means by which patients can experience the misalignment between current body schema distorted by physical dysfunction and habitual schema in which their sense of self is grounded. Patients with chronic pain may develop altered body perceptions which affect psychomotor reactions, due to neurophysiological changes and altered sensorimotor schemata (Calsius et al 2016). These concepts have been explored theoretically in physiotherapy (Shaw and Connelly 2012), chiropractic (Miller 2003) and osteopathy (Tyreman 2011b), but little research studies has been based explicitly on Merleau-Ponty's philosophy as it is difficult to design studies that bridge mind-body dualism. There is increasing interest, however, in competing theories about embodied cognition (Mahon and Caramazza 2008; Wilson and Golonka 2013) and its relevance to embodied enactive reasoning (Oberg et al 2015).

Merleau-Ponty's concepts highlight the preconscious, embodied nature of the self and the limitations of cognitive, verbal descriptions of experience. This study aimed to explore the complex relationships between patients' subjective and objective bodily experiences that are relevant to manual therapy interventions.

Descriptive phenomenological research starts with concrete examples and aims to uncover the 'essence' of a phenomenon, where interpretive methods propose that multiple realities co-exist and create tentative, contextualised accounts of meaning, so their research questions differ in focus (Table 3).

Table 3: Comparison of phenomenological research approaches

Methodology	Research question	Interview data from	Analysis aims to
Descriptive Empirical Positivist	What are the lived experiences of people with chronic pain?	Several participants describing examples of living with pain	Describe essential structures underlying this experience
Descriptive Heuristic Positivist	What is my experience of having chronic pain?	Participant stories, reflective diaries, artwork etc.	Complex description, creative synthesis of personal experience
Interpretative Constructionist	What is the individual experience of living with chronic pain?	Several participants, focusing on meaning for the participants	Identify / interpret variations between co-researchers
Relational Constructionist	What is it like to live with chronic pain?	One participant, relational themes of being-in-the-world	Describe dynamics affecting how this data was co-created

(Adapted from Finlay 2008)

3.4.5 Interpretative Phenomenological Analysis (IPA) is a qualitative methodology with its roots in hermeneutics and idiography (Smith et al 2009; Finlay 2008). Phenomenology provides the methodological basis for creating dynamic hermeneutic cycles linking understanding of parts and of the whole. Idiography aims to create detailed explorations of individual experiences as illustrated in case studies, rather than generalised claims about groups (Shaw, 2010). Analytic processes are systematic and interpretations are situated in particular contexts (Smith et al 2009), although tensions have been identified in balancing thematic and idiographic perspectives (Wagstaff et al 2013).

Meanings in IPA are created in the context and relationships of the research process (Smith et al 2009). Credibility is enhanced by identifying fore-knowledge and accounting for its influence in data collection and analysis. Meanings are created at different levels by constant movement between the data and the interpretations to describe context, identify bias and acknowledge limitations in conclusions that are necessarily tentative and incomplete.

IPA has been used to study chronic pain experiences (Osborn and Smith 2006; Lavie-Ajayi et al 2012), fibromyalgia (Dennis et al 2013), balance (Cassidy et al 2011), and participation in pain management programmes (Mathias et al 2014), as well as patient-practitioner relationships (Dean et al 2005) and physiotherapy with chronic pain patients (Scott-Dempster et al 2014). The plan to analyse patient and practitioner experiences separately using IPA and then combine interpretations was inappropriate, as meanings are created in interaction, so alternative methods of analysing communication-as-action were explored.

3.4.6 Discourse Analysis (DA) is an umbrella term for methodologies which study variable ways language is used socially, as individual accounts of events are created from a range of possible descriptions (Shaw and Bailey 2009). Data obtained from a wide range of sources are analysed to assess how and why particular linguistic repertoires, themes and metaphors are used. Critical Discourse Analysis developed by Foucault (Wooffitt 2005) also explores how discourses aim to maintain the status quo in power relationships.

Discourse analysts consider that describing experiences is a social activity, not a neutral cognitive representation of a fixed reality (Shaw and Bailey 2009). This challenges naive assumptions that language can be analysed sociologically as a de-contextualised system of symbols, or that accounts of events are constant, true representations of reality (Sarangi 2004). It has been used to explore patients' responses to biomedical and psychosocial explanations of chronic pain (Robinson et al 2013), women's perceptions of themselves as chronic pain patients (Werner et al 2004), GPs' communication about medically unexplained symptoms (Undeland and Malterud 2008), physiotherapists' communication with chronic pain patients (Opsommer and Schoeb 2014) and management of challenging patients (Josephson et al 2013).

A focus on flexible language use was congruent with social constructionism, ethno-methodology, functional principles of ACT, appropriate for exploring differences between biomedical and biopsychosocial discourses, and challenging ideological assumptions about traditional patient-practitioner relationships. Critics of DA claim that it can lead to superficial de-contextualised interpretations that are not grounded in specific examples, and are therefore not verifiable (Shaw and Bailey 2009). Discourses are also sometimes reified and separated from context (Wooffitt 2005), so a focused approach was also investigated.

3.4.7 Conversation Analysis (CA) also studies patterns in the way that language is used in everyday social interactions (Wooffitt 2005). Its assumptions, methods and outcomes, however, differ from DA and result in objective, verifiable but less generalisable findings (ten Have 2007). Interpretations are constructed from brief interactions that last from a few seconds to several minutes. Transcripts aid in the analysis of 'ordinary conversation' and are characterised by highly detailed notations developed by Jefferson (Atkinson and Heritage 1984, ix-xvi; ten Have 2007, pp.215-6), which aim to represent the 'messiness' and complexity of everyday verbal interactions (Wooffitt 2005).

The theory is that there is a systematic organisation to the way in which talk-in-interaction is organised and ordered. Knowledge about the implicit normative rules which govern the sequence and flow of turn-taking enables researchers to draw conclusions from extracts illustrating where rules are being followed or breached (ten Have 2007). Premature theorising about the influences of ethnographic context or environment are avoided by basing interpretations on objective linguistic evidence that illustrates how meaning is being co-constructed by these participants in this context (Rampton et al 2014). CA interpretations cannot be generalised beyond the context of an extract and strength of evidence rests on coherent, consistent linguistic patterns and contrasting 'deviant' examples (Wooffitt 2005).

Limitations of CA are that findings can be considered trivial and separated from context, although some authors claim broader inferences can be extrapolated from analysing normative sequences (Wooffitt 2005). CA has been used to explore healthcare communication (Roberts and Sarangi 2005) and doctors' responses to patients in distress (Karasz et al 2012), and offered a rigorous approach for analysing co-constructed meanings (Maynard and Heritage 2005) which was appropriate for analysing collaboration within patient-centred care. Concerns that interpretations from conversations between one osteopath and four patients would have limited relevance in other contexts suggested that a pluralistic approach aligned with the study's ethnographic aims (Frost et al 2010).

3.4.8 Linguistic Ethnography was explored as a method for investigating osteopathic praxis, as chronic pain patients can be considered as a specific social group whose beliefs are likely to differ from healthcare practitioners. The researcher's position as the osteopath delivering the intervention provided opportunities to use insider knowledge to identify the 'strange' processes of integrating ACT with 'familiar' practices (Kumagai and Wear 2014). Maggs Rapport (2000) identified similarities between Ethnography and Interpretive Phenomenology in their aims to explore life experience and create meaning from narratives using the researcher as a 'self conscious' data collection instrument. Differences were that ethnographers observe culturally defined groups and describe meaning from participants' perspectives, where phenomenologists aim to uncover 'concealed' meanings embedded in narratives.

Linguistic Ethnography challenges views of social power and identity (Blommaert 2015) by problematising 'known facts' (Loughlin 2010), and relevant for exploring patient-practitioner relationships. Ethnographers can be neutral observers with limited investment in a topic but, in this study, I was both osteopath and researcher. Auto-ethnography has been criticised for 'rampant subjectivism' (Crotty 1998) when focus shifts from objects to experiencing individuals.



In this study, insider knowledge (Lambert and McKeivitt 2002) and auto-ethnography aimed to provide insight into contextualised emotional experiences and understanding through comparison with similar situations (Gaitan 2000). Pluralistic methods develop meaning from multiple perspectives but maintaining ontological and epistemological consistency is a challenge (Frost et al 2010; Carter et al 2015). Ethnographers propose that knowledge is created in dynamic processes of data collection and interpretation (Rampton et al 2014) i.e. knowledge construction is the knowledge and process is the product (Blommaert 2015), so reflexivity about a researcher's stance is essential (van Manen 1997).

Reflexivity in auto-ethnographies is directed inwards to make sense of participants' experiences and externally to the research process, to explore how identity, beliefs and actions influence processes and outcomes (Gaitan 2000). It includes introspection, inter-subjective reflection and discursive deconstruction, which increases the visibility of taken-for-granted assumptions (Finlay 2002). Miczo (2003) identified the risks of taking interview data at face value as an authentic representation of experience, and failing to acknowledge how accounts are constructed for particular purposes. Cultural and social norms influence data creation and research interactions, but combining Ethnography and Discourse Analysis aims to uncover how meanings are co-created in context.

3.4.9 Linguistic Ethnography (LE) is a principles-based research methodology (Rampton et al 2014), based on coherent ontology and epistemology (Blommaert 2015). It situates verifiable findings from structural linguistic analyses within broader socio-cultural contexts that influence function and meaning in specific interactions. Iterative processes link Conversation Analysis and Discourse Analysis via analyses of communication as social action (Goffman 1967). Ontologically, language is a symbolic, contextually-bound social tool that guides human behaviour (Blommaert 2015); a dynamic view of language and social function that differs from earlier assumptions that language is static, predictable

and universal (Miczo 2003). Anthropological research has previously explored discourse, embodiment, pain and suffering (Desjarlais and Throop 2011). LE's roots in social anthropology are based on cultural relativism (Blommaert 2015) and are consistent with functional ACT principles. It differs from Linguistic Anthropology by focusing on the strangeness of mundane interactions, rather than exotic groups and rituals (Rampton et al 2014). Meaning, identity and role are co-created, and influenced by the social and cultural histories that participants bring to encounters (Scollon 2005; Perez-Milans 2015). LE has been used to explore links between interaction, agency and identity in vulnerable groups (Copland and Creese 2015; Snell et al 2015), including primary healthcare patients (Swinglehurst 2014; Roberts and Sarangi 2005). The concept of 'historical bodies' communicating in 'historical spaces' (Blommaert and Huang 2009) was relevant for embodied dyadic interactions in manual therapy (Oberg et al 2015). LE was therefore chosen an appropriate methodology for this study as it offered systematic, structured methods for exploring discourses about the body, meaning of pain, and co-creation of patient-practitioner relationships.

### **3.5 Summary**

Chapter Three outlined methodological decisions that underpinned the design of this study to explore how psychological flexibility could be promoted in manual therapy practice, and the communication processes which influence patients' responses to pain. Gaps in knowledge about osteopathic praxis justified the design of a qualitative observational study. Philosophical assumptions about the nature of the body-as-object and as a lived-body experience led to a pluralistic and constructionist data analysis strategy based on Merleau Ponty's phenomenological concept of embodiment. The rationale for using the principles based methodology of Linguistic Ethnography was justified in terms of the use of insider knowledge and learning that occurred during the research process.

## CHAPTER FOUR: METHOD AND STUDY DESIGN

### 4.1 Introduction

4.1.1 This study represents the second stage of a long-term project to develop new ways of integrating psychological pain management interventions into osteopathic practice. In alignment with guidelines for developing complex behavioural interventions (Craig et al 2006; Moore et al 2008), this chapter describes theoretical and modelling phases of a group course that informed the design of a course for individuals and a qualitative, observational research study. It outlines the recruitment process, intervention content and structure, ethical considerations and data analysis methods. The group course was Study 1 (Section 4.2), this majority of this thesis focuses on Study 2, and Study 3 (Section 6.6) was a cohort study to test the feasibility of developing and evaluating the effects of this approach using larger samples of participants.

The value of promoting physical activity in patients with chronic pain provided a logical rationale for developing a new behavioural intervention for osteopathic practice (Section 6.6), in a series of three studies (Table 4). Table 5 (on the following page) outlines the logic model underpinning the series of studies that were broadly in line with MRC guidelines (Campbell et al 2000).

Table 4: Overview of the series of three developmental research studies

	Study 1: Pilot groups	Study 2: Doctorate study	Study 3: OsteoMAP project
Duration	Oct 2010 - March 2011	March 2013 - Jan 2014	April 2013 - May 2016
Type	Quantitative	Qualitative	Quantitative
Intervention	Small group (n=7, n=8)	Case studies (n=4)	Observational cohort (n=250)
Timing	2 hours x 6 weeks	1 hour x 6 weeks	1 hour x 6 weeks
Recruitment	BSO Clinic	BSO Clinic	BSO Clinic and 2 GP practices
Outcomes	4 questionnaires, 3 times	32 hours audio recording	5 questionnaires, 2 times
Data analysis	Statistical changes	Linguistic Ethnography	Statistical changes

Table 5: The development model for the three studies (adapted from Campbell et al 2000, p.8).

Stages	Study 1 - Group course 2010	Study 2 - Case study 2013	Study 3 - Cohort study 2013 - 2016
Development	Identified evidence base for ACT and mindfulness interventions. Adapted existing ACT resources from NHS pain programmes.	Up-dated review of the evidence base for ACT and mindfulness. Adapted group resources into a course for individual patients.	Used existing review of evidence for ACT and mindfulness interventions. Created training programmes and resources for other practitioners.
Feasibility	Tested the method of delivery, tested acceptability of content, tested patient recruitment and engagement with experiential exercises in a group setting.	Developed a course integrating ACT, mindfulness and osteopathy. Tested method of delivery to individual patients, acceptability of content and course structure.	Tested course from Study 2 with more patients and practitioners. Tested acceptability of content, course process, recruitment, retention and engagement.
Evaluation	Outcome evaluation - standard patient self-report questionnaires. Evaluation of patient satisfaction - follow-up interviews. Process evaluation of delivery - facilitator debrief discussions.	Process evaluation of practitioner and patient experience - in depth analysis of audio-taped sessions. Outcome evaluation of patient satisfaction - follow-up interviews.	Outcome evaluation -standard patient self-report questionnaires. Evaluation of patient satisfaction - questionnaires and interviews. Process evaluation of delivery - fidelity of training/clinical courses.
Implementation	Two courses were run. Promising outcomes but lack of connection to manual therapy informed the development of a new integrated course for individual patients.	Four patients were treated by one osteopath. Promising outcomes but limited transferability led to development of a larger cohort study to test process/outcomes.	250 patients were recruited and outcomes are being evaluated. Results from process evaluations will inform the design of a pilot study to assess feasibility of an RCT.

## 4.2 Study 1: Group-based pain management course

4.2.1 A six week 'Living Well with Persistent Pain' (LWWP) course was developed by the researcher (an osteopath and BSO clinic tutor) and supervisor (a psychology lecturer, NHS clinical health psychologist, ACT trainer and Mindfulness teacher). It was funded as a clinical service project by the British School of Osteopathy and approved by the BSO Research Ethics Committee in 2010 (Abbey and Nanke 2013). The pragmatic rationale for developing a group course was based on existing NHS services and staff availability.

4.2.2 Course material used was adapted from the supervisor's existing NHS pain management courses on the basis of ACT group protocols (Vowles and Sorrell 2007) and self-help resources (Lundgren and Dahl 2006; Burch and Penman 2013). Sessions focused on one or more ACT principles and included osteopathic assessment and treatment, education about pain and physiological stress responses (Butler and Moseley 2003), guided experiential discovery using individual, pairs and group exercises that were chosen for evidence of effect and practicality (Mirams et al 2013; Ivanovski and Malhi 2007), group discussions, collaboratively agreed home practice and weekly handouts (Table 6).

Table 6: Structure of the group course

Week	Topics
1	Introductions, course aims, differences in acute and chronic pain
2	Physiological stress responses, relaxation, mindful awareness
3	Acceptance and defusion, mindful movement exercises
4	Identifying personal values and goals, planning activities
5	The impact of pain on relationships, effective communication
6	Developing an action plan for future treatment and self-care

4.2.3 Participants were recruited using posters and information sheets in the BSO clinic. Ways of introducing the course to patients were discussed with tutors and students, and information sheets emphasised that patients could be invited

to explore new ways of managing pain but their choices should be respected. Interested patients completed 'opt in' application forms and were screened for eligibility in one hour interviews with the researcher and study supervisor.

4.2.4 Inclusion criteria were adults with musculoskeletal pain for more than six months; evidence of pain-related avoidance behaviour; scope for increasing physical and social activities; and willingness to engage in experiential exercises to promote body awareness and psychological flexibility. Pain duration was extended beyond the usual three month definition (IASP 1994) to maximise the chance that participants had developed avoidant reactions which might benefit from a self-care approach. Exclusion criteria were people who were unsuitable for osteopathic treatment; had active psychosis or substance abuse affecting their ability to learn mindfulness skills or participate in other activities; or could not speak sufficient English to participate in a group without an interpreter.

4.2.5 Data was collected in self-report questionnaires completed at baseline, after the six week course ended, and after three months. Qualitative data on satisfaction with the course was collected in telephone interviews at three months, conducted by a member of staff who was not involved in delivery. Questionnaires included demographic details, the WHO Quality of Life questionnaire (WHO 2004), Chronic Pain Acceptance Questionnaire (CPAQ) for psychological flexibility (Vowles et al 2008), Chronic Pain Values Inventory (CPVI) (McCracken and Yang 2006) and Bournemouth Questionnaire (BQ) for pain coping behaviour (Bolton and Breen 1999).

4.2.6 Fifteen participants (11 female) attended courses in November 2010 (n=8) and February 2011 (n=7). Questionnaires were completed at three points and 132 were returned (73%), with complete data from eight patients (53%). Data from the Adapted Patient Enablement Index (Howie et al 1998) indicated that participants felt the groups had been helpful.

Some participants reported decreased fear-avoidance and increased pain acceptance but individual responses varied widely, as found in other studies (Williams et al 2012). At three months, CPAQ scores improved significantly for Activity ( $Z=-2.38$ ,  $p=0.02$ ) but not Willingness ( $Z=-1.68$ ,  $p=0.09$ ). BQ scores improved at six weeks but returned to baseline by three months ( $Z= -1.40$ ,  $p=0.16$ ). Quality of Life remained unchanged. Grouped CPVI scores for family, friends and relationship values improved significantly ( $Z=-2.12$ ,  $p=0.03$ ) but composite work, health and personal growth did not ( $Z=-1.75$ ,  $p=0.08$ ). Descriptive trends showed that individuals with high baseline BQ scores reported decreased avoidance and participants with low CPAQ scores showed increased acceptance, but the lack of a control group meant that results from this preliminary study were interpreted cautiously.

4.2.7 Participants reported facing challenges in maintaining self-care after the course ended so six, two-hour, facilitated support group meetings were held between April 2011 and May 2012. Most participants attended at least one session and reported ongoing behaviour changes in exploring new activities (e.g. creative hobbies and voluntary work), but the majority also reported difficulties in responding flexibly to pain flare-ups.

4.2.8 Conclusions from Study 1 were that recruitment and retention showed that group courses were feasible for BSO patients. Outcomes were consistent with previous studies where participants valued peer support and social interaction (Lamb et al 2010) but satisfaction was not consistently associated with behaviour change (Howie et al 1999). Group activities were separate from treatment and included few physical activities. Confidentiality issues precluded disclosure of potentially useful information to osteopaths treating individual participants, which limited their ability to help patients sustain positive changes. This study provided evidence that the ACT material was acceptable to patients attending the BSO clinic, and justified further modelling and development.

### 4.3 Study 2: Individual pain management course

4.3.1 The qualitative observational design of Study 2 was guided by learning from Study 1, which indicated that the group format limited opportunities for facilitators to respond effectively to individual's pain experiences as they arose in each session, and courses facilitated by a psychologist also limited accessibility for the majority of UK osteopaths who work in private practice (GOsC 2016). This study was therefore designed to explore the feasibility of developing a course for individuals that could be delivered by an osteopath in a standard clinical setting.

4.3.2 The case study design was based on the rationale that expert knowledge and professional identity are embodied (MacLachlan 2004; Claxton et al 2010; Esteves 2015), so research based on reflection-on-action cannot access tacit knowledge (Eraut 1994) and unconscious competence makes decisions based on psychomotor expertise difficult to identify (Tyreman 2006b). This study aimed to observe praxis in action, and explore both participants' contributions to dyadic manual therapy processes (Lambert and McKevitt 2002; Oberg et al 2015).

4.3.3 The primary research question was: How can pain management interventions informed by Acceptance and Commitment Therapy (ACT) be integrated into osteopathic practice for patients with persistent musculoskeletal pain, and what are the effects on therapeutic processes and outcomes?

### 4.4 Participants

4.4.1 A purposive sample of four patients with persistent pain who attended the BSO Clinic for osteopathic treatment opted to participate in the study.



#### 4.4.2 Inclusion criteria

- Adults over the age of 18 who were able to provide informed consent
- Patients with pain for more than six months, as this group has been identified as most likely to benefit from multidisciplinary care
- Patients with known, stable health conditions, who were not currently undergoing or waiting for further diagnostic medical investigations, as patients with unknown diagnoses may anticipate a cure and are less likely to engage in acceptance-based activities
- Patients who could attend a one hour session for six consecutive weeks
- Patients who were willing to try experiential activities to explore pain experiences, as patients with passive coping strategies are less likely to engage in experiential activities
- Patients who were willing to be active research participants, as this stage in developing a new intervention required a collaborative approach

#### 4.4.3 Exclusion criteria:

- Patients with active, uncontrolled substance abuse, as this could limit their ability to engage with the mindfulness-based exercises
- Patients with active, uncontrolled psychosis, as adverse events have been reported (Shapiro 2009)
- Patients who could not speak sufficient English to participate without an interpreter, as this would affect patient-practitioner communication

#### 4.4.4 Non exclusion criteria:

- Pain diagnosis, site, severity or duration. Acceptance-based approaches are trans-diagnostic (Hayes et al 2012) and not focused on the nature of

problems but on clients' relationship to their problem, so principles apply to 'suffering' in varied physical or psychological conditions

- Demographic variables, as mindfulness appears unrelated to age, gender or education (McCracken et al 2007)
- Mental health problems which were being managed appropriately (e.g. anxiety and depression), as mindfulness has been described as low risk (Shapiro 2009).

#### 4.4.5 Recruitment

Participant Information Sheets (Appendix 2) were left at the reception desk in the BSO Clinic. An opt-in approach meant that patients could refer themselves, but not the clinic tutors or students who usually treated them. Patients who fulfilled the inclusion criteria were invited to audio-recorded interviews which lasted up to one hour, where joint decisions were made about readiness to participate. Patients' motivation, scope for change and willingness to engage in mindfulness exercises was explored in interviews with the researcher, who was trained as an osteopath and a counsellor.

If there were mental health concerns, patients would have been asked for permission to contact their GP before decisions were made about whether they should join the course or not, but this eventuality did not arise. If the researcher had thought that a patient was unsuitable, this would have been discussed in the interview and any patient who did not wish to participate would have been offered advice about continuing with treatment in the BSO Clinic. Information about community health services or alternative support would also have been offered, but this eventuality did not arise. Patients who chose to take part were recruited on a 'first come, first served' basis and recruitment ended after four patients chose to join the study.

#### 4.4.6 Setting

This study was part of a long-term educational initiative (BSO 2015), and was delivered in a private treatment room within the normal clinical environment for the patients and the osteopath. The rationale for this setting was that most previous ACT research about chronic pain has been conducted in specialist centres, rather than in primary healthcare (McCracken and Velleman 2010).

### 4.5 Intervention

#### 4.5.1 Course structure

The intervention was an individual experiential course which consisted of six flexibly structured, one-hour sessions delivered over consecutive weeks. Group-based ACT material and mindfulness exercises were adapted from Study 1 (Section 4.2) for use with individual patients and handouts were collated to form a new Patient Workbook (Appendix 3). The first three sessions focused on avoidant bodily responses to pain and the last three focused on changing the social impact of pain on daily life and valued activities. The course was structured to follow the therapeutic sequence outlined by Harris (2009a), (Table 7).

Session 1 focused on present moment awareness to identify experiential avoidance and cognitive fusion, moving towards developing acceptance and defusion skills in Session 2. Session 3 focused on applying present moment awareness to bodily sensations and physical function. Sessions 4 and 5 focused on clarifying personal values, planning valued activities and identifying potential obstacles to change. Session 6 aimed to bring the core principles together in a psychologically flexible, compassionate self-care plan.

Each session started by reviewing the patient's response to symptoms and activities in the previous week, followed by a mindfulness exercise to guide the choice of manual therapy focus. Osteopathic assessments of active and passive movement were conducted as normal but integrated with acceptance-based or mindful movement exercises. Manual treatment was provided but typically more slowly than usual to promote patients' body awareness. Sessions ended by reviewing learning, negotiating relevant home practices, and planning a valued activity chosen by the patient.

Table 7: Structure of the intervention for individual patients

<b>Intervention structure</b>	<b>Osteopathic focus</b>	<b>ACT focus</b>
<b>Screening interview</b> Impact of pain on life Willingness Scope for change	(No treatment in this session) General health screening Suitability for osteopathy Explore treatment goals	Explaining ACT aims Workability of coping plan Intrinsic motivation Explore personal life goals
<b>1. Living with pain</b> Course aims & intentions Present awareness of pain Noticing autopilot reactions	Clarify dual course aims Mindful active evaluation Explore awareness of pain Mindful treatment, self care	Experience of pain Mindfulness - discomfort Avoidance & Fusion Present experience
<b>2. Living more flexibly</b> Increasing body awareness Parasympathetic responses Hard/soft movement edges	Assess learning about pain Mindful passive evaluation Explore awareness of stress Mindful treatment, self care	Reactions to pain Mindfulness - comfort Acceptance & defusion Home practice exercises
<b>3. Living in the present</b> Whole body sensations Exploring capabilities Noticing new choices	Assess learning about body Mindful moving evaluation Explore awareness of body Mindful treatment, self care	Increasing all present moment awareness Mindfulness - body Home practice exercises
<b>4. Living a meaningful life</b> Aware of embodied self Values, action & agency Mindful moving practices	Learn about pain reactions Explore physical sense of self when relaxed and aroused Mindful treatment, self care	Body and self awareness Values & self-as-context Roles & relationships Valued activity choices
<b>5. Overcoming obstacles</b> Willing to feel discomfort Resistance & ease Creativity and adaptation	Link treatment and self care to necessary activity movements Mindful moving exercises Mindful treatment, self care	Learning about activity Willingness to carry pain Committed action Valued activity choices
<b>6. Moving forward</b> Body awareness Self care plan Doing what works	Learn physical flexibility Mindful moving exercises Mindful treatment, self care Plan future treatment goals	Self care & compassion Agency & active coping Psychological flexibility Valued living plan
<b>Follow up interview</b> Impact of course on life Revising ACT principles Valued life direction	(No treatment in this session) Current physical health Engagement with activity Workability of treatment plan	Health and well being Social roles and relationships Psychological flexibility Self care and compassion

The rationale for combining ACT and Osteopathy was based on assumptions that body-based mindfulness and acceptance-informed interventions would promote more flexible responses to pain. Tensing against touch, movement and actual or anticipated pain are non-verbal expressions of avoidance, so routine osteopathic observations and palpation of body-based cues could be helpful in bringing attention back to present moment bodily experiences. This could help patients to notice habitual reactions, develop willingness to accept distressing thoughts and sensations, and learn how to manage their pain differently.

#### 4.5.2 Integrating ACT-informed interventions into osteopathic practice

No previous studies were found which integrated psychological interventions with manual therapy for individuals, so this study represented a modelling phase in MRC guidelines for developing complex behavioural interventions (Moore et al 2008). This section outlines how the course was operationalised, and Section 6.7 discusses the implications for osteopathic practice. In mindfulness-informed interventions, the practitioner's personal practice grounds their clinical work which occurs without formally teaching mindfulness meditation to patients (Siegel 2007). In this study, interventions were introduced at the start of each session, and home practice recommendations included activities to strengthen new skills. Interventions were typically discrete verbal psycho-education or scripted mindfulness exercises inserted between routine assessment or treatment practices, and methods of integrating ACT with 'hands on' activities developed gradually through experimentation.

#### 4.5.3 Mindfulness was used to slow down physical examinations and provide opportunities to explore bodily sensations and sense of self. Awareness was promoted using touch and guided movements to help patients become more aware of present moment sensations and automatic avoidance (Pike 2008). ACT exercises enabled patients to explore different responses to discomfort and

mindful movements were adapted for individuals, especially patients who could not sit still for formal meditation (Russell and Arcuri 2015). Patients were invited to describe discomfort as it arose, as repeated exposure in a safe environment can gradually extend range of movement (Burch and Penman 2013) when patients become less fearful of anticipated pain (Vlaeyen and Linton 2000; Vlaeyen et al 2001). Daily activity movements were used for home practice to 'detune' alarm reactions and build capacity to regulate movement and posture using sensory awareness, rather than fear of pain or expectations (Pike 2008).

## **4.6 Research process**

### **4.6.1 Recruitment**

Patients obtained information from Participant Information Sheets (Appendix 2) and completed Application Forms (Appendix 4). They attended audio-recorded interviews (Appendices 5 and 6) to explore their readiness to undertake an experiential course. Interviews took place before or after existing appointments to minimise time and cost. Traditional pain management clinics typically focus on pain reduction and promote particular coping strategies. Interviews were used to explain that this course was about learning how to 'live well' with pain and that patients who were willing to try new approaches were more likely to benefit.

### **4.6.2 Informed consent**

Participants signed Consent Forms giving permission to use anonymised material from transcripts for research purposes (Appendix 5). They paid their usual BSO treatment fee and were responsible for their travelling arrangements. Patients were asked to discontinue other osteopathic treatment during the course, unless previously agreed (e.g. emergencies or researcher absence) but were advised

that they could return to treatment in the BSO Clinic at the end, or take a treatment break if they preferred to try self-care.

#### 4.6.3 Timing

It was planned that patients would be recruited sequentially over an extended period to provide opportunities to analyse data, discuss emerging themes after each session and develop researcher reflexivity (Miller 2004), but an early start to Study 3 meant Study 2 patients had to be recruited concurrently (Table 8).

Table 8: Anticipated and actual project time plans

Time period	Anticipated timing of activities	Actual timing of activities
Oct - Dec 2012	Submit research proposal to BSOREC	Submit research proposal to BSOREC
Jan - Mar 2013	Submit RS1 to University of Bedfordshire	Submit RS1 to University of Bedfordshire
April - Jun 2013	Recruit participants, start intervention	Recruit participants, deliver intervention
July - Sept 2013	Complete intervention, analyse data	Pilot new OsteoMAP project
Oct - Dec 2013	Follow up interviews, analyse data	Run OsteoMAP project, start IPA analysis
Jan - Mar 2014	Complete follow ups and data analysis	Continue OsteoMAP, DA and CA training
April - Jun 2014	Submit thesis drafts to supervisor	Expand OsteoMAP, start DA/CA analyses
July - Sept 2014	Revise thesis drafts and submit	Continue OsteoMAP
Oct - Dec 2014	Submit thesis, viva voce examination	OsteoMAP, study follow up interview
Jan - Mar 2015	Thesis corrections	OsteoMAP, study follow up interview
April - Jun 2015	Disseminate findings, write papers	OsteoMAP
July - Sept 2015	Develop course model for further testing	OsteoMAP
Oct - Dec 2015	Start 3rd stage of course development	LE and MDA training, start LE analysis
Jan - Mar 2016		LE training, LE analysis, thesis drafts
April - Jun 2016		Thesis drafts to supervisor, revise drafts
July - Sept 2016		Submit thesis, viva voce examination
Oct - Dec 2016		OsteoMAP ends, thesis corrections
Jan - Mar 2017		Disseminate findings

#### 4.6.4 Recording

Patients received treatment similar to that provided in the BSO clinic. Case details were recorded on existing forms to provide continuity of medico-legal information and inform future care. 'Attending pain management course' was recorded and case notes were subject to standard confidentiality procedures. Research notes were separated from case files and stored securely in the

researcher's administrative office with field notes, so that they remained confidential and were not accessible to students, tutors or administrative staff. In Session 6, patients were invited to create a Valued Living Plan, including personal values, goals and a new osteopathic care plan to share with the students and tutors who usually treated them, if they wished (Appendix 3).

#### 4.6.5 Follow-up

Patients were contacted six months later for follow-up interviews (Appendix 8). Two participants attended interviews, one declined due to progressively declining health and one did not respond. Participants were invited to check transcripts for accuracy, make amendments if required and check that their anonymity had been preserved. Patients were not invited to check session transcripts as this was considered too great a burden.

#### 4.6.6 Data storage

Electronic data were stored on password protected computers in a secure staff office until the end of the study. After completion, data will be stored at the BSO for six years, after which time it will be destroyed by deletion or shredding. After the study has ended, patients will receive a lay summary of the main findings.

### **4.7 Equipment**

#### 4.7.1 Recording equipment

Interviews and course sessions were audio-recorded using two digital devices to ensure that sound quality was adequate. One recorder was placed near the chairs used at the start and end of each session, and one was placed near to the treatment table to record conversation occurring during the physical activities.



#### 4.7.2 Written resources

Question schedules for pre and post course interviews were developed from key ACT concepts (Vowles & Thompson 2011) (Appendices 6 and 8). New material was combined with handouts from Study 1 to create a Patient Workbook which was distributed in chapters at the end of each session (Appendix 3). Each chapter contained reminders about exercises from that session, suggestions for home practice, and spaces for reflective notes to help patients work through an experiential learning cycle (Kolb 1984).

### 4.8 Data collection

#### 4.8.1 Audio-recorded data

Data obtained from multiple sources included: recordings of two semi-structured interviews; six, one-hour course sessions per patient (approximately thirty hours of data); the researcher's field notes; and reflective diary entries. A pragmatic decision was made not to request approval for video-recording, as this was considered more intrusive and would involve practical challenges in finding optimal camera positions or involving another person in the recording process. Semi-structured interviews guided by topic schedules provided different data to the more naturally occurring conversations in the treatment sessions (Wooffitt 2005) but interviews that explore workability can have therapeutic effects (Harris 2009a) and so were considered to be part of the intervention.

#### 4.8.2 Additional data from field notes and the reflective research diary

Manual therapy involves non-verbal communication that cannot be identified in audio-recordings. Contemporaneous field notes recorded observations and preconceptions before and/or after sessions, as accessing the therapist's inner

conversations can provide insight (Rober et al 2008). To enhance immediacy and richness, and minimise conscious editing or premature interpretations (van Manen 1997), field notes were recorded as a 'stream of consciousness' and transcribed at a later date (Appendix 10), and diary entries recorded the development of ideas to support reflexivity (Appendix 11). These were used as sources of auto-ethnographic data to enhance transparency by providing insights into the personal and contextual factors influencing data collection and analysis.

## **4.9 Ethical considerations**

### **4.9.1 Ethical approval, governance and risk management**

Ethical approval was received from the BSO Research Ethics Committee and University of Bedfordshire in March 2013, and the study was covered by the BSO insurance policy. Clinical interventions were managed by the Head of Clinical Practice, in line with standard operating procedures. The research process was fully documented and study materials and data were stored securely. Patients with persistent pain are considered a vulnerable group due to the prevalence of psychological distress (Pincus et al 2002). They were invited to try mindfulness to increase body and self awareness, which was likely to increase awareness of the impact of pain in their lives and create temporary increases in anxiety and distress. Careful consideration was given to ethical strategies to minimise risks of harm, coercion or breaches of confidentiality.

### **4.9.2 Risk of psychological harm**

Mindfulness is considered a low risk intervention but experiential activities can challenge habitual responses to pain and increase feelings of stress (Shapiro and Carlson 2009), although this is a necessary, often beneficial, aspect of developing new ways of responding to discomfort (Harris 2009).

Patients may experience more pain due to increased awareness, so the experiential nature of the course was explained and all activities were optional. Patients could withdraw at any time, without a reason, and at no detriment to their care. ACT interventions are helpful for people with psychological problems (Keng et al 2011), so the risk of harm was thought to be low. If mental health was a concern or was interfering with participation, it would have been discussed with the patient, the GP and study supervisor, but this was not necessary.

#### 4.9.3 Risk of physical harm

The study did not involve vigorous activities and patients had previously received osteopathic treatment, so the risk of physical harm was considered to be lower than usual, as treatment was provided by a qualified osteopath. Risks associated with manual therapy are a less than 1:50,000 – 100,000 risk of a serious adverse event after spinal manipulation, and lower with conservative techniques like massage, although half of patients report short-lived (<24 hours), minor muscle soreness after their first treatment (Carnes et al 2009; Vogel et al 2012). Patients were invited to practice movements associated with normal daily activities. People with extreme fear-avoidance behaviour might have been anxious about movements they usually avoided but activities were voluntary and consent was sought throughout each session.

#### 4.9.4 Risk of coercion

The contextual psychology principles underpinning this study were inherently collaborative (Dahl et al 2005), and coercion was avoided as patients had to 'opt in' and apply to join the study themselves. They were asked to pay their usual BSO treatment fee to minimise coercion due to a financial incentive. Two patients paid concessionary fees, one paid the standard fee, and one patient paid nothing as he normally attended a clinic where treatment was already free.

#### 4.9.5 Confidentiality and anonymity

It was not possible to ensure complete confidentiality regarding attendance as patients' decisions to join the course were sometimes discussed with the BSO students and tutors treating them. Assessment and treatment details were recorded in accordance with standard clinical procedures and medico-legal requirements (GOsC 2012), and to ensure continuity of care after the study ended. Research details were stored separately and confidentially on password protected computers and in a locked cupboard in a secure administration office.

Contact details were removed from Consent Forms and audio-recordings were numbered. Names and identifying details were deleted from transcripts and field notes. Recording devices were removed from the clinic at the end of a session. Audio-recordings were transferred to a secure computer, but not deleted until the study was completed as they were an important source of data (Tessier 2012). Verbatim quotes were anonymised before inclusion in reports and other potentially identifiable demographic information was deleted or altered.

#### 4.9.6 Risk of bias

Bias is an acknowledged limitation in qualitative research (Lincoln and Guba 1985) but authenticity, coherence, transparency and generativity are also important measures of quality. There were no expectations that this study would be representative of interactions in a wider population of patients or osteopaths but field notes, diary entries and objective micro-linguistic analysis methods were used to provide insight into the researcher's preconceptions and assumptions. Follow-up interviews were conducted at six months to explore whether patients reported long-term benefits and to encourage honest feedback by allowing time for effects of the therapeutic relationship to diminish.

#### 4.9.7 Credibility of the intervention

The ACT material had previously been used in NHS courses and piloted in Study 1 (Abbey and Nanke 2013), and evidence for ACT demonstrates effects which are similar to CBT (Veehof et al 2011; Williams et al 2012). The course was delivered by an experienced osteopath and supervised by an experienced ACT trainer and Mindfulness teacher. Attendance, adherence and engagement with experiential learning were promoted by tailoring activities to individual capabilities and goals. The Patient Workbook aimed to promote ownership by encouraging patients to choose practice activities, and to strengthen self-efficacy by providing space to reflect on their successes and obstacles to developing self-care skills (Kolb 1984).

This process of developing a mindful approach was grounded in the osteopath's awareness and capacity for non-judgemental acceptance of discomfort (Kabat Zinn 2013), maintained through personal mindfulness practice (Shapiro and Carlson 2009). The osteopath had to be willing to use ACT principles in her own life in order to be authentic and effective in helping patients address avoidance and re-engage with valued activities. It is generally agreed that practitioners should not lead patients beyond their own level of mindfulness practice. The researcher started practising mindfulness in 2010 and participated in an eight week MBSR course and personal coaching in 2013.

#### 4.9.8 Utility

The ACT intervention was evidence-based, congruent with osteopathic principles and practices, and feasible for use by an osteopath with ACT training. Utility was strengthened by focusing on an area of limited knowledge but known patient need; the aim to expand existing scope of practice and develop care pathways for patients with persistent pain; and the potential to reduce healthcare resource use by promoting resilience, wellbeing and more effective self-care skills.

## 4.10 Data analysis methods

4.10.1 This section describes the data collected and the rationale for analysing data from only one of the four patients. It outlines two stages of quantitative and qualitative analysis, which were consistent with the principles-based approach of Linguistic Ethnography (Sections 3.4.8 and 3.4.9). This pluralistic methodology was appropriate for a complex data set (Frost et al 2010) and methods evolved through experiential learning with findings from one stage guiding the next. Stage 1 consisted of quantitative analyses of content, linguistic structure and ethnographic factors (Stages 1A, 1B and 1C), and these findings were combined to inform the selection of extracts for qualitative analysis in Stage 2.

Stage 2 consisted of Micro Discourse Analysis of communication structures and functions (Stage 2A), followed by mid-level Interactional Sociolinguistic analysis of responses to pain within the patient-practitioner relationship (Stage 2B), and macro level analysis of biomedical and biopsychosocial healthcare discourses (Stage 2C). Other analytic methods considered and reasons for discarding them are in Appendix 12. The methods of analysis used are outlined below in terms of aim, type of data, process and the learning that led to the next stage (Table 9).

Table 9: Overview of data analysis stages

	Type of analysis	Type of data	Outcome of analysis
1A	Frequency analysis - coding of ACT content	Colour coding of 'avoidance', 'awareness' and 'approach'	No patterns seen, led on to linguistic structure coding
1B	Frequency coding - linguistic structure	Sentences coded using RIAS communication categories	Communication patterns led on to analysis of context
1C	Frequency coding - ethnographic factors	'Familiar' and 'strange' interactions coded	Mechanistic and facilitative communication extracts
2A	Micro Discourse Analysis	Analysis of conversational norms e.g. turn taking	Factors opening or closing facilitative communication
2B	Interaction Sociolinguistics	Factors associated with different responses to pain	Links between discourses and roles and relationships
2C	Discourse Analysis	Links between discourses, processes and outcomes	Link to biomedical and biopsychosocial concepts

4.10.2 The plan was to analyse each patient as a case study and compare themes within the group, but the data set of thirty two hours of audio-recording was too large for in-depth analysis of all four patients. Listening to the recordings repeatedly illustrated that most communication was focused on osteopathic content, not psychosocial issues or ACT principles. A decision was made to analyse data from Patient A, 'Adam', first for this study because he appeared to have engaged more actively than the others with the experiential activities and reported the most transformational changes in behaviour. This case therefore provided the richest source of data relevant to addressing the research question. Patient B reported some cognitive and affective learning but less consistent behaviour changes, and C and D were less engaged with the experiential work and reported similar outcomes to previous osteopathic treatment (Table 10).

Table 10: Demographic characteristics

Patient	Nature of pain; personal goals	Perceived process	Perceived outcome
A	Musculoskeletal/neuropathic pain; 10 years; to live better with pain	Fully engaged, but illness limited practice for 2 weeks	Pain variable; QoL + activity increased
B	Musculoskeletal pain; 5 years; to relieve pain, return to normal life	Engaged but struggled with concept of 'accepting' pain	Pain reduced, QoL + activity increased
C	Musculoskeletal pain; 3 years; to remove pain, return to normal life	Struggled to understand acceptance or mindfulness	Pain, QoL + activity levels unchanged
D	Musculoskeletal/neuropathic pain; 10 years; to reduce pain, be active	Struggled with a worsening neurological condition	Pain worse, poor QoL, less activity

The rationale for analysing patient A's data was that it contained more rich examples of acceptance-based interactions in a data set where these were scarce. The main limitation was that outcomes from this patient were likely to differ from patients C and D in particular and were likely to illustrate a more positive response to the intervention. It also limited constant comparison of themes emerging within the group (Charmaz 2006), and weakened the strength of the conclusions that could be drawn from these results.

#### 4.11 Stage 1A: Quantitative content analysis

4.11.1 The aim of this process was to assess where ACT interactions occurred in all the transcripts, and to explore if 'broad brush' patterns could be used to identify appropriate 'sites of engagement' for deeper analysis (Scollon 2001). The rationale for colour coding was that it would provide a method of visualising the large data set as a whole and would illustrate where ACT had been integrated. Creative methods of analysis also disrupt taken-for-granted assumptions (Rampton et al 2014), as new patterns emerge can when data is viewed through an artistic lens or in poetic 'stanzas' (van Manen 1997).

4.11.2 The method was a line-by-line colour coding of the three ACT principles of 'avoidance' (pink), 'awareness' (orange) and 'approach' (yellow) (Harris 2009). Text which could not be clearly categorised was left blank (Appendix 13). The categories were chosen as theoretically relevant 'sensitising concepts', indicating directions in which to look but not specifying what to see (Rampton et al 2014). Interviews 1 and 8 were separated from treatment sessions 2 to 7 as they contained data relating to the research agenda, rather than naturally occurring conversations in shared activities (ten Have 2007; Goffman 1967). Transcripts were pieced together and photographed for visual analysis (Appendix 13).

4.11.3 Outcomes were assessed in terms of patterns (Section 5.2) but the colour coding process was subjective and the broad categories could not be categorised unambiguously, especially when *what* was said related to the wider context and function of *how* it was said. This stage illustrated the need to develop more detailed, systematic analyses of linguistic structure and function.



## 4.12 Stage 1B: Quantitative linguistic analysis

4.12.1 Line-by-line linguistic coding of patient A's transcripts was conducted using criteria adapted from the Roter Interaction Analysis System (Roter and Larson 2002), which was developed for medical communication (e.g. open and closed questions, requesting or giving information etc.). Utterances were coded for type (e.g. question/statement), temporal focus (e.g. past/present), and activity (e.g. talking/treatment) (Table 11). Six categories were discarded as too difficult to assess unambiguously (Table 12).

Table 11: Linguistic categories

Category	Definition	Coding problems identified
Open question	How, why, what's it like? etc.	Statements e.g. 'I wonder..'
Closed question	Answerable yes/no, quantity	Statements e.g. 'I imagine..'
Informing statement	Public domain information	Informing could be advising
Advising statement	Expert osteopath guidance	Could suggest acceptance
Accepting statement	Open, facilitative responses	Accepting or agreeing?
Disclosing statement	Private/internal information	Different to information?
Other/inc. humour	Laughing at self or other	Overlap with disclosure?
Present focus	Experience right now in room	Difference in talk and touch
Past or future focus	Last week, future plans etc.	How many minutes ago?
Unclear time focus	Overlapping both categories	Long sentences include all
In face-to-face talk	Interviews, start/end sessions	Walking in/out of room?
In treatment	In hands-on manual therapy	Grey area while undressing

Table 12: Discarded linguistic categories

Category	Definition	Coding problems identified
Rhetorical question	No answer required, 'self talk'	Was it public 'self talk'?
Interpersonal process	Building rapport	Preceding talk about pain?
Change of topic	Not same as previous stanza	Response to earlier topic?
No response space	1st speaker continues talking	Transcript detail missing
Unexpected outcome	Provided new info or insight	Very subjective, no context
Expected outcome	Adequate for understanding	Very subjective, no context

4.12.2 To classify complex discourse into meaningful units for analysis, pragmatic decisions were made about defining some categories. For example, it was difficult to differentiate 'free' statements from responses to previous questions when clarifications had been inserted between First Part Pair Questions (FPPQ) and Second Part Pair Answers (SPPA) (Levinson 1983).

This could not be assessed without micro-analysis, so statements were defined as turns that did not answer a question in the previous two turns. 'Informing' was defined as being about information already in the public domain (e.g. from previous consultations or observable events), where 'disclosure' related to private inner experiences. The rationale was that disclosures might offer new information and occur at particular moments or with increasing frequency.

4.12.3 Codes were entered into SPSS V.22 (IBM 2016), frequencies were calculated and links between linguistic structures and functions were analysed descriptively (Section 5.3). Differences in patient and practitioner communication patterns guided the selection of extracts for further analysis. Linguistic coding also identified ambiguous categories and illustrated how meaning was difficult to assess from structure alone when the function or context of an utterance related to previous interactions or tacit factors that were not visible in the text. This highlighted the need for an ethnographic analysis of communication function and context, informed by the researcher's knowledge of osteopathy (Stage 1C).

#### 4.13 Stage 1C: Quantitative ethnographic analysis

4.13.1 To assess context, utterances were coded for topic, response, and as 'familiar' or 'strange' content and 'missed opportunities' or 'choice points' using the osteopath's knowledge about the intervention (Table 13).

Table 13: Ethnographic categories

Category	Definition	Problems identified
Patient's problem	About pain, health or life	No obvious problems
Research process	About the research study	Preceding talk about self
Brief response	Five words or less	Non verbal responses too
Longer response	Longer than five words	If utterance was interrupted
'Familiar' content	Osteopath's normal practice	Both familiar and strange
'Strange' content	Unusual content or depth	Became familiar in course
Unclear content	Overlapping both categories	Need to hear the response
'Missed opportunity'	Cue to go deep not taken up	Hard to decide if CP or MO
'Choice point'	Could go deep or change topic	Hard to decide if CP or MO

4.13.2 Some categories were discarded as they were difficult to assess. For example, assessing if a response was 'useful' or 'adequate' was based on assumptions that open questions obtain richer information and might occur more frequently as collaborative communication developed. 'Adequacy' was discarded as it was not possible to assess fully without micro analysis, so responses were categorised by length, with five words or less coded as 'brief'. Linguistic coding and ethnographic categories of 'familiar' and 'strange' interactions were analysed (Appendices 14 and 15). Lines were grouped into stanzas and fifty three extracts relating to pain arising during treatment were identified (Appendix 16). Two diverse extracts were chosen per session and re-transcribed in Conversation Analysis format (Appendix 17).

#### **4.14 Stage 2A: Micro Discourse Analysis**

4.14.1 To explore linguistic patterns associated with different pain responses, extracts were split into stanzas and categorised in three groups: practitioner-led treatment (n=15); collaborative learning (n=10); or mixed (n=3) (Appendix 18). Extracts were analysed to assess 'What is going on here?' and 'How do we know?' (Rampton et al 2014), using normative rules of social interaction which include turn-taking and first and second part sequences (Levinson 1983). Pauses were analysed as interactional work, frame changes, efforts to present a particular identity or to save face (Goffman 1967). Differences in linguistic form and communication process were assessed within and between groups of extracts that were practitioner-led or collaborative interactions (Appendix 18). The rationale for micro analysis was to provide structured, objectively verifiable methods of analysing how communication patterns differed between aims. Micro analysis findings are, however, not usually extrapolated beyond a local setting (ten Have 2007), although in Linguistic Ethnography they are integrated with interactional analyses to explore the wider social context (Goffman 1981).

#### **4.15 Stage 2B: Interactional Sociolinguistic Analysis**

4.15.1 To explore how linguistic patterns identified in micro analysis related to ethnographic context and influenced processes and outcomes, fifteen extracts were split into thirty one stanzas with 'choice points' or 'missed opportunities'. Stanzas were coded dichotomously as 'familiar'/'strange' content, open/closed communication and known/new information (Appendix 19). Each 'choice point' was identified and the following turn was coded as moving towards practitioner-led treatment stance or collaborative patient learning stance. Interpretations were based on 'emic' knowledge of osteopathic practice in general and auto-ethnographic knowledge of delivering this intervention. Insider information added contextual depth to findings from the previous stage and insights about tacit or previously unrecognised ethnographic factors. Decisions about 'choice points' or 'missed opportunities' were not externally verified, as they were based on insider knowledge about the osteopath's aims in specific interactions. This limited dependability but informed the context for Macro Discourse Analysis.

#### **4.16 Stage 2C: Macro Discourse Analysis**

4.16.1 To explore how findings from previous analyses related to biomedical and biopsychosocial discourses, imagery and metaphors from patient A's transcripts were grouped into mechanistic or functional themes, which related to the body-as-object or lived-experience and were linked to behavioural reaction to, and social consequences of, pain. The rationale was that cultural discourses both prescribe and proscribe behavioural responses, so changes in perspective affect therapeutic relationships and health outcomes. This stage aimed to enhance transferability by grounding examples from specific interactions in a wider context, although analysing data from interaction with one patient limited comparison with the others and the strength of the conclusions drawn.

#### **4.17 Summary of data analysis methods**

4.17.1 In Stage 1, quantitative coding methods were used to analyse content, linguistic structure and ethnographic context in eight transcripts from one patient. Combining these results illustrated patterns of communication interactions which informed the selection of fifteen extracts for qualitative analysis. In Stage 2, a three-tiered Linguistic Ethnography approach included micro-level discourse analysis of communication structure, interactional sociolinguistic analysis of communication processes, and macro-level analysis that situated these findings in the context of wider biomedical and biopsychosocial healthcare discourses. Details about the other data analysis methods that were initially used but then discarded are included in Appendix 12.

## **CHAPTER FIVE: RESULTS**

### **5.1 Introduction**

5.1.1 This chapter presents results from two stages of data analysis. In Stage 1, quantitative coding of ACT content, linguistic structure and ethnographic factors informed the selection of fifteen extracts. In Stage 2, the three-tiered qualitative approach of Linguistic Ethnography included micro discourse analysis to explore structural linguistic communication patterns; interactional sociolinguistic analysis of participants' co-created meanings and responses to pain; and macro discourse analysis to ground findings in the wider social context of healthcare discourses.

### **5.2 Stage 1A: Patterns in ACT-related interventions**

5.2.1 The course aimed to decrease avoidance of discomfort and increase body and self-awareness and willingness to engage with valued activities (Harris 2009). Colour coding was conducted to explore visible changes from pink (avoid) to orange (aware) to yellow (approach) within transcripts or across the six sessions. The results showed that pre and post course interviews illustrated different patterns to treatment sessions because of differences between naturally occurring conversations and interviews guided by a research agenda (Appendix 13). Interview transcripts demonstrated larger colour blocks where the patient was responding to specific questions. These were predominantly pink in the pre-course interview where the patient was talking about negative pain impacts, and yellow in the follow-up interview where he was asked about valued activities.

The predominance of pink in all transcripts suggested that communication was mainly about avoidance. Orange for discourses about body awareness were less frequent and occurred in scripted exercises inserted between treatment routines or short sequences integrated with body-based activities. Yellow for approaching valued activity was coded least frequently (Appendix 13).

5.2.2 Colour coding of ACT-related processes (avoidance, awareness and approach) demonstrated increasingly fragmented patterns, apart from sessions four and five which included conversations about a chest infection and an injury. These pattern changes were tentatively interpreted as an index of more flexible shifts in focus between avoidance and awareness. Large sections of text could not be coded using this method because meaning was contextually embedded (Rampton 2010) or linked to non-verbal cues such as voice tone and fluency (Tessier 2012), so further analysis of linguistic process and context was required.

### **5.3 Stage 1B: Patterns of communication and participation**

5.3.1 Linguistic structures were analysed to describe communication patterns and explore whether patterns of participation altered between interviews or over the six treatment sessions. A total of 966 utterances were coded in eight transcripts from one patient, divided into 399 question-and-answer pairs and 567 statement-and-receipt pairs (Appendix 14). Analysis of question-and-answer and statement-and-receipt pairs demonstrated systematic differences in the linguistic structures used by the patient and osteopath (i.e. the osteopath used more questions and statements but answered fewer questions. The majority of questions asked were closed (73-87%) and only 28-38% of them were focused on present moment experiences. The patient's statements provided information (60%) or disclosed inner experience (30%), and his questions were generally seeking clarification about a clinical or research issue (Appendix 14).

5.3.2 There was no evidence of change over time in use of different linguistic structures (e.g. no increase in open questions or disclosures), and no obvious connections between communication structure and patient responses at this level of analysis (e.g. open questions did not appear to be associated with longer answers). This finding was at odds with the osteopath's observation that open questions were sometimes associated with responses which illustrated new or deeper understanding about embodied experiences. This conflicting information was explored in analyses of linguistic fluency (e.g. pauses, hesitation) and clinical context (e.g. familiar and unfamiliar types of question).

#### **5.4 Stage 1C: Ethnographic influences**

5.4.1 Ethnographic analysis of contextual features demonstrated that hands-on treatment activities were associated with the highest proportion of ACT and mindfulness-based communication about present moment experience (Appendix 15), which was coded as 'strange' when it included unfamiliar psychological concepts and mindfulness terminology (48% statements; 65% questions). Present moment experience conversations were more frequent in treatments than in interviews (42% to 4%), especially in hands-on treatment (53%). Approximately 25% of the osteopath's communication was coded as a 'choice point' or 'missed opportunity', where an alternative response was possible.

5.4.2 Despite the explicit aim to use collaborative interventions to influence the patient's response to pain, there were relatively few examples of open questions. Facilitative questions were more frequent in 'strange' interactions (Appendix 15), which suggested that communication arising during hands-on treatment activities would yield the richest data about the development of body awareness and acceptance-base discourses about pain.



## 5.5 Stage 2A: Talking about pain

5.5.1 This section explores the pain imagery and metaphors identified in fifteen extracts selected for detailed micro discourse analysis. At the end of Stage 1, coding tables were constructed to select a diverse set of extracts, based on three dichotomous categories of 'familiar' or 'strange' content; presence of a 'choice point' or 'missed opportunity'; and discourses that focused on controlling pain or exploring physical sensations (Appendix 16). This section includes a full line-by-line evaluation of a familiar, mechanistic interaction about pain control (Table 14), followed by shorter extracts illustrating other discourse patterns (Tables 16 to 18). This stage of analysis identified two distinct types of discourse that were described as being either 'mechanistic', and focused on osteopathic treatment, or 'facilitative', and focused on promoting patient learning and self-care.

5.5.2 In extract 4.1 (Table 14), the osteopath and patient were participating in a physical assessment activity, with the patient sitting on a treatment table while the osteopath examined his neck. They mapped out the site of pain and explored how sensations changed when the patient bent his head forward. The osteopath then decided how to proceed. This was interpreted as a familiar activity in which the osteopath was in control because the predominance of the osteopath's instructions and the patient's unhesitating responses illustrated shared tacit understanding of the consultation routine (e.g. lines 1-2, 33, 44-45). In lines 12, 21 and 28, the osteopath clarified information and used 'self talk' in line 30. The patient did not add more information than was requested or use the transition relevant places in lines 3, 4 and 34, suggesting less active participation.

Table 14: MDA notes on Extract A4.1

Key: O = osteopath; P = patient; TRP = transition relevant place

Context: Patient sitting on treatment table. Osteopath standing behind to examine his neck.

<p>1 O: you okay <u>perched</u> on the <u>ledge</u> [like] <u>that</u> TRP  <i>Closed and leading question. 'Perched' implies he might look unstable or uncomfortable?</i></p> <p>2 P: [yeah]  <i>Interruption pre-empts TRP. No hesitation implies familiar question and expected acquiescent answer</i></p> <p>3 O: (2)  <i>Pause while osteopath observes from behind. Patient does not use space. Familiar role and routine for both?</i></p> <p>4 O: °okay° (2)  <i>Said quietly, second pause. Purpose of this 'self talk'?</i></p> <p>5 O: tell me what your neck feels like just sitting like that now. TRP  <i>Osteopath's instruction. 'Tell me' without please implies osteopath's expected role. 'Just' qualifies without moving. 'Now' emphasises question about present moment body sensations in a particular body part.</i></p> <p>6 P: um (2) i- u- on ther (.) on the <u>right</u> hand side. (1) TRP</p> <p>7 P: it just feels (.) it just i- it feels</p> <p>8 P: it feels i- i- i- it doesn't feel as though (.) it's umm (0.5)  <i>'It just feels' is passive and separate body as object. Hesitation may be interactional work before dis-preferred response or difficulty describing sensation? Osteopath has not interrupted the patient's hesitant speech.</i></p> <p>9 P: it just feels like it's a <u>block</u> TRP  <i>Object body 'It'. Emphasis on 'block' suggests certainty and low tone implies end of turn.</i></p> <p>10 O: ↓mhm↑  <i>Expected receipt of his assessment. Tone curious? but minimal utterance passes turn back to patient.</i></p> <p>11 P: down =</p> <p>12 O: = all that's down [the <u>side</u> (.)] and across the <u>top</u> TRP?</p> <p>13 P: [down the side.]  <i>Overlapping. Patient gesturing. Osteopath clarifying 'down the side' but interrupts, adds content and emphasises in 'across the top'.</i></p> <p>14 P: and <u>going</u> t- y- y-</p> <p>15 P: even though it doesn't really make any sense <u>muscularly</u>.  <i>'Going' is definite (low tone, emphasis) but then hesitant. Line 15 could be a pre-sequence self-initiated self-repair to save face as a rational person whose body sensation is 'real' despite incongruence with anatomy?</i></p> <p>16 P: it f- I can feel it (.) it's like a- (.) like a::a (.hh 0.5)</p> <p>17 P: like a big (.) like there's almost like a big <u>hole</u> there. TRP?  <i>Active voice 'I can feel'. Hesitation for inter or intrapersonal work. Moving between 'it feels like' and 'I can feel'. Uncertainty in qualifying 'almost like'. Osteopath doesn't interrupt or use potential TRP.</i></p> <p>18 P: but it's just (.) where it (.)</p> <p>19 P: an inside the s- s- circle is ju[st <u>solid</u>.] (right shoulder) TRP  <i>'Just as a qualifier for a confusing sensation e.g. a 'blocked' 'hole' that feels 'solid.'</i></p> <p>20 O: [↓mhm↑] (0.5)  <i>Overlapping 'mhm' pre-empts 'solid' so not simply receipt. Could be encouragement for him to go on?</i></p> <p>21 O: an it sounds like from where you put your hand</p> <p>22 O: it [feels] quite <u>solid</u> at the [<u>front</u>] here↑  <i>Aim of pre-sequence 'sounds like'? Clarifying patient's gesture, 'here' accompanied by touch.</i></p> <p>23 P: [yeah] [yeah]  <i>Overlapping 'yeah's, immediacy and tone imply strong agreement.</i></p> <p>24 O: how far down the <u>back</u> does the <u>solidity</u> ↑go. TRP</p>
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*Direct question, object body in 'the back' and 'the solidity'.*

25 P: um (.) it goes down (.) to t- to where the (.)

26 P: the where the shoulder blade is (0.5)

27 P: o- (.) th- the bottom of th- this shoulder blade. (0.5 hh) TRP

*Expected answer, hesitant on details. With gesture for 'this'. Indicates large area of back.*

28 O: right. (.) [so right down to here.]

*Receipt of information but sounds surprised. Checking with repetition of 'right' and 'here' with touch.*

29 P: [down (.) right down to] about there

*Overlapping clarification*

30 O: aha (0.5) okay (.) so that's uh- (.) yeah (.) TRP

*Aha as receipt and 'I understand'? OK signals a frame change? Self talk or the start of an aborted question?*

31 O: an- if you sit there longer↑ does it get more un↓comfortable TRP

*Direct closed hypothetical question, anticipating answer yes. Odd tense mix in 'if you' and 'does it'*

32 P: it ge- yeah (.) it does TRP

*Expected answer, no further details added.*

33 O: okay (.) I won't keep you here more than a se↓cond then

*OK as pre-sequence for a frame change. Osteopath's statement of intended (not) action.*

34 O: (3) Osteopath's pause while thinking or palpating? Patient does not interrupt.

35 O: I'm not going to ask you to do squillions of movements [but]

*Pre-sequence statement. Interactional work or self initiated self repair before a dis-preferred request? Use of 'squillions' to emphasise 'reasonableness of next request for potentially painful neck movements?'*

36 P: [no ]

*The patient's overlapping no is agreement that pre-empts a TRP?*

37 O: if you wouldn't mi↓nd

*Polite pre-sequence to soften a potentially dis-preferred request? Function of tone change on 'mind'?*

38 O: I'm going to ask you to very ↑very ↑very gently.(.)

*Future tense suggests 'not immediately but...' Emphasis of repetition and rising tone on 'gently'.*

39 O: just let your head go forwards

40 O: as far as you feel ↓comfortable going

*'Just' minimises the action. Emphasis on 'comfortable'.*

41 O: and stop when you've had enough. which is there =

42 P: = there

*Instruction and immediate silent patient compliance. Osteopath says 'there' first.*

43 O: okay (.) and up you come that's absolutely fine (.) TRP

*Acknowledging compliance. Instruction to move head. Does 'fine' mean done or 'fine' task or movement?*

44 O: (.hh) are you ↑okay lying down on your back. TRP

45 P: yeah (.) I am.

*In breath. Direct, closed question, anticipating yes. High tone on OK. Minimal response.*

5.5.3 Communication characteristics included descriptions of un-owned, body-object parts (e.g. 'it', 'the back'), over which the patient had little active control (e.g. 'there's a hole' - line 17; 'it goes down' - line 25), and the osteopath did not explore the patient's experience (e.g. the 'block', 'solidity', 'a hole' and 'enough').

Turns where the osteopath could have used facilitative communication were interpreted as either valid clinical decisions ('choice points', CP) or 'missed opportunities' for learning (MO), but it was not possible to differentiate them at this stage. It was not clear if the osteopath's statement in line 43 meant the assessment of movement had been completed successfully or if the range of movement was adequate. 'OK' was interpreted to mean that the osteopath had assumed the epistemic authority to make such judgements.

5.5.4 Extracts were coded for type of utterance, time and topic, active or passive verb tense, and response (Appendix 14). Patterns in extracts with a mechanistic focus on treatment included closed questions about dysfunctions in the patient's body-as-object. For example, in extract 4.1, the patient responded to closed questions with factual information or acquiescence. His body was typically described as 'it' and as separate parts (e.g. 'the neck', 'the shoulder') over which he had little control (e.g. 'it goes', 'it does'). In contrast, linguistic characteristics in extracts with a facilitative learning focus included curious, open questions about lived-body experiences (Appendix 15), with more space for patient responses. Consistent linguistic differences are summarised in Table 15.

Table 15: Linguistic patterns

Associated with mechanistic treatment focus	Associated with facilitative learning focus
Statements, explanations and judgements	Questions
Closed or leading questions	Open and curious questions
Interruptions, statements or explanations	Space for patient to respond
Describes the body-as-object	Describes lived body experience
Descriptions in passive third person tense	Descriptions in active first person tense
Change of topic (treatment or control agenda)	Continue with topic (learning agenda)
Focused on past or future experiences	Focused on present moment experience
Focused on thoughts, feelings, memories, plans	Focused on the patient's body sensations

5.5.8 Descriptions of discomfort were analysed to explore whether particular images and metaphors were associated with different intervention aims. The results illustrated different pain responses. Familiar images included mechanistic descriptions of sensations in fragmented body parts, which varied from aversive,

attacking imagery, to unusual or 'un-homelike' sensations (Table 16). The nature of some recurring images evolved. In session one, Adam described a savage, chomping, black sensation in his neck that changed into a smaller, dark red 'strangling' sensation, which he later experienced as arterial pulsations. In the third session, it was linked to familiar feelings of 'dread' and he gradually became aware of an automatic response to tense against this sensation, which generally made the pain symptoms, and his sense of suffering, worse.

"The theme of dread knots it up as well. Dread of being in excruciating pain, having to dose myself up with pain killers, stop what I'm doing and lie down, not knowing how long it will go on for but expecting it could be days... It's unbearable and it's a waste of time." (A5)

Table 16: Descriptions of pain

Mechanistic treatment discourses	Facilitative learning discourses
Single, fixed anatomical causes of pain: I can p- <u>pinpoint</u> it and put my fi- finger on the. the bit that causes all the problems (3.3:35-37). There there's a kind of a d- <u>disc</u> that's (.) that's sticking into the <u>spinal</u> column (3.3:39-40).	Inter-related, changeable sensory experiences: I can feel something happening <u>there</u> an it's it's quite uhh, it's been a point that's been quite painful since this er but it f- it actually feels as though there's something releasing (6.3:6-11)
Undifferentiated, anatomical evaluation of pain: On the <u>right</u> hand side. (1) it just feels it feels <u>locked</u> it feels it doesn't feel as though it's umm (0.5) it just feels like it's a <u>block</u> (4.1:6-9)	Detailed description of physical sensations: Even though it doesn't really make any sense <u>muscularly</u> , I can feel it it's like a big, like there's almost like a big <u>hole</u> there but it's just where it, an inside the s- circle is just <u>solid</u> (4.1:15-16)
Pain as a violent image, to be avoided: But it's umm (3) uh it was like <u>chomping</u> (2) like ch- you asked what it was <u>like</u> umm. Ah, it feels quite <u>black</u> (2.1:20-22). And it feels like it's <u>biting</u> my neck but uh er it feels <u>jagged</u> (2.1:27). Teeth t- <u>tearing</u> away (...) (2.1:31-32)	Sensations as varied images, to be explored: When you put your hand around the <u>back</u> just now umm (2) it was almost like the same <u>door</u> but it was completely different, different err not <u>closed</u> (5.11:27-31). Felt more like its something being vac- or s- sucked out of s- th- there (7.5:6-7)
Osteopath as the authority on managing pain: Just let your head go forwards as far as you feel <u>comfortable</u> going and stop when you've had enough, which is <u>there</u> (4.1:39-41)	Patient choice in responding to discomfort: How you doing with that <u>arm</u> ? Do you, I notice you twiddling your fingers. Do you want to <u>move</u> it? (4.3:100-101)

5.5.9 Another recurrent, evolving image was a 'locked, blocked' sensation in Adam's chest and shoulder, which evolved into a smaller sense of 'solidity' within a circular hole. Initially, this did not 'make sense' to but he noticed links to other

body areas and the sensation became 'a closed door' that changed during treatment - 'It was almost like the same door but it was completely different, not closed'. Adam associated chest tightness with habitual efforts to suppress feeling vulnerable and sad, which he linked to the macho imagery of the 'Die Hard' films as he became more active in noticing interoceptive sensations (Table 17).

Table 17: The patient's responses to pain

Patient's responses in mechanistic discourses	Patient's responses in facilitative discourses
Fighting to change what's wrong: I tried to do some visualisation exercises, a long time ago now, on the <u>spinal column</u> , this was like <u>pushing it out</u> (3.3:43-47)	Accepting what can't be easily changed: You can't just <u>snap</u> it back into position (3.2:61)
Avoiding emotional discomfort: Um. (1) I felt rather <u>embarrassed</u> yesterday about the f- <u>state</u> of the <u>face</u> (1) (6.4:1-3)	Awareness of emotional discomfort: Well i- ( <i>sigh</i> ) there's a there's a <u>vulnerability</u> there (1) um but I feel quite <u>safe</u> so it's not it's not I don't fe- tha- y- does that make sense (4.3:43-45)
Autonomous body parts, unaware patient: Umm m- the my the the <u>instinctive</u> . (1) err it's the <u>instinctive</u> is still the is the <u>Die Hard</u> . my ar- my sh- shoulder wants to (0.5) <u>rush</u> forwards umm (1) or <u>push</u> (4.3:20-25)	Owned bodily experience, aware patient: I can <u>feel</u> there's uh. (2) i- the its there's err the front of my <u>chest</u> in the <u>middle</u> or <u>breast</u> bone is kind of umm (1) I can feel it i- i- I can <u>feel</u> how I'm holding on to it (7.7:3-8)
Passive experience of body: There's a u- <u>drawing</u> of energy <u>from</u> the neck t- to the <u>point</u> where your <u>hand</u> is touching (4.3:15-16)	Active engagement with body: I could feel my body responding to it like, almost locking, an <u>following</u> you, so I've d- so I've I've sort of focused then on when I was breathing out, an just <u>relaxing</u> my top half of my body (3.3:7-12)

5.5.10 Some pain descriptions illustrated assumptions about the primacy of the osteopath's expert knowledge compared to patient self-knowledge, and different beliefs about controlling or accepting discomfort. Patient responses initially focused on avoidance (e.g. having to give up and rest in bed) or endurance (e.g. having to keep walking, even on 'bleeding stumps'), which evolved into more flexible pacing and activity planning. The osteopath's descriptions of pain moved between aversive experiences to be avoided and sensory experiences to be explored. Different imagery was associated with aims to treat the body or to facilitate patient learning (Table 18).

Table 18: The osteopath's responses to pain

Osteopath responses in mechanistic discourses	Osteopath responses in facilitative discourses
Avoiding causing pain: An if you sit there <u>longer</u> does it get more uncomfortable? It ge- yeah, it does (4.1:31-32)	Encouraging exploring sensations: Tell me what your neck <u>feels</u> like just sitting like that now (4.1:5)
Giving abstract explanations: It's like the <u>surfing</u> , the sadness will come the muscles will tighten (1) <u>over</u> the top of the wave and then we roll down into a better place (4.3:89-93)	Giving explanations linked to bodily sensations: We learn not to (1) well maybe, I'm working on this, not to let it ( <i>sadness</i> ) become quite so <u>physically</u> and <u>rigidly</u> embodied (4.3:85-87)
Screening for medical problems: Do you feel any other sensations like movement or swirly or sick or anything? No, no. Tell me if you do. (6.3:14-18)	Promoting body awareness: What you're <u>noticing</u> in this blocked shoulder area in the front of your <u>chest</u> at the moment (4.3:3-4)
Checking consent to continue treatment: Is this gentle stretch to the <u>side</u> okay? It is, it is. (3.3:2) Is it okay for me to have that sort of pressure? Yeah, yeah, yeah (5.7:35-36)	Exploring patient experience to guide treatment: How does the front of your shoulder feel now there isn't pressure on it? (5.7:1-2) How are you feeling at the moment? (6.3:1)
Using own knowledge and agency: Okay an I'll come back up to the neck and see what's changed (4.3:125)	Promoting patient's knowledge and agency: Is there anything you feel like you or your body want to do that would help you to let <u>go</u> of that a little bit? (7.7:11-12)
Making treatment choices: You okay for us to stop at that? I feel like if I keep <u>going</u> it might be a bit too <u>far</u> (5.11:23-25)	Sharing treatment choices: Do you have any sense w- <u>what</u> (1) your body would <u>like</u> to happen in this area at the moment? (4.3:18-19)
Explaining changing sensations: There was a <u>little</u> bit of a <u>release</u> in- I felt in your shoulder at that point a bit of a twitch so it may be that it's almost like there's a kind of a <u>strong</u> bit of elastic going between the two and as one lets go it <u>yanks</u> on the other a bit (7.5:14-21)	Exploring changing sensations: I mean you've let your shoulder drop into my <u>hand</u> as its come back a little bit. and you've not got that <u>protection</u> does that open up any other sensations? (4.3:36-39)

5.5.11 In summary, micro analysis illustrated different patterns in linguistic structure and imagery associated with mechanistic and facilitative discourses, although there were fewer examples of facilitation. The osteopath's role in promoting patient learning was characterised by discourses about present moment sensations and tentative interpretations of embodied experience, rather than expert advice. The patient's role in learning discourses was characterised by more active engagement, acceptance of discomfort and increasing agency. The next stage of analysis focused on exploring the interpersonal communication processes that influenced shifts between different therapeutic aims and discourses.

## 5.6 Stage 2B: Changing responses to pain

5.6.1 This section presents results from interactional sociolinguistic analysis of the ethnographic factors that influenced communication processes and pain responses. This stage broadened the analytic process to include information based on the researcher's general knowledge of osteopathic practice and specific knowledge of this study. Extracts were coded as ethnographically 'familiar' or 'strange' examples of practice and categorised as mechanistic or facilitative. Extracts were analysed to explore which personal or contextual factors appeared to influence shifts in discourse at 'choice points' or 'missed opportunities'.

5.6.2 As an example, extract 2.1 (Tables 19 and 20) was coded as 'strange', as it was unusual for the osteopath to ask for further details about a pain that had been described as 'black and chomping' pain. The question was coded as 'open' as it could not be answered yes or no. The information was coded as 'new' because it related to sensations that could not be interpreted without gaining more information from the patient. In lines 48-49, the osteopath could have explored what 'inside/outside' pain sensations felt like but moved to a mechanistic treatment discourse. This was categorised as a 'missed opportunity' because the response in line 48 could have aimed to deepen patient awareness.

Table 19: Ethnographic coding of extract A2.1

Familiar		Strange
Closed		Open
Known		New
Choice?	L48/49	Missed?
Expert-led	<	Collaborative

Table 20: Linguistic details of extract A2.1 with CP/MO in line 48-49

41 O: did it change in any way or has it carried on being (.)
42 O: [savage and chomping?]
43 P: [ uh its carried its ] carried on umm (2) (hhhh)
44 P: but in some in some ways it's slightly (1)
45 P: uh its <u>different</u> ↓ but uhh (2) it feels like (.)
46 P: it feels slightly (.) more <u>outside</u> now than inside (1)
47 P: but it's still its still inside as well
48 O: right (.) ↑okay. (.)
49 O: I would like to (.) start doing some treatment very [gently]



5.6.3 Thirty one 'choice points' or 'missed opportunities' were identified. Twenty one extracts ended in an expert stance and ten ended collaboratively (Appendix 19), but no clear patterns linked 'familiar' starts with expert-led endings or 'strange' starts with collaborative endings. Contextual factors were explored to assess whether, and how, patient characteristics, practice guidelines or the osteopath's therapeutic stance influenced shifts between discourses. Extracts were analysed to assess if there were consistent ethnographic patterns between mechanistic treatment and facilitative learning interactions.

Table 21 presents a summary of the contextual factors that were consistently associated with mechanistic or facilitative discourses. Tables 22 to 27 present detailed analyses of diverse extracts illustrating which factors influenced communication at moments coded as 'choice points' or 'missed opportunities'.

Table 21: Contextual factors that influenced intervention focus

Mechanistic focus	Facilitative focus
Concerns about new or worsening symptoms or a need to establish safety and medical diagnosis	Patient symptoms stable, no acute pain or distress, no pathological medical concerns
Uncertainty about whether to focus on trying to resolve or minimise pain	The patient's presentation made it unlikely that his pain could be 'fixed'
Limited ACT knowledge and skills	Increasing ACT experience and confidence
Personal struggle with mindfulness practice	Gradually increasing mindfulness skills
Desire to be right, in control and beliefs that the osteopath understood the patient's body	Willingness to be wrong and uncertain, sound silly and acknowledge lack of understanding

#### 5.6.4 Missed opportunities in mechanistic discourses:

In the extracts in Table 22, closed questions were used to gain consent and little space was created to explore the patient's experience. Communication focused on the osteopath's assessment of the patient's body and responses to touch and movement. Closed questions (lines 12 and 35) led to preferred agreement (Levinson 1983), where an open question would have gained richer information. Reasons for missed opportunities included lack of mindful awareness, inexperience in using ACT and habitual use of the word 'OK'.

Table 22: Missed opportunities in mechanistic discourses

<p>3.2 with MO in lines 12 and 14          12 O: is it okay.=          13 P: =yeah it's good          14 (1)          15 P: after (.) after the:r. treatment last week when I left [(0.5)]</p>
<p>5.7 with MO in line 35          35 O: is it okay for [me to] have [that] sort of press[ure.]          36 P: [yeah] [yeah] [yeah]</p>

5.6.5 Missed opportunities in facilitative discourses:

In extracts 4.3 and 5.11, missed opportunities occurred when the osteopath's response to disclosure did not create opportunities to deepen awareness. Questions in lines 76 and 32 illustrate lack of skill in facilitative questioning (e.g. 'What do you notice in your body as you talk about giving up?' or 'What does the door sensation feel like right now?')

Table 23: Missed opportunities in facilitative discourses

<p>4.3 with MO in line 76          73 P: part of me has just given up          74 O: mhm          75 P: an er (0.5) an that's s- s- s- <u>stopping</u>.          76 O: yeah. (1) when you say this is not who you planned to be. (.)          77 O: do you: (0.5) imagine that you would be you without a well of          78 O: sadness↑ or you [(1) with a w- well of sadness]</p>
<p>5.11 with MO in line 32          29 P: umm (2) it was almost like the same door. (.)          30 P: but it was completely different (0.5)          31 P: different err (.) not closed. (1) yeah          32 O: (0.5) ↑mm. might be interesting to see what comes through it</p>

5.6.6 Choice points in mechanistic discourses:

Characteristics included brief, closed questions and statements about expert observations, followed by space for the patient to describe bodily experiences. This was often hesitant, which could be interpreted as showing inter-personal work (Goffman 1967) but could also indicate intra-personal reflection about

unfamiliar interoceptive sensations. In extract 3.3, the osteopath could have asked 'How does this stretch feel to you?' in line 2, but the pause in line 4 provided a transitional space for the patient to talk again. The tacit reason for pausing was because the palpatory sense of muscle tension was inconsistent with the patient's 'OK', which created uncertainty about an appropriate response. The habitual closed question in line 2 illustrated a lack of experience in working collaboratively, but the pause in line 4 was mindful. It was prompted by the osteopath's awareness of 'feeling stuck' about what to say next but confidence in palpating important muscle resistance. The question in extract 7.7, line 2 was open question but the patient gave a preferred, closed approval response. Space was created for him to continue. The patient was now more familiar with course aims and body awareness and agency were illustrated by first person, active verbs (e.g. 'I can feel...' and 'I'm holding on...' in line 7).

Table 24: Choice points in mechanistic discourses

<p>3.3 with CP in line 2            2 O: is this gentle stretch to the <u>side</u> okay↑            3 P: it is (.) it is.            4 (4)            5 P: I was j- just (.) uh hh trying t- to er (.)            6 P: cos I could it- it- it- felt a little. (.)            7 P: un I could feel my body responding (.) to it like (.)</p>
<p>7.7 with CP in line 6            2 O: how's this.            3 P: it- it's uh it's good I can <u>feel</u> there's uh. (2)            4 P: i- the its (.) there's err (.)            5 P: the front of my. (.) <u>chest</u> (.) in the <u>middle</u> (.) or <u>breast</u> bone.            6 O: (0.5) mhm.            7 P: is kind of umm (1) I can feel it (.)            8 P: i- i- I can <u>feel</u> how I'm holding on to it</p>

#### 5.6.7 Choice points in facilitative discourses:

Characteristics included open questions, space to explore experiences that were hard to verbalise and active participation. In extract 4.3, an open question in line 3 aimed to explore the patient's awareness of muscle tension. Hesitation in line 15 suggested he was noticing a present moment sensation, not recalling a past

experience. The following prompt helped him to explore an automatic reaction (e.g. 'the instinctive'), and the question about agency in 7.7, line 11 prompted him to notice sensations and tensions that he felt able to influence internally.

Table 25: Choice points in facilitative discourses

<p>4.3 with CP in lines 18/19            (3 O: to ask you what (.) yo::u're (.) ↓<u>noticing</u> in this (0.5)            (4 O: blocked shoulder area in the front of your <u>chest</u> at the moment)            15 P: there's a u- u- <u>drawing</u> of energy (.) <u>from</u> the neck (.)            16 P: t- (.) to the <u>point</u> [where] your <u>hand</u> is ↓touching            17 O: [ mhm ]            18 O: okay.(1) do you have any sense w-<u>what</u> (1)            19 O: your body would <u>like</u> to happen in this area °at the moment°            20 P: (0.5) umm (.) m- the my the (.) thee: <u>instinctive</u>. (1)</p>
<p>7.7 with CP in line 11            8 P: i- i- I can <u>feel</u> how I'm holding on to it            9 O: aha.            10 P: f- fromm.= (unknown if he gestures here)            11 O: =is there anything you feel like you or your body want            12 O: to do that would help you t- [(.)] let <u>go</u> of that a little bit            13 P: [(hh)]            14 P: I th- (.) well I- I think I am. (.) un there's uh (.)</p>

#### 5.6.8 Missed opportunities in mixed interactions:

This communication did not explore present moment experience. Line 43 was a 'missed opportunity' as the patient's understanding of how much movement was 'enough' was not explored. The osteopath's choice not to repeat movement may have been influenced by the patient's earlier distress. In extract 5.7, responses illustrate assumptions about expert knowledge, and the reference to 'magic fingers' flattered the osteopath but disempowered the patient by implying that he had limited understanding and agency regarding his own body.

Table 26: Missed opportunities in mixed interactions

<p>4.1 with MO in lines 43/44            41 O: and stop when you've had enough ↓ which is <u>there</u> =            42 P: = there            43 O: okay (.) and up you come that's absolutely fine (.)            44 O: (.hh) are you ↑okay lying down on your back.</p>
<p>5.7 with MO in lines 31 and 33            31 O: okay (.) is this: the (.) <u>top</u> end of the door.            32 P: ur yeah I think y(hh)ou I think you've got your finger [on it]            33 O: [okay]            34 P: you got you've got magic fingers hh hh (0.5) y hh hh</p>

### 5.6.9 Choice points in mixed interactions:

Shifts from present moment focus were sometimes conscious choices influenced by professional responsibilities. In 2.10, the topic changed in line 6 because the osteopath thought that gentle treatment might be useful but the patient had previously stated that he preferred stronger work. The question in line 7 aimed to check his beliefs and 'the spot' in line 4 but revisited in a later interaction. In 5.11, the osteopath's turn after the long pause was based on tacit assumptions about professional knowledge or a conscious choice to avoid over-treatment.

Table 27: Interactions with unclear aims

2.10 with CP in lines 6/7 2 O: how's that 3 P: °yeh° (0.5) .hh [yeah] 4 O: [that] marks the spot 5 P: yeah. 6 (30) 7 O: did you say you tried craniosacral therapy.=
5.11 with CP in line 18 17 (22) (sound of clock, people walking past) 18 O: (.hh) ↑my fee~lings ↓are that (.) 19 O: your shoulder at the front is ↓neutral↑ 20 O: an your neck's had enough of. me.

5.6.10 In summary, consistently different linguistic patterns were identified at 'choice points' and 'missed opportunities' in mechanistic and facilitative interactions (Table 21). Mechanistic discourses focused on anatomical pain sites, past experiences and object body parts, with the patient acting as a passive provider of answers to familiar, closed questions. Facilitative interventions included curious, open questions, active patient engagement and richer but hesitant descriptions of lived-body experiences. Insider knowledge indicated that other tacit contextual factors had affected the osteopath's facilitative abilities, so further analyses were conducted to explore deeper influences that either enabled learning at 'choice points' or blocked it at 'missed opportunities'.

### 5.6.11 Factors influencing facilitative learning discourses

Tables 28 to 30 contain auto-ethnographic information about the osteopath's actions. In 2.1, a closed question about a 'black, chomping' pain reported following a mindfulness exercises was answered hesitantly, and the patient sounded disappointed that the pain remained (line 47). This was acknowledged briefly before the focus moved back to treatment. This was the first session and the osteopath may have been reluctant to ask more as the patient had been embarrassed about crying earlier. Alternatively, the focus on treatment may have been prompted by concerns about working with unfamiliar pain imagery and the default to treatment provider in line 49 was prompted by uncertainty.

Table 28: Closing down a facilitative learning discourse

Extract 2.1

41 O: did it change in any way or has it carried on being (.)  
42 O: [savage and chomping?]  
43 P: [ uh its carried its ] carried on umm (2) (hhhh)  
44 P: but in some in some ways it's slightly (1)  
45 P: uh its different ↓ but uhh (2) it feels like (.)  
46 P: it feels slightly (.) more outside now than inside (1)  
47 P: but it's still its still inside as well  
48 O: right (.) ↑ okay. (.)  
49 O: I would like to (.) start doing some treatment very [gently]

5.6.12 In Table 29, line 31 was prompted by muscle tightness described as 'a closed door'. The participants' laughter may have been affirming a shared experience or indicated that touch affected the patient's body sense, but this was not explored further. Lines 38 and 39 opened up learning but moved away from the present moment. This was a missed opportunity as the osteopath was struggling to avoid giving advice. The pre-sequence in line 41, qualifying 'direct' with 'fairly', aimed to save face if the patient declined to answer the next question. The ACT principle of 'valued action' was the focus for this session, so this extract illustrates either a valid choice about relevant material or a missed opportunity to facilitate learning.

Table 29: Missing a facilitative learning opportunity

<p>Extract 5.7:31-41</p> <p>31 O: okay (.) is thiss the (.) <u>top</u> end of the door.</p> <p>32 P: ur yeah I think y(hh)ou I think you've got your finger [on it]</p> <p>33 O: [okay]</p> <p>34 P: you got you've got magic fingers hh hh (0.5) y hh hh</p> <p>35 O: is it okay for [me to] have [that] sort of press[ure.]</p> <p>36 P: [yeah] [yeah] [yeah]</p> <p>37 P: yeah=</p> <p>38 O: =okay. (.) I'm just going to sit here for a bit and see (.)</p> <p>39 O: what (.) you experience and what I experience</p> <p>40 (18) (traffic noise)</p> <p>41 O: got a fairly direct question feel free not to answer it=</p>
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5.6.13 In Table 30, palpating tight muscles prompted a question about the patient's awareness. Hesitation suggested he was aware of sensations linking his neck and chest. 'Okay' with a falling tone and a pause in line 18 was a frame change preceding an open question about self-awareness. Further hesitation suggested sensory, rather than cognitive, awareness. In line 17, the pause was associated with uncertainty about the meaning of the imagery in line 15. Line 18 refocused on present moment awareness as the patient seemed curious and willing to explore his bodily experience.

Table 30: Opening up a facilitative learning opportunity

<p>Extract 4.3:3-17</p> <p>3 O: to ask you what (.) yo::u're (.) ↓<u>noticing</u> in this (0.5)</p> <p>4 O: <u>blocked shoulder area</u> in the front of [your <u>chest</u>] at the moment...</p> <p>15 P: there's a u- u- <u>drawing</u> of energy (.) <u>from</u> the neck (.)</p> <p>16 P: t- (.) to the <u>point</u> [where] your <u>hand</u> is ↓touching</p> <p>17 O: [ mhm ]</p> <p>18 O: okay.(1) do you have any sense w-<u>what</u> (1)</p> <p>19 O: your body would <u>like</u> to happen in this area (0.5) at the moment</p> <p>20 P: (0.5) umm (.) m- the my the (.) thee: instinctive. (1)</p>
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5.6.14 In summary, there were linguistic and ethnographic differences in the mechanistic discourses that characterised the osteopath's focus on providing treatment compared to the facilitative discourses that characterised a focus on collaborative learning. There were also consistent patterns in factors influencing the use of facilitative discourses (Table 21). The next stage of analysis explored how these discourse patterns were associated with changing responses to pain, different patient and practitioner roles, and wider social healthcare discourses.

## 5.7 Stage 2C: Broadening the discourse about pain

5.7.1 This section integrates results from the micro and mid-level linguistic and ethnographic analyses with broader macro-level analyses of biomedical and biopsychosocial discourses. Themes relating to the nature of the body, the meaning of pain, and patient and practitioner responses to pain were created using *in vivo* quotes, which were combined to form a coherent set of inter-linked, local discourse themes (Table 31). Mechanistic themes predominated at the start of the course, illustrating a gravitational pull to familiar roles, illustrated below.

Table 31: Local discourse themes

Category	Mechanistic themes	Functional themes
The nature of the body	<i>The war zone</i>	<i>A foreign land</i>
The meaning of pain	<i>The call to arms</i>	<i>It just is what it is</i>
Patient role and identity	<i>Putting on a brave face</i>	<i>The curious explorer</i>
Osteopath role and identity	<i>Mechanic with magic hands</i>	<i>The interpreter</i>

### 5.7.2 Mechanistic body themes - The war zone

Adam's body was described as a loosely connected set of independent body-object fragments, typically referred to in the third person (e.g. 'it' or 'the neck') rather than first person, lived-body experiences. Parts were described as sentient and capable of possessing emotions and thoughts and acting autonomously. They were attributed as having defensive roles or aggressive attitudes and could act without Adam's awareness or cooperation (*'My calcaneals have been playing up like billy-oh'*). Communication focused on painful areas, with asymptomatic parts largely absent from the discourse. Relationships between the patient's sense of his body were typically described as one-way communication from body to self, and based on assumptions that the body was independently aware and knew what it needed. Body parts appeared to 'speak' only to the osteopath, whose privileged knowledge enabled the interpretation of the non-verbal body signs that the patient could not decode for himself.



Symptomatic parts created wider problems (*'The moment my neck goes, then I just tense up'*). These were influenced by external forces (e.g. trauma) and internal forces (e.g. muscular tension), and left a palpable trail of evidence. Sometimes Adam noticed internal sensations but did not know how to interpret the meaning or respond effectively, which led either to inaction or over-exertion.

### 5.7.3 Mechanistic pain themes - The call to arms

Living in a war zone left Adam beset by hostile assaults from different body parts and his conditioned response was to fight back. He described pain as 'real' if it could be attributed to causes that made cognitive 'sense' (e.g. injuries or structural faults), especially when validated by medical tests. If he ignored pain, vicious cycles of negative thoughts, feelings and physical sensations began, and stress increased his sense of suffering and made it harder to cope. He managed pain by avoidance (e.g. bed rest) or endurance, continuing to do tasks until he collapsed. He was afraid of ending up in *'the knacker's yard'* but aware that attempts to minimise pain set up *'ping pong games'* between competing body areas. Tension often built up un-noticed until it affected his whole body. Adam thought he should strive to be normal (*'Even if my leg's chopped off at the knee, I should still be able to walk t'mill on my bloody stump'*), as giving up meant being *'broken'* and not *'who he had planned to be'*. Limiting activities affected Adam's sense of self when he did not feel physically independent or socially reliable.

### 5.7.4 Mechanistic patient themes - Putting on a brave face

Unpredictable symptom patterns affected Adam's plans to seek voluntary work, and adversely affected his finances and housing situation. He isolated himself socially and acted as a 'professional patient' for the stream of medical experts involved in managing his complex healthcare problems. He *'put on a brave face'* and was stoic in adversity, trying to look happy all the time to avoid being *'weak'*.

Adam wanted to protect friends from his suffering as he felt he had become '*an atmosphere hoover*'. He was '*willing to fight for years*' to find effective treatment but interventions that were supposed to help often felt like further assaults on his ailing body. Medication helped him to remain active at the cost of being '*zoned out*' by side-effects. Adam felt that his doctors and specialists did not communicate with each other effectively, so symptoms were treated as separate problems and it was hard for him to retain a sense of himself as a whole person.

#### 5.7.5 Mechanistic osteopath themes - The skilled mechanic

The osteopath's role in Adam's fight against pain was to offer support as a skilled technician. Specialist knowledge and skills enabled her to assess what was wrong and provide treatment that aimed to reduce pain and increase his physical functioning. Adam had limited control or awareness of symptomatic body parts, so the osteopath assumed responsibility for treatment choices, guided by what Adam's body '*said*' to her. She also verbalised the body reactions and automatic '*defences*' of which Adam was unaware. Taken-for-granted theories were that holding muscles tense could keep difficult emotions under control and that relaxing tension could release them. Posture was linked to mood and '*opening up*' psychologically and physically was considered to be beneficial, unless it happened unexpectedly (e.g. the '*roller coaster ride*'). The osteopath did not always negotiate consent with Adam as an embodied agent but based decisions about action in the consultations primarily on her assessments of his body responses (i.e. '*I don't think the neck muscles like this*').

#### 5.7.6 Functional body themes - The foreign land

In contrast to the dominant mechanistic imagery, functional themes emerged more slowly and were linked to facilitative communication that introduced ACT and mindfulness exercises. Adam's increasing interoceptive awareness created a

new sense of his body as '*a foreign land*', where he was either a curious traveller or simply lost. Mindfulness exercises gradually enabled him to link separated body parts and explore the road less travelled to pain-free regions that were often bypassed because of automatic urges to attend quickly to painful areas.

#### 5.7.7 Functional pain themes - It just is what it is

Exercises which aimed to develop ACT-informed processes of acceptance and defusion provided opportunities for Adam to notice a wider spectrum of feelings, and to re-frame pain as one sensory experience amongst many. Functional pain discourses involved shifting epistemic assumptions, as his self-knowledge was considered to be as valid as the osteopath's theories or opinions. Adam began to notice how pain changed his lived-body experience - '*Pain wrong foots you. You should be able to take it in your stride but when you put your foot forward, it doesn't land where you expect it to*'. He also noticed how it was harder to cope with when he was 'suffering' with unwanted thoughts and feelings.

#### 5.7.8 Functional patient themes - The curious explorer

Travelling through the foreign land of his body, and learning how to focus at will on different aspects of experience, gave Adam a sense of agency that differed from his previous need for control. He initially found it hard to just 'be with' discomfort and used mindfulness exercises for relaxation or pain reduction. Later, he learned how to use body scan techniques to make space for discomfort that could not be changed, which expanded his whole body awareness and enabled him to re-engage with a bigger sense of him 'self' - '*Pain is no longer who I am, it's just something I have*' (A7).

Adam's responses to discomfort became more flexible when he learned how to differentiate physical pain from emotional suffering, and he began to plan daily

and personally valued activities more skilfully. For example, walking to the cafe in the park connected with three values - to be more physically active, to enjoy being outside in nature and to socialise with friends. It also enabled him to leave when he chose, rather than complying with his friends' expectations when they visited him. His coping strategies became flexible (e.g. swimming when walking was painful) and pragmatic (e.g. what worked to improve his own quality of life).

#### 5.7.9 Functional osteopath themes - The interpreter

Combining ACT with Osteopathy created a more collaborative therapeutic relationship. When Adam's journey was viewed as exploring a foreign land, the osteopath's role was re-framed as an interpreter who could use skilled palpation to translate the potential meaning of unfamiliar bodily sensations and bridge gaps between cognition about the object-body and perception of the lived-body. This used the osteopath's specialised knowledge to explore the unique context of the patient's embodied self. Tentative interpretations replaced expert diagnoses because clinical uncertainty was increased, and meaning could be lost in translation between cognitive verbal and experiential non-verbal vocabulary.

The patient's role as the expert in his own life guided choices about treatment and self-care, and the collaborative stance led to slower treatments which focused on developing self-awareness of physical and emotional 'stuckness' in his life. One of the osteopath's roles was to help Adam notice automatic reactions and experiment with letting go of habitual muscular defences that might no longer be necessary. Focusing awareness on unfamiliar interoceptive and somatic sensations sometimes led to aversive responses, so the osteopath's role also included tactile guidance that respected the patient's boundaries and enabled Adam to choose whether, and when, to approach or retreat from present moment discomfort.

### 5.7.10 Mechanistic and facilitative discourse characteristics

In summary, the mechanistic and functional discourses identified in these extracts embodied different assumptions about the body and pain, which were linked to broader biomedical and biopsychosocial healthcare models. Treatment-related discourses were associated with military metaphors (e.g. the war zone and the call to arms), with the osteopath's role framed as providing mechanical expertise to help the patient fight pain (Table 32). Learning-related discourses were associated with curiosity and acceptance, which re-framed patient and practitioner roles as explorer and guide. Linking the micro-analyses of linguistic patterns to the analyses of ethnographic factors illustrated how the discourses shifted between biomedical and biopsychosocial approaches, and the effects on clinical reasoning processes and patient outcomes are discussed below.

Table 32: Mechanistic and facilitative discourse characteristics

Theme	Mechanistic discourses	Facilitative discourses
Therapeutic aims	Increase physical mobility Decrease pain levels Focus on content of experience	Increase psychological flexibility Increase valued activities Focus on context of experience
The body	Body as object Separate body parts	Body as lived experience Self or whole body experience
Meaning of pain	Structural damage Cause and effect explanations Limits specific physical functions Pain site and severity	Functional adaptation Tentative relationships Affects daily and social activity Pain impact in specific contexts
Patient's roles	Lacks knowledge, needs support Evaluate, judge, control, avoid Behave sensibly, avoid blame Pace, conserve energy Reduce goals to live within limits Compliance with expert advice	Has knowledge and agency Notice, describe, explore, accept Act meaningfully, self compassion Prioritise, spend energy wisely Use values to adapt to challenges Self care guided by personal values
Osteopath's roles	Expert, teacher, treaters, carer Observe and palpate Assess movement and restriction Deliver expert diagnoses Make statements, give advice Be helpful, effective and in control	Facilitator, co-learner, interpreter Observe and palpate Assess function and capability Discuss tentative understandings Open questions, invite choices Be curious and compassionate
Linguistic characteristics	Agency - passive voice Inanimate - it, the Certainty - it is, I know, probably Expectations - ought, have to	Agency - active voice Human - I, my, you Uncertainty - I wonder, maybe Possibilities - could, might, choose

### 5.7.11 Cognitive and phenomenological sense-making discourses

Systematic analysis of twenty seven examples of the patient's frequently asked question 'Does that make sense?' demonstrated different communication functions, including asking for - validation of cognitive understanding; validation as a rational person; and help in making sense of unfamiliar sensations. When the osteopath's response was not an immediate affirmation (e.g. 'Yes, that makes sense'), open question responses uncovered the existence of different cognitive and phenomenological sense-making processes.

In Table 33, the examples of cognitive sense-making appeared to be fluent, concise, causal explanations and strategies for pain control. In contrast, the phenomenological sense-making examples were more hesitant and included unexpected imagery and richer sensory descriptions.

In extract A5, the patient asked if a 'neutral' sensation made sense, which met with immediate agreement. 'Neutral' is an evaluation, however, rather than a sensory description, and agreement represented a cognitive response. Later, the patient asked if his coping strategy made sense, which implied asking for validation that he had acted sensibly. The osteopath's open question response 'What are you sensing now?' shifted the interaction to a phenomenological sense-making frame and linked emotional awareness with physical sensations.

Table 33: Cognitive and phenomenological sense-making discourses

Cognitive sense-making	Phenomenological sense-making
<p>P: But more than 50% of the time, I can't identify a cause.                      O: Okay.                      P: Does that make sense to you?                      O: Yeah, yeah.                      P: And I think that's probably just because it's just... a bit broken (A6:100)</p>	<p>P: You know that gobbling sound... that people make when they're... they're forcing... eating forcing food in, it's almost... it's almost like...                      O: Kind of a ravenous...                      P: A ravenous but gurgling and bubbling at the same time, if that makes sense.                      O: Kind of like the pain is eating you up.                      P: Yes, it feels like that sometimes. (A2:288)</p>
<p>P: And I don't know whether it causes it just to flare up so much that I shut off from it or whether that by aggravating it's dissipating it. If that makes any sense.                      O: Hmm. So do you tend to go out feeling worse? (A2:271)</p>	<p>P: I almost feel... like a drawing point, does that make sense to you? As if... there's a drawing of energy from the neck to... the point where your hand is touching.                      O: Okay. Do you have any sense what your body would like to happen in this area at the moment? (A4:252)</p>
<p>O: I don't know if I've explained that and it makes any sense.                      P: Yes.                      O: Because often people... (A2:350)</p>	<p>P: [The pain] was separate, its desperation was almost like... clawing at me... because I was in the way... does that make sense?                      O: I'm slightly lost. (A3:214)</p>
<p>O: Okay. How does the front of your shoulder feel now there isn't pressure on it?                      P: Umm... neutral.                      O: Okay.                      P: If that makes sense?                      O: Yes. (A5:335-339)</p>	<p>P: I'm actually getting up and carrying on, but in some ways it's sort of like... it's there and just carrying on... Does that make sense?                      O: Hmm. What is in there for you in this shoulder at the moment?                      P: Umm well initially when you put your hand there, the shoulder feels scared of... if that makes sense to you... the shoulder is feeling really scared and skittish. (A5:290-300)</p>

5.7.12 Systematic analysis of the question 'Does that make sense?' illustrated consistent linguistic differences between cognitive and phenomenological sense-making frames, which are summarised in Table 34. The key findings from the quantitative and qualitative stages of analysis and implications for osteopathic research, practice and education are discussed below in Chapter Six.

Table 34: Cognitive and phenomenological sense-making frames

	Cognitive sense making	Phenomenological sense making
Question	Does that make sense?	Do you have a sense what you....?
Temporality	Past event or future plan	Present moment experience
Preceded by	Statement or causal explanation	A description of sensory perception
Language	Fluent, 'I think...', 'because...'	Hesitant, 'I feel..', 'It's almost like..'
RFT concepts	Discord between frame concepts	Unfamiliar feelings, adds to frame
Aims to	Appeal to language based logic	Explain internal bodily sensations
Anticipates	Agreement or compliance	Understanding or interpretation
Authority	Expert knowledge, generalised	Self knowledge, contextual
Conclusions	Certain, predictable, static	Uncertain, unpredictable, tentative
Cynefin model	Complicated ordered domain	Complex un-ordered domain
Response	Sense, <i>analyse</i> , respond	<i>Probe</i> , sense, respond
'Sense' as	Being sensible, logical, rational	Being sensitive, aware, intuiting
Knowledge	Normalised, external, informing	Individualised, internal, wisdom
Opportunity	Validates knowledge re 'cause'	Creates knowledge about patterns
Effect	Normalises, reinforces a frame	Expands frame, new relationships
ACT concepts	Risk of fusion, fixed sense of self	Chance to be open and flexible



## **CHAPTER SIX: DISCUSSION**

### **6.1 Introduction**

6.1.1 Chapter Six presents the discussion of findings in six sections, which are: a summary of the key findings; the strengths, and limitations of the study; a comparison of the results with existing literature; implications for future research; and osteopathic practice and education. Results are discussed within the contextual framework of the ACT theory of psychological flexibility (Hayes 2014) and the Cynefin model of sense-making (Kurtz and Snowden 2003), and implications for research are informed by MRC guidelines (Moore et al 2008).

### **6.2 Summary of the key findings**

6.2.1 The discovery of 'mechanistic' and 'facilitative' discourses about pain

- Interactions were categorised as 'familiar' or 'strange' in the context of the researcher's experience of osteopathic practice and this intervention, and were used as a tool to identify different discourses about pain.
- 'Familiar' discourses about pain illustrated a predominantly mechanistic osteopath-led approach, which typically focused on the patient's painful object-body parts. 'Strange' facilitative communication focused on learning about the patient's lived-body experiences was less frequent.
- There were consistently different linguistic characteristics in interactions associated with mechanistic discourses that had a pain control agenda, compared to facilitative discourses with a patient self-care agenda.

- Mechanistic discourses were characterised by closed questions or statements of expert opinion focusing on biomechanical dysfunction, whereas facilitative communication was characterised by curious, open questions and space to explore unfamiliar body sensations and reactions.
- A consistent shift from mechanistic to facilitative discourse did not occur over the six week course, but there was evidence of increasingly flexible transitions to facilitative discourses about present moment experiences of pain arising during manual therapy activities.

#### 6.2.2 Factors that influence shifts between discourses

- It was only possible to make sense of shifts in discourse shifts using 'insider knowledge' about the osteopath's aims in specific interactions.
- This knowledge was used to identify 'choice points' and 'missed opportunities' that were used as a tool to explore influential factors.
- Factors that promoted a shift to facilitative discourses included the osteopath's confidence in palpating muscle tension that indicated experiential avoidance, and sessions in which the patient reported stable symptoms and manageable pain levels.
- Factors prompting a conscious choice or habitual default to mechanistic discourses were a lack of confidence in using ACT, poor communication skills, lack of awareness, and concern about new or worsening symptoms.

#### 6.2.3 The effects of facilitative discourses about pain

- Facilitative communication provided opportunities for the patient to develop interoceptive awareness, which was associated with reduced anxiety and fear-avoidance of particular movements and activities.
- Facilitative communication also provided opportunities for the patient to link physical sensations with cognitive and emotional experiences,

which enabled him to reconnect with a richer sense of himself beyond a fixed and limited identity as a 'chronic pain patient'.

- Facilitative communication was associated with the development of mindful awareness, which enabled a shift from habitual urges to avoid or control pain to more conscious acceptance-based responses to pain.
- An increasing sense of body ownership and agency was also associated with the patients' reports of re-engage with valued activities in daily life.

#### 6.2.4 Changing therapeutic roles and relationships

- The mechanistic and facilitative themes arising from this study were congruent with biomedical and biosychosocial healthcare discourses.
- Changing to more facilitative discourses involved a shift in epistemic assumptions about the knowledge that should be prioritised in decisions about therapeutic activities and goals.
- Facilitative pain discourses were associated with shifts in the dynamics of the traditional therapeutic relationship.
- The patient's role moved from 'victim'/'fighter' to 'curious explorer', and the osteopath's role moved from the 'mechanic with magic hands' to a 'skilled interpreter' of unfamiliar sensations.
- Shifting between therapeutic aims required the osteopath's willingness to try responding differently to the patient's pain, and to tolerate increased clinical uncertainty, and shifting between discourses also required the development of psychological, mindfulness and communication skills.

#### 6.2.5 Exploring a new way to make sense of persistent pain

- The process of integrating ACT and Osteopathy in this study evolved from 'added-in' to 'blended in'.

- Analysis of the question 'Does that make sense?' identified different cognitive and phenomenological sense-making processes, which formed the basis of a new model of reasoning based on the Cynefin framework.
- This model needs to be subjected to further testing to assess whether it might be a useful framework for reframing the osteopathic care of patients with complex problems, such as persistent pain.

### **6.3 The strengths of the study**

6.3.1 This study represented one developmental stage in the MRC guidelines, which included identifying the existing evidence base about the theoretical mechanisms of change, modelling the delivery process, and assessing outcomes (Moore et al 2008). It generated empirical data which demonstrated that it was possible, although difficult, to integrate ACT into osteopathic practices with individual patients. These findings need to be verified further but will inform the feasibility phase of development and design of a pilot RCT.

The best opportunity to engage the patient in exploring his responses to pain was found to be during hands-on manual therapy activities, when object-body and lived-body experiences could be explored together using a combination of verbal, movement and touch-based interventions. Analysis showed that facilitative communication and focus on the functional impacts of pain appeared to promote willingness to experience pain and psychologically flexible responses. Evaluation of the study's strengths and limitations is based on constructionist assumptions that qualitative research can be assessed in terms of its ability to generate knowledge within a discipline or deepen understanding by linking existing inter-disciplinary theories and praxis. This section outlines the strengths of this ACT-informed osteopathic study in terms of utility and relevance; research design and process; and the coherence, resonance and generativity of the results (Dey 1999; Tracey 2010).

6.3.2 Strengths included clinical relevance and an innovative inter-disciplinary design. Utility was grounded in the limitations of existing pain management approaches; developments in understanding persistent pain; and opportunities for collaboration between the researcher (an experienced osteopath and counsellor), and the supervisor (an NHS Clinical Psychologist, ACT practitioner and Mindfulness teacher specialising in pain management). Their combined expertise strengthened the quality and authenticity of the intervention.

6.3.3 This study generated empirical evidence about the communication processes involved in integrating ACT with Osteopathy, and effects on therapeutic roles and relationships. The rationale for using ACT and auto-ethnography was described in Section 3.4, and the study generated knowledge about specific contextual factors that influenced the osteopath's ability to act as a facilitator. Linguistic analysis illustrated how different therapeutic intentions were enacted through discourse, and ethnographic data illustrated what influenced shifts towards patient-centred care. ACT and mindfulness have been shown to be effective in physical healthcare (Veehof et al 2016), but this study demonstrated a way of blending them with manual therapy.

6.3.4 The credibility of course content was described in Section 4.3, and knowledge was generated from the delivery process. At the start, ACT exercises were typically 'added in' as verbal interactions or scripted mindfulness exercises between osteopathic routines. Increasing awareness and skill led to the creation of brief, individually-adapted, touch and movement-based interventions, which can be used to benchmark future osteopathic research and training.

6.3.5 The layered methodology of Linguistic Ethnography (Copland and Creese 2015) increased the coherence of the findings through within-study triangulation (Frost 2008). Diverse, representative extracts (Burman 2003) were analysed to explore specific and broader patterns of response (Antaki et al 2003).

Meanings were based on participants' responses to each other, not on '*a priori*' assumptions about power relationships in healthcare (Rampton et al 2014). This illustrated influences in specific situations, including professional identity factors that promoted or hindered facilitative interventions.

Empirical analysis of communication interactions was consistent with the current ACT focus on evidence-based processes and mechanisms of change (Vowles and McCracken 2014). Systematic processes were developed to identify appropriate extracts from a large data set that were most relevant to the research questions. Multiple data sources included transcripts, field notes and diary entries, which supported an audit trail. A pluralistic design (Frost et al 2010) included coding of linguistic structure and ethnographic context, and qualitative analysis of micro and macro level discourses. Interpretations presented in MDA groups at Kings College, London were considered to be coherent and adequately evidenced.

6.3.6 Thick descriptions increased potential transferability. Findings have already been used to inform osteopathic education and practice (Section 6.6.2) and presented at healthcare conferences, indicating wider relevance (Section 1.8). A major strength was identifying specific barriers to the osteopath's use of opportunities to create facilitative interventions. Three approaches to reflexivity were used to enhance transparency (Finlay 2008). Field notes were recorded to minimise premature editing and interpretation (van Manen 1997), and identify tacit assumptions (Smith et al 2009). Emic knowledge about factors influencing intervention choice suggested that some actions had a clear rationale, while others were habitual practices. The limited examples of facilitation were analysed to illuminate the barriers to implementing ACT-informed osteopathy.

6.3.7 Insider knowledge and methods to disrupt automaticity in entrained thinking (Kumagai and Wear 2014; Stoddard and Afari 2014) uncovered differing cognitive and phenomenological sense-making processes.

Relational Frame Theory states that frames of understanding cannot be disassembled but adding new concepts can change the shape and impact of existing frames (Torneke 2010). This study generated data about re-framing processes in action, which was used in the design of the third study (Section 6.6).

#### **6.4 The limitations of the study**

6.4.1 This section explores the study's limitations in terms of research design and process, and the credibility, trustworthiness and transferability of the results (Lincoln and Guba 1985). This study did not fully conform to MRC guidelines, as it was based on an existing theory but not on a systematic review (Moore et al 2008). Previous literature relates primarily to psychological therapies and group programmes but lack of a systematic assessment of ACT outcomes for chronic pain may have limited optimal development. The course evolved during delivery, so participants' experiences varied. This was consistent with ACT principles of flexibility and pragmatism (Hayes 2004) but reduced replicability. The original plan to deliver one course and analyse outcomes before further recruitment was dropped because the third study started, so delivering all four patient courses concurrently limited opportunities for sequential experiential learning.

6.4.2 Major design limitations were lack of pre and post measures and absence of a control, which meant changes in response could not be attributed directly to facilitative interventions. The depth and precision of analysis is likely to have been limited by relative lack of experience in Linguistic Ethnography, although further training was undertaken which enabled the identification of consistent and interpretable communication processes in the data. The restricted data set meant that data saturation was unlikely in breadth of themes (Charmaz 2006) or theoretical sufficiency (Dey 1999). Data analysis and interpretation were conducted by a single researcher with limited use of inter-subjective or external validation procedures, which limits credibility and potential generalisability.

6.4.3 The choice to analyse data from one patient who engaged most actively with experiential exercises and reported the best outcomes will have inevitably generated unrepresentatively positive results. It was not possible to assess if the patterns of interaction identified were unique or shared by the other three patients, which limits the conclusions that can be drawn. Analysis focused on communication about pain in manual interventions, which limited analysis of purely verbal interactions. The focus on the three core principles of awareness, acceptance and defusion also limited conclusions about values, committed action, self-as-context, and the behavioural impact of the whole course. Ethnographic coding was based on insider knowledge of the osteopath's aims in specific interventions, which could not be externally verified. Interpretations were not subject to member checking by participants, as it was inconsistent with Linguistic Ethnography and social constructionism principles. This limits the credibility and dependability of the findings, although different data sources and multiple analyses were triangulated to enhance coherence.

6.4.4 Researchers are said to require 'transformational criticality' to explore their own models of practice (Barnett 1997) but criticality may have been limited by the researcher's professional identity and investment in the topic. The intervention was delivered by an osteopath with psychological training, and supervised by an ACT psychologist. This may limit transferability to osteopaths with less clinical experience, psychological training or ACT guidance. The clinical context and institutional culture influenced the range of meanings that could be constructed (Crotty 1998). This limits transferability, although ACT is a trans-diagnostic model of human functioning (Hayes et al 2012) so the responses of the participants in this study to pain may be similar in other contexts.

6.4.5 The findings could be criticised as self-evident i.e. facilitative interventions are associated with different therapeutic relationships compared to mechanistic approaches. This is the first time, however, that these biomedical



and biopsychosocial patterns of discourse have been empirically demonstrated in an osteopathic clinical context. It was a substantive finding that particular characteristics were associated with different discourses, and this prompted the development of facilitative communication guidelines (Section 6.7).

Phenomenological understanding is embodied, situational and non-theoretic (van Manen 1997), which is challenging to articulate and align with cognitive understanding. Presenting complex communication processes in a linear written account offers limited understanding of their interactional complexity (Finlay 2008). This thesis is an authored account created from a particular research perspective (van Manen 1997; Van der Zalm and Bergum 2000), and the conclusions that can be drawn from this study are inevitably limited as they are contextually bound, tentative and emergent (Copland and Creese 2015).

6.4.6 In summary, the key limitations of this developmental feasibility study included a restricted sample and interpretations based on insider knowledge, which decreased credibility and transferability. The main strengths included clinical relevance, systematic analysis processes and the generativity of the findings. In the context of these strengths and limitations, a comparison of the study's key findings with previous research literature is presented below.

## **6.5 Comparison of the findings with existing research literature**

6.5.1 This section compares the findings of this study with existing literature in the context of differences between biomedical and biopsychosocial discourses; changing therapeutic roles; the effects of facilitative communication strategies; and the implications for osteopathic clinical reasoning and models of care. Biopsychosocial approaches are useful for patients with chronic pain and medically unexplained symptoms (Butler et al 2004), where it is useful to differentiate disease processes from functional illnesses (Williams et al 2008).

Challenges have been identified in enacting biopsychosocial care in practice (Greaves 2002), but this study demonstrated that it was possible to broaden the scope of Osteopathy by integrating ACT interventions with routine manual therapy practices. This integrative process required the osteopath to develop the self-awareness to move consciously between between dual therapeutic aims and to develop stronger facilitative communication skills. This section ends with an emerging framework for making sense of persistent pain, which links clinical practices with different therapeutic intentions and interdisciplinary theories.

#### 6.5.2 Differences in biomedical and biopsychosocial discourses about pain

Previous literature has identified the benefits and challenges of using facilitative communication (Schiffrin et al 2001; Fisher et al 2012). The findings from this study were consistent with research into behavioural interventions, which showed that physiotherapists could promote agency by using motivational communication as an 'active ingredient' of their interventions (Lonsdale et al 2012; Michie et al 2012). In the current study, data illustrated how mechanistic language appeared to limit patient awareness and willingness to engage in physical activity when focused on dysfunction in object-body parts. Facilitative communication about lived-body experiences was infrequent and, as has been found in other studies (Swinglehurst et al 2011), inhibited by practitioners' lack of awareness or confidence to work beyond traditional physical therapy boundaries (Foster and Delitto 2011).

There were consistently different linguistic characteristics in mechanistic discourses with a pain control agenda compared to those with facilitative aims. They embodied contrasting concepts about the aims of pain management and were based on different clinical reasoning processes and epistemic assumptions. Meaning has been classified as cognitive understanding, which connect concepts in ways that are understandable to the self and to others, and phenomenological

meaning which is more personal, non-cognitive and embodied (Van der Zalm and Bergum 2000). Phenomenological sense-making includes sensory perceptions and expressive verbal and visual imagery and poetic metaphors, which can enrich understanding (van Manen 1997). In this study, cognitive and phenomenological understanding was characterised by different communication content and fluency (Table 34). When the osteopath asked open questions, the patient had more opportunities to be curious about his own experiences. It could be argued that understanding the impact of habitual reactions to pain may have engaged internal motivation to sustain behaviour changes in daily life more effectively than has been reported in some rehabilitation programmes (Michie et al 2012), but this requires testing in larger, more varied patient samples.

The effects of facilitative discourses in promoting curiosity about embodied experience were congruent with Relational Frame Theory (RFT). This model proposes that words are situated in 'frames' that are loaded with meanings which reach beyond present moment experience (Hayes 2004). This can provoke recurrent reactions to pain-evoking words in the absence of nociceptive stimuli (Smart et al 2012a). RFT suggests that existing language based frames cannot be deleted (Torneke 2010), but that frames can be re-configured by adding content, including knowledge, skills or values. Responses can be altered by creating relationships between existing factors or placing one frame within a bigger context, such as an osteopath's reframing biomedical concepts and discourses as being simply one 'bio' aspect of a larger biopsychosocial model of healthcare.

Loss of a familiar sense of self has been linked to the suffering that is often associated with chronic pain (Charmaz 1983), but the ability to see multiple self perspectives can be promoted by mindfulness skills which create broader awareness of present moment experiences (Hayes 2004). Rich descriptions of tactile, visual and verbal imagery can transform familiar embodied experiences to alter the impact of an existing frame of meaning (Torneke 2010).

Imagery involving motor activities can lead to physiological improvements in patients with chronic pain (Moseley et al 2008), and asking for detailed descriptions of static and movement-based body sensations may strengthen interoception and self-care abilities. This was illustrated by the patient's transition from tensing against an aversive 'black chomping pain' to noticing a 'red throbbing sensation' to understanding the sensation of arterial flow through tight neck muscles. This increased awareness subsequently enabled the patient to use mindfulness skills to self-manage his sense of 'dread'.

Psychological literature has suggested that pain acceptance and willingness are necessary precursors to changing behavioural responses (McCracken et al 2004), although willingness is reported to be a more ambiguous and contested concept (Nicholas and Asghari 2006). In this study, the osteopath's experience was that the four participants demonstrated varied engagement with experiential course exercises, and those who were more willing to try mindfulness reported greater changes. This was similar to the informal participant feedback obtained from Study 1 (Section 4.2), but further systematic analysis of data from three of the four patients in the current study would be required to verify this observation.

Pain education has been shown to promote behaviour change (Louw et al 2015), and combining individualised pain education with bodywork may increase a practitioner's opportunities to promote acceptance and willingness. In this study, increased awareness was observed as occurring more frequently in hands-on activities that were focused on present moment experiences of touch or movement. This was aligned with the theory of body mindfulness developed in physiotherapy (Pike 2008). The concept of physical literacy as a pre-cognitive, pre-verbal capacity that develops in infancy (Whitehead 2007) also provided a theoretical basis for understanding disruptions between the patient's current physical capacities and long-term body schemata.

Exploring body awareness through simultaneously talking and touching appeared to link the patient's cognitive understanding and pre-cognitive experiential understanding, which was aligned with Merleau-Ponty's concept of embodiment as including both object-body and lived-body experiences (Romdenh-Romluc 2011). Combining mindfulness-based bodywork with practitioner touch may therefore represent a new approach to embodiment that is worth further study.

The Linguistic Ethnography concept of discourse trajectories interacting within a nexus of practice (Scollon 2001) describes communication between two or more participants in a specific interactional context. In this study, the practitioner's discourse trajectory included academic, clinical and research influences. The patient was on a different trajectory relating to his unique 'historical body' (Blommaert and Huang 2009) and narrative pain journey (Gale 2010). Findings indicated that facilitative discourse helped the patient to make more coherent, embodied sense of his experiences of living with pain, which was consistent with studies by Bullington et al (2003) and Flensburg-Madsen et al (2005). The predominance of object-body discourses, however, suggested that maintaining a broader phenomenological perspective was challenging for the osteopath, and was associated with an almost gravitational pull towards a mechanistic approach.

### 6.5.3 Changing therapeutic roles

Integrating psychological self-management interventions informed by ACT principles changed the context of osteopathic care in this study, and had implications for treatment aims and actions. Consequent changes in the therapeutic relationship created opportunities and challenges, which were aligned with literature about the influence of expert-led and patient-centred approaches on agency and autonomy (Thomson et al 2012; Tyreman 2015). Practitioners' beliefs about pain management have enduring impacts on patient outcomes (Darlow et al 2012), and practitioners with a strong biomedical stance

may achieve poorer outcomes compared to those with biopsychosocial attitudes (Darlow et al 2015), especially for patients with complex, chronic conditions. Some practitioners continue to treat patients who reported limited benefits, in the absence of convincing theories or evidence that this can prevent symptom recurrence (Pincus et al 2006). This attitude to maintenance treatment has fuelled claims that manual therapists can promote passive coping strategies by teaching patients that pain sensations are signals to avoid activities that may provoke future discomfort (Zusman 1997; Darlow 2013). This study was based on explicit intentions to promote active coping strategies but the predominantly evaluative, pain-avoidant language used suggested that the osteopath found it difficult to relinquish the familiar treatment provider role (Thomson et al 2014).

Previous research illustrated the challenges faced by practitioners who attempt to work with dual therapeutic aims (Lau and McMMain 2005), as this requires the courage to moderate professional control and share responsibility for treatment choices with patients. In this study, interactions coded as 'familiar' or 'strange' (Kumagai and Wear 2014) helped to identify tacit biomedical assumptions about the nature of the body and pain (Loughlin 2009). The osteopath was more likely to act facilitatively when the patient had a stable musculoskeletal condition and manageable pain levels, but defaulted to expert stance and mechanistic discourses when concerned about new or worsening symptoms, consistent with a professional focus on risk management and standards of practice (GOsC 2012).

Shifts in intention were enabled in this study by the osteopath's awareness of practice habits and personal urges to minimise the patient's discomfort. The skills that promoted facilitative discourses included a collaborative stance and mindful awareness. Challenges included lack of skill and confidence, which was consistent with evidence that other practitioners have reported difficulties in assessing and managing patients' psychosocial issues (Daykin and Richardson 2004; Harding et al 2010; Foster and Delitto 2011; Sanders et al 2013).

Different factors promoted shifts between aims at moments in conversation that were categorised as 'choice points' or 'missed opportunities', and this appears to represent a new finding. Tacit reasons for shifts were identified using insider knowledge, and often occurred when the osteopath felt muscle guarding as a palpatory clue of avoidance. Mindfulness may prompt deliberate Type 2 thinking which reduces cognitive bias (Croskerry 2009), and support embodied clinical reasoning; conceptualised as patient-practitioner interactions combining object-body and lived-body experience in dyadic sense-making (Oberg et al 2015).

Previous research into osteopathic clinical reasoning identified dual pathway processing (Esteves and Spence 2014), in which practitioners act as 'cognitive misers' (Croskerry 2009) using fast Type 1 thinking for recognisable symptom patterns and slower Type 2 thinking when more systematic analysis is required for unfamiliar problems. Less experienced osteopaths, unsurprisingly, use Type 2 reasoning more frequently, as has been found in other healthcare disciplines (Croskerry 2009). In this study, ACT material was communicated slowly and hesitantly, compared to osteopathic content, which suggested that Type 2 processing was occurring. Field notes also illustrated instances of conscious deliberation and reflection both in, and on, action (Eraut 2000). These findings were consistent with literature about the staged development of expertise in professional practice (Benner 1984), and added insights into the role of mindfulness in increasing practitioner awareness of 'workability' (Harris 2009a). The ability to notice opportunities to switch to slower, more exploratory reasoning processes was consistent with previous research that demonstrated mindfulness effects on focused attention and open awareness (Shapiro et al 2005; Jha et al 2007; Beckman et al 2012).

Esteves and Spence's (2014) dual model of clinical reasoning is based on the assumption that Type 1 processing typically occurs as the default mode, and that Type 2 thinking arises only when practitioners are jolted into deliberate analysis

by information that does not fit into an expected pattern, or when anticipated outcomes are not achieved. In this study, identifying 'choice points' and 'missed opportunities' frequently showed a default tendency towards practitioner-led actions and mechanistic discourses. Sometimes, however, a facilitative approach was chosen without an obvious verbal prompt which suggests that, in addition to dual cognitive processing (Croskerry 2009), the osteopath's decision-making was guided by haptic touch-based information (Esteves 2012). Skills that increase mindfulness might enable osteopaths to use Type 2 thinking more frequently and integrate awareness of internal experiences and external patient cues.

Combined programmes of physical therapy, graded exercises and CBT are considered to be effective in managing functional illnesses (Williams et al 2008). Working with dual therapeutic aims, or in a multimodal programme, can be challenging for individual practitioners (Sanders et al 2013), as conceptual frameworks to guide the integration of change and acceptance-based interventions are under-developed (Lau and McMain 2005). Combining ACT, mindfulness and osteopathy in this study was challenging, as it was difficult to choose when to take control or work collaboratively. This was consistent with literature that has emphasised the need for practitioners to 'walk the talk' (Harris 2009a), to maintain a regular personal mindfulness practice (Pike 2008; Shapiro and Carlson 2009), and to tolerate the increased clinical uncertainty that is inevitable in collaborative work with patients who have complex, chronic healthcare problems (Sweeney and Griffiths 2002; Sturmberg and Martin 2009).

Chronic pain affects the whole person and patients' lives can be consumed by waiting for it to go (Ojala et al 2014). It is often associated with mood disorders (Pincus et al 2002) and affects valued roles, relationships and social activities, which can leave patients feeling they are no longer the same person (Kralik et al 2004; Ojala et al 2014). Chronic pain can become a defining identity or provide motivation to return to 'normal' life roles (Bullington 2009; Lima et al 2014).



The theory of psychological flexibility proposes that ACT interventions should not aim to reduce symptoms, as continuing fights to control unwanted inner experiences are futile and usually perpetuate problems (Harris 2009b). Instead, ACT interventions aim to increase valued activities, so that pain may seem less overwhelming when framed in a larger, meaningful life context. This patient was more able to make sense of pain experiences and re-connect with a broader sense of his identity, which was congruent with other patients' reports that self-management means learning to create order out of chaos (Kralik et al 2014) and find new meaning in life (Bullington et al 2003).

Exercise programmes sometimes fail to engage patients' autonomous motivation (Michie et al 2012), although activities are more likely to be maintained when chosen by patients and aligned with their personal values (McCracken and Velleman 2010). Exercise activity may be limited by beliefs about the need to avoid further damage (Butler and Moseley 2003; Darlow et al 2013), which leads to self-perpetuating cycles of worry, hyper-vigilance and inactivity (Ecclestone and Crombez 2007). In this study, activities were guided by patient goals, as ACT considers clients to be experts in their own lives (Hayes 1999). A collaborative approach engages autonomous motivation for behaviour change (Harris 2009a), which contrasts with models of external motivation based on expert advice or persuasion (Michie et al 2011), but practitioners can struggle to relinquish the apparent certainty of biomedical science (Darlow et al 2015) and the urge to seek predictability using language-based problem-solving (Torneke 2010).

Education and communication are considered to be essential aspects of pain management (Butler and Moseley 2003), but usually locate epistemic authority and agency with practitioners. Thomson et al's (2014) Grounded Theory model proposed that osteopaths practise typically as in treatment provider, educator or communicator roles, which are associated with the distinctive characteristics of technical rationality and professional artistry.

In this study, the patient's role as 'curious explorer' was associated with a new osteopathic role of 'skilled interpreter'. This dyad enabled a more collaboration approach, as the interpreter role located biomechanical expertise with the osteopath, but agency for choosing responses with the patient (Harris 2009a).

#### 6.5.4 The effects of facilitative communication

This study generated data about factors influencing the osteopath's motivation and ability to work collaboratively. Personal insights informed interpretations that were consistent with previous research into the effects of facilitative interventions on agency, autonomy and activity (McCracken and Velleman 2010). Mindfulness-informed discourses appeared to strengthen interoception (Farb et al 2013; Farb et al 2015), and body awareness has been linked to psychological health (Mehling et al 2013; Kanbara and Fukunaga 2016). Graded exposure can reduce alarm reactions (Vlaeyen et al 2002) and practitioner touch can be reassuring (Consedine et al 2016). Combining these may counter-balance experiential avoidance, promote willingness to accept discomfort, and help to integrate information about current state with body schema distorted by pain.

Neurophysiological research has identified links between interoception (Farb et al 2013), self-perception and body schema (Schwoebel et al 2001; Bray and Moseley 2011) and emotional processing (Esteves et al 2014). Functional magnetic resonance imaging (fMRI) studies have demonstrated that mindfulness exercises increase interoceptive ability, and are associated with increased insular activity, decreased prefrontal cortex activity and altered connectivity between the cortex and insula (Farb et al 2013). This suggests that mindfulness influences neural plasticity, but further studies are required to analyse whether, and how, increased insular activity and interoception may contribute to well-being.

Mindfulness provided the patient with 'time out' and a more stable sense of self when he was feeling overwhelmed by pain, especially after using the Mountain Meditation (Kabat Zinn 1990). He also reported objectively measured reduction in blood pressure, consistent with previous research (Hughes et al 2013), possibly due to neurophysiological effects on relaxation (Lomas et al 2015). Beneficial changes are theorised to result from reduced activity the human 'threat/protect' system which is associated with adrenaline, and increased oxytocin production in the 'let' system of rest and relaxation (Gilbert 2010). Touch has also been associated with oxytocin production, so practitioner touch combined with patient mindfulness may enhance the ability to hold object-body and lived-body experiences more closely together (Romdenh-Romluc 2011). This may create a broader, more congruent sense of self which can more easily accommodate 'unhomelike' experiences of illness (Svenaus 2000).

Central sensitisation in chronic pain has been associated with somatosensory cortex changes (Smart et al 2012a), when painful areas may become over-represented and asymptomatic parts become 'lost' in body schemata. The healthy body is often silent and noticed only when it becomes dysfunctional. This was termed by Zeiler (2010) as 'dys-appearance'. Inefficient control of posture and movements can risk further injury (Whitehead 2007), if movements are guided by incomplete interoception (Haase et al 2016). The ACT analogy relating to driving is that inflexible cognitive representations provided by out-of-date 'satnav' equipment provide limited data to guide actions in the present moment, so awareness of current 'road' conditions and the purpose of the journey are also needed (Stoddard and Afari 2014). Mindful awareness can help align schema with current state (Pike 2008) and prompt the 'eu-appearance' of body parts which feel pleasant (Zeiler 2010). Exercises like the Body Scan (Mirams et al 2013) and mindful movement exercises (Burch 2008) may therefore help to create a clearer sense of the self as an embodied person (Osborn and Smith 2006; Claxton, 2015).

When patients struggle to describe bodily experiences prompted by practitioner touch, they may not be repeating a familiar 'story' but constructing a new body narrative (Gale 2010). Hesitation may also represent a transition from a fixed 'chronic pain patient' identity towards a more flexible identity as a person who experiences pain (Lundgren and Dahl 2006). Inter-personal touch can influence emotions and social action, even when people do not remember being touched (Gallace and Spence 2010), so the potential to influence psychosocial responses in manual therapy is high.

Calsius et al (2016) proposed that manipulation of muscles and fascia generates interoceptive signals processed via the insula. Poor interoception has been shown in patients with chronic pain and associated with low resilience (Haase et al 2016). Further research is needed into physiological processes in touch and pain perception that involve C afferent tactile fibres (Olausson et al 2008), alexithymia (Calsius et al 2016), embodied empathy (Finlay 2005) and emotional processing (Esteves et al 2014). The intervention developed could be explored as a neurophysiological research resource for clinical settings.

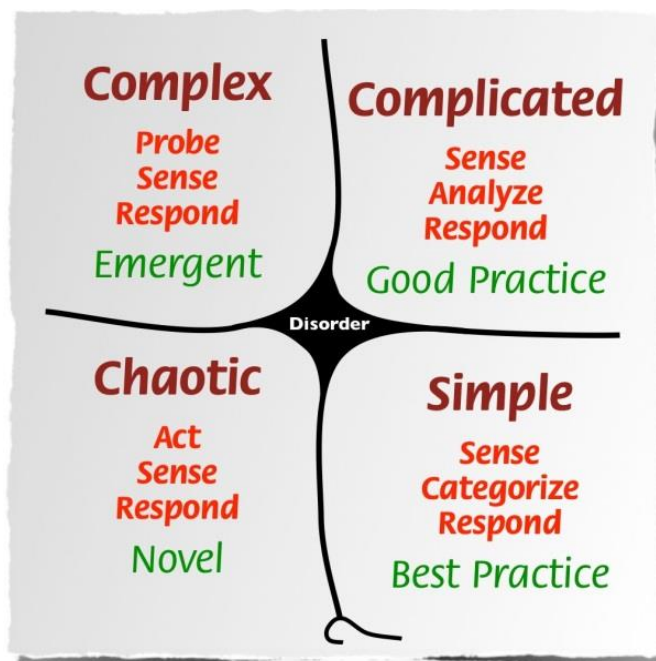
#### 6.5.5 Osteopathic clinical reasoning processes and models of care

Chronic pain has been acknowledged as a complex problem which is influenced by interactions between multiple healthcare domains (Martin and Sturmberg 2009). Practitioners experience difficulties when inappropriate clinical reasoning frameworks are used (Kurtz and Snowden 2003), as the nature and context of complex problems differ from those with complicated but potentially knowable or controllable factors (Sturmberg and Martin 2009). The Cynefin model (Figure 2) identifies five sense-making domains; 'simple' and 'complicated' domains of order on the right; 'complex' and 'chaotic' domains of un-order on the left; and a central domain of 'disorder' where the situation is, as yet, un-categorised.

Different types of reasoning are suited for particular situations, which are defined by order, predictability and knowability. Biomedical reasoning is typically located in the simple or complicated domains, where the practitioner's role is to predict the most effective treatment. Appropriate actions in the two ordered domains are first to 'sense' the situation and then to 'categorise' simple patterns or to 'analyse' complicated situations containing multiple, but not immediately obvious, cause-and-effect relationships.

It has been argued that patients with persistent pain represent complex adaptive systems (Sturmberg and Martin 2009), in which predictable and predictive relationships do not exist. From this perspective, patients are best managed using interventions that probe for the emergence of helpful or salutogenic patterns of response to be strengthened, and maladaptive responses to be discouraged (Martin et al 2011). It could be argued that the complex and complicated domains are most relevant to osteopaths, as patients with chaotic problems are likely to present with symptoms that require immediate action and referral to emergency medical or psychiatric services.

Figure 2: The Cynefin Model (Snowden 2010)



Recent initiatives in physical therapy have aimed to align clinical practice and education with current pain science knowledge (Zusman 2010), as the validity of nociceptive theories of pain and patho-anatomical clinical reasoning has been questioned (Fryer 2011; Lederman 2010). These theories assume a sense of order, intention and rationality that does not apply in complex problems, so new reasoning frameworks are needed (Kurtz and Snowden 2003). In this study, there were shifts between complicated (e.g. assessing respiratory and neurological disease-related symptoms) and complex sense-making (e.g. exploring pain experience as a functional illness), which was appropriate for symptoms that could not be predicted or controlled. Using the Cynefin model, health problems do not move between domains but practitioners choose to use different reasoning processes. This contextual approach does not assume that one method is best for all situations, which aligns well with the concept of workability (Hayes 2004). Sense-making processes in the ordered and unordered domains may also be congruent with cognitive and phenomenological understanding (van Manen 1990), and using them alternately may support the development of a broader sense of embodied cognition (Wilson and Golonka 2013).

The patient's frequently asked question 'Does that make sense?' had multiple functions, one of which appeared to be a transition from cognitive understanding of 'pain' to a phenomenological lived-body experience of unfamiliar sensations. The osteopath's management role involved reinforcing 'positive attractors' in responses (e.g. active engagement, curiosity, new links and understanding) and de-emphasising 'negative attractors' such as fear-avoidance and limiting negative thoughts. Combining body awareness and non-directive verbal encouragement may encourage willingness to explore pain sensations (Pike 2008), and research has demonstrated that slow, gentle touch carried by unmyelinated C afferent tactile fibres affects pain processing and perception (Olausson et al 2008). Manual treatment may therefore have beneficial effects on psychological health and people's sense of self as social beings (Williams 2007a; Calsius et al 2016).

#### 6.5.6 Summary

Combining the ACT theory of psychological flexibility, the Cynefin model of sense-making, and the concept of patients with chronic pain as complex adaptive systems may therefore offer a promising means of expanding the theoretical basis of biopsychosocial care for patients with persistent pain. A preliminary conceptual model derived from the study's findings is presented in Table 35. It outlines relationships between sense-making domains in the Cynefin model, different healthcare problems, variations in clinical roles, and communication characteristics associated with interactions at each level of complexity. The literature indicates that individual, integrated pain management courses are rare, compared to multidisciplinary programmes. The multimodal model of practice emerging may offer an alternative to existing pain management approaches. It requires further, rigorous testing but its potential implications for osteopathic research, practice and education are discussed below.

Table 35: Models of osteopathic pain management

Domain	The context of the problem	The practitioner's role	Clinical characteristics
<b>Simple Ordered</b>	<p><b>Cause-and-effect:</b> Linear relationships are perceivable and predictable</p> <p><b>Patterns:</b> Used to predict future events</p> <p><b>Solutions:</b> The right answer does exist</p> <p><b>Treatment:</b> Often one obvious option</p> <p><b>Guidelines:</b> Intervention rules are defined as standard procedures for '<b>best practice</b>'</p>	<p><b>Aim:</b> Categorise the problem</p> <p><b>Questions:</b> What causes the pain? How can the osteopath fix it?</p> <p><b>Model:</b> Biomedical science, 'known-known' facts</p> <p><b>Action:</b> Sense-categorise-respond</p> <p><b>Role:</b> Treatment provider, teacher, expert, parent</p> <p><b>Clinical reasoning:</b> Disease focus, cognitive understanding, fast Type 1 thinking, the 'cognitive miser'</p>	<p><b>Discourses:</b> Body-as-object, eliminating or avoiding pain</p> <p><b>Communication:</b> Practitioner-led instructions and advice</p> <p><b>Theories:</b> Patho-anatomical or biomechanical diagnoses based on 'the osteopathic lesion' or structural-postural models of physical dysfunction</p> <p><b>Interventions:</b> Manual therapy, practitioner advice, prescribed exercises</p> <p><b>Aim:</b> To cure or control symptoms</p> <p><b>Outcomes:</b> Can be effective for acute pain but leads to long assessments for complex problems, osteopaths stuck in habitual ineffective routines, largely passive patients, risk of chronicity and pain-related disability</p>
<b>Complicated Ordered</b>	<p><b>Cause-and-effect:</b> Relationships exist but are separated in space and time</p> <p><b>Patterns:</b> Require analysis but have some predictive value</p> <p><b>Solutions:</b> More than one right answer</p> <p><b>Treatment:</b> Range of options and routines</p> <p><b>Guidelines:</b> Flexible recommendations created to promote '<b>good practice</b>'</p>	<p><b>Aim:</b> Analyse what parts that make up this problem</p> <p><b>Questions:</b> What factors are involved? How can the osteopath control the problem or help the patient cope better with parts?</p> <p><b>Model:</b> Biomedical science + psychosocial issues, 'knowable' facts</p> <p><b>Action:</b> Sense-analyse-respond</p> <p><b>Role:</b> Treatment provider, educator, skilled communicator</p> <p><b>Clinical reasoning:</b> functional focus, cognitive understanding, slow Type 2 thinking</p>	<p><b>Discourses:</b> Body-as-object, patient experience, coping with pain</p> <p><b>Communication:</b> Practitioner-led questions and management plan</p> <p><b>Theories:</b> 'Somatic dysfunction', addition of psychological, cognitive or environmental factors only when biomedical approaches are ineffective</p> <p><b>Interventions:</b> Manual therapy, pain education, stress management</p> <p><b>Aim:</b> To cure or control pain and/or help patients cope with symptoms</p> <p><b>Outcomes:</b> Can be effective or can lead to serial treatment seeking, frustrated patients and osteopaths, difficult to address non-physical barriers to recovery, referral to multidisciplinary care including CBT</p>
<b>Complex Unordered</b>	<p><b>Cause-and-effect:</b> Relationships unclear</p> <p><b>Patterns:</b> Can be seen retrospectively but do not predict future events</p> <p><b>Solutions:</b> No obvious right answers</p> <p><b>Treatment:</b> Experiment, create new perspectives and management options</p> <p><b>Guidelines:</b> Principles-based frameworks are evolving for '<b>emerging practice</b>'</p>	<p><b>Aim:</b> Explore the relationships between factors</p> <p><b>Questions:</b> What is pain part of? What does it mean for the patient? How can the osteopath help the patient function better?</p> <p><b>Model:</b> Biopsychosocial relationships, 'unknown' facts</p> <p><b>Action:</b> Probe-sense-respond</p> <p><b>Role:</b> Facilitator, collaborator, interpreter, guide</p> <p><b>Clinical reasoning:</b> Values-based focus, function and context, phenomenological understanding, embodied haptic reasoning</p>	<p><b>Discourses:</b> Lived body experience, somatic awareness, pain acceptance</p> <p><b>Communication:</b> Collaborative, facilitative, curious, open and aware</p> <p><b>Theories:</b> Complex adaptive systems, psychological flexibility, ecology</p> <p><b>Interventions:</b> Mindfulness-informed manual therapy, ACT interventions</p> <p><b>Aim:</b> To help patients to live more active, meaningful lives, despite pain</p> <p><b>Outcomes:</b> Develop ability to discriminate between factors that can be changed and present moment experiences that can't, flexible responses to pain, learn new skills, engage with valued social and physical activities</p>
<b>Chaos Unordered</b>	<p><b>Cause-and-effect:</b> No visible relationships</p> <p><b>Patterns:</b> Unpredictable and in flux</p> <p><b>Solutions:</b> No obvious right answers</p> <p><b>Treatment:</b> Many options but not clear at first what approaches will 'work' and no time to think or reflect before reacting</p> <p><b>Guidelines:</b> None, actions are imposed to regain order, requires '<b>novel practice</b>'</p>	<p><b>Aim:</b> Safeguarding to contain or control the problem</p> <p><b>Questions:</b> How can this situation or patient be safely contained?</p> <p><b>Model:</b> Biomedical models, 'unknowable' risk factors</p> <p><b>Action:</b> Act-sense-respond and act-sense-revise</p> <p><b>Role:</b> Emergency service rescuer, judge, parent</p> <p><b>Clinical reasoning:</b> Ethical safe-guarding, react to 'red flags'</p> <p><b>Guidelines:</b> Regain order, then re-evaluate the aspects of the problem within the complex domain when safe to do so</p>	<p><b>Discourses:</b> Breakdown of function in the patient's body-as-object and/or their experiential relationship with their environment</p> <p><b>Communication:</b> Practitioner-led commands</p> <p><b>Theories:</b> Crisis management strategies</p> <p><b>Interventions:</b> Triage, referral, containment, invasive interventions</p> <p><b>Aim:</b> Keep the patient safe until the situation can be properly assessed</p> <p><b>Outcomes:</b> Rarely seen in private practice, often immediate referral to mainstream medical care, return for assessment in complex domain</p>



## **6.6 Implications for osteopathic research**

6.6.1 This study represented an early developmental phase in MRC guidelines for developing complex behavioural interventions, and it led onto the OsteoMAP project, which was an observational cohort study that formed the next stage. The logic model (Moore et al 2008) which informed OsteoMAP development is illustrated in Table 36. This section outlines the research implications of these studies with recommendations for future work to assess the robustness of the findings and the effects of the intervention in a larger sample of patients, the feasibility of developing this approach for delivery by other practitioners, and studies to assess the effects of different models of practitioner training.

### **6.6.2 Study 3: OsteoMAP**

Background: The Osteopathy, Mindfulness and Acceptance Programme (OsteoMAP) was a clinical development project funded from April 2013 to May 2016 by the UK Department of Health (BSO 2015a; BSO 2015b). It was an observational cohort study (n=250), based on the content and structure of the previous study, with new training programmes for student osteopaths (n=80) and Continuing Professional Development (CPD) courses for qualified osteopaths (n=80). The study included a fidelity evaluation of the integrity of course delivery conducted by the National Council for Osteopathic Research. Its aim was to explore whether communication processes and therapeutic outcomes observed in the Professional Doctorate study were replicable. The intervention was based on assumptions that brief ACT training could help osteopaths with varying levels of expertise to work more effectively with persistent pain (Nanke 2013).

Table 36: MRC logic model for developing the OsteoMAP study (adapted from Campbell et al 2000, p.38)

Problems	Evidence base	Resources	Activities	Short-term outcomes	Medium-term outcomes	Long-term outcomes
Patients with chronic pain may limit activities due to fear avoidance, which can reduce their well being and quality of life.	Better patient outcomes have been reported from multidisciplinary pain management programmes that include CBT or ACT interventions.	Access to a large population of patients with chronic pain and population of osteopaths within the general clinic at the BSO.	Recruit a cohort of patients with chronic pain who were willing to try experiential mindfulness and ACT exercises to aid self-care skills	Patients learn self-management skills to reduce distress, increase physical activity levels, well being and sense of resilience.	New self-care skills lead to decreased use of medical care or osteopathic treatment and increased activity levels.	Improved levels of general health and quality of life. Re-engagement with personal goals and valued social roles. Decreased personal and welfare costs.
Osteopathic care is typically based on biomechanical theories but manual therapy alone for chronic pain has shown limited outcomes.	Chronic pain is often associated with anxiety and depression, and recent pain science research does not support mechanical pain theories.	Access to an experienced ACT psychologist and mindfulness teacher, and an experienced ACT trained osteopath to act as trainers.	Develop, deliver and evaluate a new ACT training course for tutors, osteopaths and students at the BSO	Qualified and final year student osteopaths learn new ACT skills to support a broad and more explicit biopsychosocial model of care.	More effective osteopathic practices for patients with chronic pain guides changes in osteopathic education.	Evidence may be generated to inform theories about ACT processes and the effects of combining touch with guided mindfulness and ACT exercises.
UK osteopaths have limited psychological training and limited access to multidisciplinary NHS programs	CBT and ACT have been shown to be effective in chronic pain management. Mindfulness also affects pain-related stress and anxiety.	A 6 week patient course for use by osteopaths, which was developed using open source ACT protocols and clinical resources.	Deliver individual patient courses, assess outcomes and the fidelity and processes of the patient and training courses.	Collaborative, person-centred approaches to osteopathic care aim to promote patient agency and autonomy.	Results may be used to inform the design of a trial to test the feasibility of conducting a full realist RCT.	If this approach is proven to be both effective and cost effective, it may broaden existing NHS chronic pain care pathways.

Tutor training: Four tutors with more than five years clinical and teaching experience participated in training, informed by the preceding study and delivered by the study supervisor and researcher. Training aimed to develop personal flexibility and ground core ACT principles in practice, using individual and group-based experiential activities one day a month for four months with structured observation and skills development exercises in between (Gauntlett-Gilbert 2011; Flaxman and Bond 2010). Attention was paid to noticing 'choice points', developing mindfulness skills, and learning to accept the uncertainty and discomfort of trying unfamiliar approaches in practice.

Training emphasised the invitational stance of ACT, respect for patient choice, and the concept of 'workability' in noticing when actions did not result in desired outcomes (Harris 2009a). The sequence and content of tutor training was based on the Patient Workbook (Appendix 2). A new Training Manual was created to explain session aims, with scripted exercises and home practices presented as guidelines, not a set protocol. A Practitioner Workbook was developed in 2015 to link theoretical principles more explicitly with reflective exercises in the Patient Workbook. Tutors received mentoring on how to communicate differently about pain and manage intentional shifts between change-based and acceptance-based interventions. They also had to demonstrate understanding of the ACT principles, willingness to apply these concepts to their own life experiences, and show their ability to work collaboratively with patients and students to create and adapt ACT interventions relevant for individual needs and goals.

Student training: BSO students were introduced to pain neuroscience and ACT principles in third year lectures and skill development workshops. From September 2013, fourth year students participated in twelve week OsteoMAP clinical placements, which became part of the BSO curriculum in September 2014. Training was based on a collaborative learning approach (Nanke 2014).

Optional revision sessions were held at the start of each elective and students were encouraged to develop their own practice style. Students used the same principles-based approaches as tutors but commensurate with their stage of learning. Competence was not formally assessed but feedback was provided from external observations and internal audits, and tutors and students worked together to develop clinical skills and share good practices.

Recruitment: Patients were recruited from the BSO clinic and two GP practices, and screened for eligibility using the criteria outlined in Sections 4.2 and 4.3. Courses ran parallel to existing medical care but patients were asked not to start new treatments to reduce pain unless recommended by their GP, as efforts to control symptoms can conflict with self-management (Lau and McMain 2005).

Outcomes: Self-report questionnaires from the group study were revised to minimise participant burden (Table 37).

Table 37: Changes in quantitative outcome measures

Measures	Group study 1 (n=15)	OsteoMAP study 3 (n=250)
Data collection	4 questionnaires at 3 points: Baseline, 6 weeks, 3 months	5 questionnaires at 2 points: Baseline, 6 months
Demographic data	Age, gender	Age, gender, ethnicity, language fluency, living alone, educational level, employment status
Pain sites	Not recorded	Single and multiple pain sites
Pain impact	Bournemouth Questionnaire	Bournemouth Questionnaire
Quality of life	WHOQOL-BREF	EQ-5D – briefer, commonly used
Acceptance & activity	Chronic Pain Acceptance Questionnaire (CPAQ)	Acceptance and Action Questionnaire (AAQ-IIR) - briefer
Values	Chronic Pain Values Inventory	Not assessed - focus changed
Mindfulness	Not assessed	Freiburg Mindfulness Inventory - mediator of behaviour change
Medical resource use	Not assessed	Self-reported change in medication and health consultations at 6 months
Satisfaction	Patient Enablement Index	Satisfaction on 5 point scale Open questions on adverse events
Qualitative data	Telephone interviews with 9 patients at 3 months	Telephone interviews with 11 patients at 6 months

The main outcome was quality of life (Euroqol 2015) and other measures were chosen as predictive of outcome, potentially modifiable (van der Windt et al 2008; Foster and Delitto 2011) and related to change mechanisms such as psychological flexibility and mindfulness (McCracken and Vowles 2014; Tang et al 2015). They included the revised Acceptance and Action Questionnaire (AAQ-IIR) (Bond et al 2011) and Freiburg Mindfulness Inventory (Walach et al 2006b). Follow-up was at six months to analyse long-term outcome (Sturgeon 2014).

Intervention: Patient courses based on the the previous study (Section 4.5) started in September 2013. OsteoMAP received ethical approval for delivery in NHS primary care from August 2014 (MREC: 14/LO/0828) and became part of the NIHR Clinical Portfolio (No. 16731) (UKCRN 2015) and was registered as a clinical trial (ISRCTN 04892266). Between June 2013 and April 2016, 325 applications were received and 287 people attended screening interviews (83%). Of those interviewed, 264 (92%) were recruited; 206 (78%) in the BSO clinic and 58 (22%) in GP practices. Of the 61 not recruited, 25 were unavailable for interview, 18 were not eligible, and 18 chose not to join. Of the 264 patients recruited, 66% (175) attended five or six sessions, 20% (52) attended three or four, 10% (26) attended one or two sessions, and 4% (10) withdrew before the course started.

Baseline data: The average age of participants was 49, ranging from 20 to 91, 70% were female, and the median duration of pain was 6 years. There were no significant differences in baseline characteristics between patients who joined and those who did not (Table 38). Final outcome data will be reported after the last follow-up questionnaires have been collected in December 2016.

Table 38: Baseline differences between recruited and non recruited patients

Variable	Recruited (n=264)	Not (n=61)	Statistical results
Median age	49.50 (25)	57 (31)	U=6288.00, p=0.054
Female gender	70% (184)	59% (36)	$\chi^2=2.59$ , p=0.11
Median pain years	6 (7)	5 (8)	U=5584.50, p=0.12
Pain duration range	0.5 - 50 years	0.25 - 50 years	
Seen in BSO Clinic	78% (206)	84% (51)	$\chi^2=0.93$ , p=0.34
Existing BSO patient	59% (150)	70% (41)	$\chi^2=2.39$ , p=0.12

6.6.3 The OsteoMAP study demonstrated that it was feasible for osteopaths with varied experience and training to deliver an integrated pain management course. The fidelity evaluation indicated the intervention was acceptable to patients and courses continue to run in the BSO Clinic, with tutor training started at the European School of Osteopathy in October 2016. Ongoing OsteoMAP research involves assessing quantitative patient outcomes and qualitative feedback from practitioners about their training and practice experiences. The next MRC stage would be a feasibility study for a pilot RCT to test research procedures, estimate patient recruitment and retention, and determine an appropriately powered sample size (Moore et al 2008). Traditional RCTs based on controlled intervention protocols, however, may be less appropriate for functional contextual interventions that are necessarily adapted for individuals (Hayes 2015). Correlation methods have been used to assess ACT outcomes (Ruiz 2010), but cannot generate data about processes or causal mechanisms. Other options include pragmatic, realist RCTs, single case experimental designs (Kratochwill et al 2010) and n-of-1 trials (Moore et al 2008). A recent study used a modular design to assess the effects of the 'active ingredients' of awareness compared to values-based action (Vilatte et al 2015). A systematic review of outcomes from clinical trials measuring changes in flexibility in response to chronic pain, and a review of the philosophical and practical challenges of combining change and acceptance-based interventions would be helpful.

#### 6.6.4 Patient outcomes and neuro-physiological processes

Data from this qualitative study suggested that practitioner touch may help to create a safe environment in which anxious patients feel more willing to explore physical discomfort and avoided movements. Further research is recommended to assess the effects of combining touch and mindfulness on interoception, proprioception, kinesiophobia and somatic awareness. Other directions include assessing whether changes in pain acceptance are dependent on present moment awareness or are mediated by other processes, and whether blending mindfulness exercises with manual practices enhances outcomes. Research into the influence of C-afferent fibres on sensory and affective pain pathways in asymptomatic participants has suggested that soft, slow touch and manipulation of muscles and fascia influence pain processing and perception (Haase et al 2016; Calsius et al 2016). Interoception may enhance well-being, if patients become able to differentiate physical sensation from cognitive or emotional evaluations, as demonstrated in research into body scan techniques (Mirams et al 2013).

Neurophysiological studies could assess whether increases in insular activity related to mindfulness training correspond with objective improvements in interoceptive abilities. The osteopath's touch-based affirmation of patient experience and interpretation of sensations was sometimes associated with patient insights and increased body awareness. Further research could explore how mindfulness skills mediate patients' perceptions of pain, and whether mindful osteopaths achieve better patient outcomes.

#### 6.6.5 Therapeutic processes, communication and clinical reasoning

Expanding an osteopath's remit to promote patient self-care raised questions about optimal processes for delivering an intervention with dual aims, re-framing

problems in terms of functional potential, rather than as structural dysfunctions, and defining how a 'good' clinical outcome should be defined and measured.

Complex reasoning appears to be congruent with patient-centred care and further qualitative research into practitioners' experiences of working with this approach, and of using the Cynefin framework, would be helpful. Process-based communication studies could explore whether distinctions between mechanistic and facilitative discourses have relevance and utility for other practitioners and clinical contexts. Linguistic analysis interprets lack of fluency as an indicator of social role discomfort and signals that inter-personal work is maintaining face or footing in a relationship (Goffman 1967). From a psychological perspective, however, fluent speech indicates a familiar narrative, so hesitation may be a sign of present moment awareness. Linguistic Ethnography studies could explore if hesitation represents inter or intra-personal reflection, and there are consistent linguistic cues illustrating opportune moments to promote learning. Studies would benefit from multi-modal analysis of video-recordings (Bezemer 2014) to assess links between verbal communication, touch, posture, gesture, gaze, and other factors that are symbolic cultural signifiers of meaning (Crotty 1998).

Linguistic Ethnography could also be used to analyse whether agency can be evidenced in changes from passive to active voice (e.g. from 'It makes me' to 'I can'). Mindfulness may increase interoceptive awareness, which re-frames meaning in fear-avoidant relational frames (Lakhoff and Johnson 2003; Torneke 2010) and re-draw body schema that are distorted by pain. Neurophysiological and linguistic approaches might be combined to explore potential relationships between the verbal and visual imagery used to describe sensations (e.g. biting compared to pulsing), and changes associated with touch and mindfulness. Mindfulness skills may also mediate practitioners' abilities to move consciously between complex and complicated sense-making frameworks, so discourse analysis could explore differences in cognitive and phenomenological reasoning.



## **6.7 Implications for osteopathic practice and education**

6.7.1 The pain management course described in this thesis may offer potential benefits for osteopathic practice, as it is a multimodal intervention that aims to integrate physical and psychological interventions in a way that can be aligned with NICE (2016) guidelines. This section outlines the implications and challenges of developing and evaluating the utility of an integrated approach in terms of models of care, patient-practitioner issues, and the educational curriculum.

### **6.7.2 Models of osteopathic practice**

This attempt to expand the scope of care for patients with chronic pain has implications for re-evaluating clinical reasoning processes that are appropriate for managing complexity. The aim was to adapt existing practices to promote patient self-care when pain resolution was unlikely, but the development of a multimodal model raises implications for professional governance. In the UK, many osteopaths use biopsychosocial models of evaluation but typically deliver primarily physical treatments. This integrated course could be considered either as a positive innovation or as a challenge to professional boundaries. Osteopaths do not generally have extensive psychological training, even though pain is often associated with anxiety and depression, and professional regulations identify the need to maintain appropriate boundaries of competence (GOsC 2012). They are unspecific, however, about how to negotiate grey areas of practice, such as differentiating empathic listening from active counselling. Guidelines for managing psychological distress also vary between disciplines, and boundaries of competence vary between practitioners with different levels of expertise. The implications of this approach are that boundaries are likely to be more blurred in integrated courses, so new governance frameworks for training and supervision will be needed, built on existing guidelines for formal, group-based mindfulness teaching (Crane et al 2009; Crane et al 2012).

Developing an approach within higher level mindfulness teaching could increase safety and effectiveness but involve time and cost, which may limit participation by practitioners who consider themselves to be primarily physical therapists. Current guidelines for MBCT and MBSR group work have less relevance and flexibility for manual therapy with individual patients. A mindfulness-informed approach is congruent with the flexible stance of ACT but will require new quality measures and governance structures for training and practice. This study was based on ACT because of the supervisor's experience with the flexible 'viral transmission' model of teaching (Nanke 2013) and the researcher's experience. Harris (2009b) proposed that formal meditation was not essential, and this study explored ways to increase awareness by simply 'noticing' embodied experience. A choice needs to be made, however, about whether to continue development within ACT or within the teaching guidelines in the UK mindfulness community.

### 6.7.3 Practitioners' knowledge, skills and therapeutic intentions

Practitioners are more likely to resonate with this approach if they acknowledge that traditional treatment approaches are ineffective for some patients, and that psychosocial factors are important. Practical implications are that osteopaths need to develop the ability to move flexibly between a focus on change-based treatment and acceptance-based learning, which require different clinical reasoning skills. This approach also implies a commitment to continuing professional development and the courage to try activities outside their comfort zone, to apply ACT principles in personal life and learn new skills. Potential benefits are that mindfulness has been shown to promote self-awareness, empathy, compassion, creativity and focused attention (Section 2.8). Using the Cynefin model, the 'explorer' role provided opportunities to probe patterns of embodied experience, but required an understanding of the patient's functional relationship to their pain, as well as their musculoskeletal diagnosis.

Functional assessments guided actions when there was a choice between treating symptoms or promoting self-care. Asking patients to describe pain sensations in detail aimed to promote exposure to sensations that were habitually avoided, feared or ignored, to enhance interoception. Promoting exposure to discomfort required a shift in the osteopath's habitual response to patient discomfort, which often included suggestions to avoid movement or urges to relieve symptoms using treatment. Patient learning appeared to be enhanced, however, using tentative open questions about pain arising in routine assessment and treatment activities (Table 39). This approach created high levels of clinical uncertainty, possibly associated with the collaborative stance and changes in role. To safeguard patients, new practice frameworks will need to be aligned with mindfulness guidelines and professional osteopathic standards.

Table 39: Facilitative osteopathic communication

Focus	Question
Awareness	<i>What are you noticing right now?</i>
Meaning	<i>What's that... like for you?</i>
Relevance	<i>How does this... fit with what usually happens in your body/life?</i>
Empathy	<i>I imagine that might be... for you?</i>
Consent	<i>How would it be with you if we... ?</i>
Being present	<i>What are you noticing and feeling right now?</i>
Opening up	<i>Would you be willing to just let that... be there?</i>
Checking in	<i>Can you describe what's happening for you?</i>
Willingness	<i>Is it possible for you to stay with... just for a moment</i>
Avoidance	<i>I notice when... you seem to... and I wonder... ?</i>
Body awareness	<i>What do you or your body need right now?</i>
Self compassion	<i>What would be the kindest thing you could do for yourself now?</i>
Self awareness	<i>How might this look from the perspective of ...</i>
Choices	<i>I wonder what else or how else you could...?</i>
Values	<i>What is it about... that really matters to you?</i>
Action	<i>I wonder what small step you could take to...?</i>
Obstacles	<i>I wonder what might get in your way?</i>
Learning	<i>Does any of this... seem interesting or useful to you?</i>
Sustainability	<i>How might you choose to take this... forward?</i>

#### 6.7.4 Patient recruitment and informed consent

Changing the concept of chronic pain and working with dual aims created different roles within the therapeutic relationship. This has implications for information provided to patients before they can give informed consent for experiential courses that require active participation and willingness to learn new skills. A consequence of developing mindfulness is that patients are likely to become more aware of pain and distress, which they may interpret as getting worse. It is common for patients to report temporary worsening of pain at the start of the course, so it is important that this possibility is explained. In manual therapy, increased symptoms would typically be considered adverse events, but in ACT this is often an inevitable consequence of increased awareness. The possibility that the course may increase anxiety, depression or other mental health conditions means that patients need to be screened for suitability, which may require consent to contact the patient's GP or mental health practitioner.

This approach aims to harness salutogenic factors to promote function and agency, as well as treating dysfunction, but combining manual therapy and mindfulness may promote more frequent emotional disclosures than in standard osteopathic care. This implies the need to gain informed consent throughout sessions, as the patient's initial expectations may change, and practitioners need to be aware of, and respond appropriately to, any non-verbal cues of discomfort that arise. This is not an approach that is appropriate for all patients, and it has implications for clinical governance and developments in osteopathic education.

#### 6.7.5 Osteopathic education

If ACT-informed practice proves to be effective in improving outcomes, there are implications for updating aspects of the undergraduate curriculum, including pain neuroscience and patient education, the principles of pain self-management

programmes, facilitative communication, and complex clinical reasoning models and processes appropriate for understanding and managing chronic pain. It also implies the need for greater flexibility in working with traditional, so-called 'tissue-based', models of diagnosis, which may prove to be more challenging for osteopaths, educators and clinic tutors who use these models exclusively. Benefits include the potential to introduce evidence-based psychological approaches which may enhance clinical effectiveness in persistent pain management and increase students' range of clinical experience and skill.

Educational establishments need to develop opportunities for students to apply skills and knowledge in safe, supervised clinical environments. Postgraduate education requires similar knowledge and skills but practice opportunities for qualified osteopaths differ, as there are no requirements for formal supervision and there are currently limited resources or staff available to provide mentoring. Work is continuing to up-date the undergraduate and postgraduate training programmes that were developed for the third developmental study, with the eventual aim of creating a community of mindful osteopaths who can provide peer support. Future developments will rest on the strength of quantitative outcomes from the OsteoMAP study, which will be used to guide further research to analyse the utility and feasibility of this approach.

## **CHAPTER SEVEN: CONCLUSIONS**

### **7.1 Introduction**

7.1.1 This study was designed to explore whether, and how, psychological pain management interventions informed by Acceptance and Commitment Therapy (ACT) could be integrated into standard osteopathic practice for patients with persistent musculoskeletal pain. The results suggested that it was feasible for an osteopath with brief ACT training to deliver a multimodal course, but the process involved shifting between therapeutic intentions and developing mindfulness and facilitative communication skills. The patient appeared to gain increased awareness of habitual bodily reactions, and reported willingness to choose more flexible, active responses to pain. Factors that strengthened the osteopath's ability to promote patient learning were identified as willingness to relinquish the expert role and confidence in using observations of patient behaviour and palpatory findings. Data from the patient who engaged most fully with course material was analysed in depth, but the other patients' data contained fewer examples of facilitative communication and has not yet been fully analysed. The conclusions are therefore presented in the context of these limitations.

### **7.2 Study context**

7.2.1 The course was based on the ACT theory of psychological flexibility but did not include a systematic literature review, which may have limited optimal intervention development. The evolution of the delivery process probably influenced different levels of patient engagement and limits future replication. The lack of pre and post-intervention measures and absence of a control group

means that positive outcomes cannot be attributed directly to facilitative interventions. Communication findings could be criticised as self-evident, although the study did identify consistent patterns of mechanistic and facilitative discourse. Analysing data illustrating the best outcomes inevitably generated unrepresentatively positive results, and analysis focused on three of the six, core ACT principles, which limits conclusions about the behavioural impact of the whole course. Saturation and theoretical sufficiency were not achieved, and the use of auto-ethnographic data from a single researcher with limited external validation of analytic processes reduces the the credibility of the interpretations. The researcher is an osteopath with additional psychological training, which also limits the transferability of these findings to other practitioners.

### **7.3 Skill development**

7.3.1 In this study, shifts between predominantly mechanistic discourses to a more facilitative stance appeared to be enabled by the osteopath's ability to notice signs of avoidance and willingness to explore observations collaboratively. Obstacles to facilitation appeared to include a habitual mechanistic stance and lack of skill in integrating ACT interventions. There was some evidence that, with practice, the osteopath managed more flexible transitions between discourses, and learned to blend mindfulness with body-based activity. Further research is required to explore whether, and how, these factors enable and limit course delivery in a wider sample of practitioners and patients. The osteopath in this study appeared to develop awareness through personal mindfulness practice, which has implications for recruitment and training for osteopaths in future studies. Managing dual therapeutic aims also required willingness to tolerate the increased clinical uncertainty that appears to be inevitable in ACT interventions, but further research is needed to explore appropriate ways of training manual therapists to use a principles-based psychological approach (Nanke 2014).

## **7.4 Patient outcomes**

7.4.1 Promising outcomes were illustrated by the patient who engaged most fully with body-based mindfulness, which suggests that willingness to participate in experiential activities is an essential recruitment criterion for future studies. Changing the dynamics within the therapeutic relationship enabled expertise and responsibility for treatment choices and management decisions to be shared more collaboratively between the patient and osteopath. The patient's agency was re-framed in the role of a 'curious explorer', aided by the osteopath acting as an 'interpreter' of unfamiliar, uncomfortable bodily sensations. Communication that promoted learning was characterised by facilitative open questions, which explored the nature and perceived meaning of physical sensations and automatic cognitive and affective reactions to pain. The patient's increasing interoceptive abilities and somatic awareness was associated with reduced anxiety and more conscious responses of pain acceptance.

## **7.5 The osteopathic model of biopsychosocial healthcare**

7.5.1 It was possible, but difficult, to combine ACT and Osteopathy and the integration process required the osteopath to develop sufficient awareness and skill to manage flexible, dynamic, conscious shifts in therapeutic stance within each consultation. Combining dual therapeutic intentions can be challenging and ineffective if there is no clear framework to guide transitions between activities with contrasting therapeutic aims. The emerging hypothesis from this study is that practitioner mindfulness enabled shifts in focus between the patient's object-body and his lived-body experience. This expanded the scope of the osteopath's care by creating possibilities to promote acceptance of discomfort when pain symptoms could not be controlled. Data also illustrated different cognitive and phenomenological methods of understanding and clinical reasoning, which could be situated within the complicated and complex domains



of Cynefin framework of model of sense-making. Cynefin offers potentially useful concepts for working with chronic pain that are congruent with the principles-based approach of ACT, and with osteopathic concepts of function and agency.

7.5.2 Osteopathy has traditionally been practised in a biomedical model of healthcare, in which agency and expertise are located with the practitioner. In collaborative therapeutic relationships it is not possible, or necessary, for the practitioner to provide the 'right' answer, as these types of intervention are guided equally by patients' values, self-knowledge and self-awareness, including body sensations. In this study, the osteopath retained professional responsibility and musculoskeletal expertise but also adapted assessment and treatment routines to promote patient learning. Responsibility for choosing appropriate responses to pain arising in the moment was shared, and explicitly guided by the patient's goals and choices. The aim was to help the patient track the consequences of behavioural choices on his quality of life, and empower him to re-engage with physical activities and social roles that were meaningful in his current life context. Manual therapy activities were re-framed within the organising theory of psychological flexibility, and the osteopath's scope of care was expanded by blending individualised psychosocial interventions with hands-on treatment in a broader model of biopsychosocial healthcare.

## **7.6 Conclusions**

7.6.1 The findings were generated from a case study of one patient from a sample of four who completed an individual, six week, ACT-informed osteopathic treatment course. The intervention was carried out by a single practitioner-researcher, so the findings do not provide an adequate basis for generalisation. They do raise further research questions, however, about the extent to which these processes can be usefully identified in different patient-practitioner dyads working with a similar theoretical approach. They also raise questions about how

to assess patients' suitability for ACT-informed osteopathy, and how to develop practitioners' skills in facilitating patients' engagement with experiential work.

7.6.2 The conclusions of this study are emergent and contextually bound, but appear to resonate with practitioners in other clinical contexts. Experiential learning has been used to inform training for osteopaths, and to guide the design of an observational cohort study. The empirical finding that psychological processes associated with persistent pain can feasibly be addressed in a manual therapy context opens up possibilities for exploring whether the therapeutic synergy associated with combining physical and psychological interventions in this way proves to be robust and repeatable. It is hoped that future development of the course may lead eventually to a theoretically coherent, patient-centred, biopsychosocial model of osteopathic care for patients with persistent pain.

## CHAPTER EIGHT: THE RESEARCH JOURNEY

### 8.1 Introduction

8.1.1 This thesis presents an approach to osteopathic practice about which I have strong opinions, so this chapter presents my reflections on the learning journey, as it can be difficult to differentiate between personal and professional knowledge. I will describe what I knew and believed at the start of the study, what changed, and how the process of conducting this research affected me. My aims are to provide a context for assessing which aspects of this study may be unique and which may have resonance and relevance for other practitioners. The study was designed during the taught phase of a Professional Doctorate course in “the high country of the mind” where “one has to become adjusted to the thinner air of uncertainty” (Pirsig 1974, p.120). Delivering the course brought me down from the high, hard ground of academia to the swamp of clinical practice (Schon 1983). At times I felt submerged and it took me a long time to learn how, and where, to “dive for pearls” (Smith 2011), as insights seemed few and far between. The process had a significant impact on my clinical practice and, hopefully, my reflections may help others make sense of similar challenges.

8.1.2 The "lateral drift" in my career (Section 1.6) provided me with physical and psychological skills and social and educational interests in healthcare, which created a gestalt of "lateral knowledge... that's from a wholly unexpected direction" (Pirsig 1974, p.114). The last three years, however, have felt like a slow motion collision between Osteopathy, Acceptance and Commitment Therapy, Linguistic Ethnography and the Cynefin model of complexity. The Professional Doctorate process helped me to create a new way of working with patients

whose symptoms could not be "fixed", but took me outside the comfort zone of osteopathic expertise. The probe-sense-respond strategy of the Cynefin model was useful for understanding complex clinical interactions, but the processes of interpreting the data and mapping my learning were circuitous and confusing. The aim of this reflective chapter is to make my journey through the complex stages of this interdisciplinary study more comprehensible to others.

## **8.2 Home is where we start from**

8.2.1 My motivation for starting the study was prompted by scepticism about the way I had been trained to practice osteopathy, and my frustration at not being able to help patients feel sufficiently better to satisfy my urges to rescue people (Miller 1995). I stopped practising for a few years until I met my supervisor and discovered ACT, which helped me understand it is acceptable, and often inevitable, to feel uncertain. I started the Professional Doctorate believing that biopsychosocial care was the best approach and I wanted to change my existing mode practice, even though I did not yet know what a more psychosocially-balanced model of osteopathic care would look like.

My ACT experience as co-facilitator of the pilot group study involved little body-based work, so I was not sure how to combine verbal psychological content and mindfulness exercises with 'hands-on' treatment, as this field note illustrates:

"It's a choice, do I go with this conversational thread, or do I stay with what's happening under my hands? and it's a judgement call and I guess I was trying to find the balance between the talking and the touching."  
(FN4)

8.2.2 I wanted to make psychosocial components an integral part of osteopathic practice, but started by inserting scripted ACT interventions between my normal history, examination and treatment routines. Developing a properly integrated course was more challenging than I expected, as a collaborative therapeutic stance was inconsistent with my role as expert treatment provider. I felt destabilised and anxious about relinquishing my familiar mechanistic role, as these field notes show:

"I felt a little bit stage fright-y, just for a few minutes beforehand, but not as much as I had been the day before." (FN3)

"I've slipped in to "I wish I'd made him better" and if he comes back and its been horrible I'm going to feel really sad for him and a bit guilty and responsible that I couldn't fix it." (FN4)

8.2.3 At the start of the study, I felt as though I was trying to jump an unbridgeable gap, hoping that somehow the distance between biomedical and biopsychosocial concepts would get smaller. Now combining these approaches seems easier, but it is not achieved by leaping dramatically from one script to the other but by changing my gaze and intentions. This means that I can see the patient's problem from different perspectives and use similar activities but with different aims. The gap between approaches may therefore be the same but my awareness has grown through practising mindfulness and considering the workability of each comments or action, as this diary entry illustrates:

"I also listened to the beginning of some of my audiotapes from 2013 and I was really surprised to hear how scared I was and how nervous about doing the integrated sessions using mindfulness with osteopathy. I guess I've got so used to it now that I don't get to that level of anxiety; maybe not as often as I did then when it was all new." (RD 14/10/15).

### **8.3 Whose journey is it anyway?**

8.3.1 I initially planned to conduct a phenomenological study into patients' experiences, to analyse themes and patterns in individual narratives. The data was difficult to code as conversations were fragmented and meaning was often unclear unless the context of longer-term aims was acknowledged. I became more interested in the implicit values and beliefs that guided how things were said, or not said. Learning about Linguistic Ethnography enabled a shift in focus to data as interactional dialogue, rather than as an individual's narrative story. Micro discourse analysis uncovered the unspoken factors that influenced course processes and outcomes, and required the use of insider knowledge, so the research became more about me than I had expected. My experiences may have catalysed patient changes, as we seemed to be on similar journeys, although climbing different mountains. In this thesis I have tried to balance my 'emic' personal and osteopathic insights with the 'etic' perspective of the researcher (Lambert and McKeivitt 2002; Dahlberg et al 2009).

8.3.2 Mindfulness increased my awareness of personal struggles and the way I distract myself from discomfort by focusing on other's people's problems. Slowing down and being willing to practice acceptance, was difficult. I knew that mindfulness is a way of being but remaining mindful is hard. My habitual thinking was under scrutiny and illustrated aspects I did not want to know. I used insider knowledge to deepen analyses, which was an uncomfortable process:

"I am still upset, still tired, still struggling but that it feels qualitatively different when I think about the session coming up with A in terms of whether I'm apprehensive or looking forward to it and I think the difference is in my relationship with the patient, so with R and with M I feel that I may be judged or tested which makes me a lot more anxious about the session." (FN5)

I know that I am not alone in experiencing this approach as a personal challenge, as the titles of later training course feedback from other osteopaths suggests:

"It starts with me! The journey which was not supposed to be mine."

"The course I thought I was going on and the one I am grateful I went on."

"Looking at myself from the inside."

## **8.4 The limits of language**

8.4.1 I started with a naive understanding about the co-construction of discourse. I knew that language was not simply a means of conveying neutral facts from one person to another (Sarangi 2004), but I did believe that speech production was a linear uni-directional sequence. I believed that discourse analysis uncovered what people really thought but I knew little about analysing interactional communication processes. Conversation Analysis has been likened to a game of table tennis, but Linguistic Ethnography feels more like Twister, and I have become increasingly aware of convoluted, dynamic, embodied interactive process of communicating with patients, especially during manual therapy activities. I learned that I could not analyse the way that ACT influences patient behaviour from analysing audio-recorded data alone, and focused on identifying what my data could show. In contrast to following the logic of the lamp post, I stopped struggling to find answers in the shadows and started to explore the visible communication process gems glinting in the dust.

8.4.2 I was disappointed when the data demonstrated how I worked mainly in a primarily mechanistic manner and was worried there would be few examples of good practice in ACT-informed discourses. This became an opportunity for me to practice acceptance and defusion, and separate the data from my sense of self-worth and feelings of incompetence. I became more willing to explore the

obstacles that had limited my collaborative intentions, and I hope this thesis shows glimpses of ways to develop more facilitative osteopathic interactions.

"Part of me wishes I had had the time to analyse the transcripts in between sessions... but I might not have 'seen' or understood what was in the data because I was so close to it... I have a bit more distance between me and the data now and a little more understanding and confidence in myself, so it is easier to see my errors and accept them as part of the learning process." (RD 11/01/15)

## **8.5 What am I supposed to be doing?**

8.5.1 Before this study, I would typically consider psychological, social and environmental issues when assessing a patient's problem, but then treat areas of physical dysfunction. I am also trained as a counsellor and feel comfortable talking about psychological distress but was unsure how to include these aspects effectively in my osteopathic practice. Conducting this study helped me to see how my decisions were often based on my knowledge, rather than the patients' experiences and opinions, and I have learned to seek their wisdom and choices more consistently. At the start, I inserted ACT exercises between routine practices, as an add-in approach. As the study progressed, I started asking about patients' experiences during activities, often after I had palpated some sense of tension or muscle resistance, and this blending created a more embedded type of facilitative interaction. I feel increasingly able to combine interventions that aim to change physical restrictions with mindfulness exercises that aim to help patients learn how to live more flexibly with their conditions. I notice subtle cues of avoidance and am more confident in slowing the process down to explore what is happening in this moment.



8.5.2 Small changes in what I say, when introduced at opportune moments, can have big impacts on patient awareness. At the start, my ACT conversations were lengthy and stilted but I learned how to integrate principles more fluently, and allow patients to guide conversations, which I failed to do at the start:

"My choice to go quickly was because I felt like he might get upset staying with the pain or very uncomfortable physically, so I deliberately didn't leave him there too long, but I was perhaps over-cautious." (FN2)

8.5.3 Buchholz (2014) suggested that empathy has a musical dimension in the rhythm and flow of patient-practitioner communication. Learning to use ACT has changed my osteopathic dance style from a formal waltz to the messier rhythms of the Lindy Hop. Sessions look chaotic but they retain a recognisable style and the lead is shared, which creates opportunities to create dynamic, responsive new moves. The study broadened my perspective, slowed me down, made me aware of subtle body cues, and encouraged me to choose words more carefully. I am now learning how to help patients *feel* better, as well as to feel *better*.

8.5.4 The Cynefin sense-making framework gave me permission to 'not know' about unknowable factors and opened up options to use observation and palpation skills to probe, sense and respond to patients. Kelly Wilson described this shift in perspective as seeing people as sunsets, rather than maths problems, but this image implies an either/or view. A both/and photographic metaphor is that patients' problems don't change but the practitioner's flexible gaze can shift between a focus on the individual in close-up, or a family portrait of the patient in their social relationships, or a panoramic landscape of the patient moving through the bigger picture of their life.

## **8.6 Right here, right now**

8.6.1 One challenge in delivering the new course was working out what to use, and how, and knowing when to stop. I felt disorientated, as if I had double vision, but I have gradually adjusted to wearing bifocal ACT and osteopathic lenses, although I still get a jolt if I walk off an unexpected step. I have learned how easy it is to fall back into familiar reactions and how hard to consciously choose a different response. Many of my habitual actions are to avoid the discomfort of my own uncertainty, embarrassment and worry that patients will think I don't know what I'm doing, but it has often been worth the risk.

"I'm pleased that I followed my instinct that the block that he feels in his neck is linked to the right shoulder and that I was brave enough to share what sense I had when I had my hands on that part of him." (FN5)

8.6.2 The benefits for me are that I have returned to practice with renewed inspiration, and enjoy opportunities to work more effectively with challenging patients. My role has expanded from expert treatment provider to being an interpreter, although my new identity is still developing and the process of change has been painful. To help patients make sense of their pain, I have had to 'walk the talk' (Harris 2009), but I have struggled with mindfulness, which is considered to be the bedrock of authentic practice (Shapiro and Carlson 2009). My experiences of difficulty help me to empathise with patients who report similar challenges but it limits how far I can guide them. Learning to use ACT has required time, effort and willingness to leave my comfort zone - permanently it seems. I have had to dive deep for the pearls but I think the continuing journey is helping me to become a more effective osteopath and a more skilled researcher.

## **8.7 What would I have done differently?**

8.7.1 I don't think I could have done many things differently in this study, as knowledge was generated as part of the inevitably slow process of developing new skills and understanding. It would have been sensible to delay the start of the OsteoMAP project until after I completed the Professional Doctorate, but the funding was hard to refuse and I gained valuable experience from leading OsteoMAP. Data analysis would have been easier if I had known about Linguistic Ethnography two years earlier but, again, the process of struggling to work out how to understand the data was part of the research journey. I wish I had video-recordings but that would inevitably have affected the clinical intervention and the patients' responses. I wish I had talked less and integrated ACT principles directly into bodywork at the beginning of the course but I did not know how to. I wish I had started writing earlier and had refined the concepts presented in this thesis, but I look forward to post-doctoral developments and dissemination.

## **8.8 What next?**

"House building metaphor - I'm still digging down to establish the foundations and haven't got above ground yet. I won't have time to build a thesis that looks like a palace but the shack that I do build should have a solid base - and I will apply for planning permission to build an extension!" (RD 01/05/16)

8.8.1 Learning what helped me to develop a more person-centred approach and what got in my way has been a long process. I can now see how to work more effectively simply by doing what I normally do, but more slowly and mindfully. I hope that my attempts to reflect on the research process mean that my personal knowledge can be translated into propositional knowledge with wider relevance.

The next stages for me will be to gain more experience of combining the interventions and to test the validity of these findings. This thesis is not the work I would have written two years ago but it reflects where I am now. Although it reflects the end of one stage of my research, the journey continues. I have chosen to end with a feedback narrative from 2014, which formed part of the innovative research method being developed by Cognitive Edge, because it encapsulates my feelings about working with this approach.

"Riding the roller coaster naked at midnight: I am dreading it at the start. It's weird and dark and scary. I can't see where I am going and feel vulnerable. And off we go and my stomach is churning and the world turns upside down and there is no solid place to put my feet. Around me I can hear other people laughing and crying and screaming. Uninhibited and alive. And we come to the end, battered and windblown, shivering with excitement and still feeling a little sick but with the adrenaline buzz of having survived the unknown, and been taken out of the ordinary to a place of heightened awareness where I am somehow more than myself."

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## Appendix 1: Literature searching strategy

Systematic literature searches were conducted throughout the study to identify relevant papers to support the theoretical rationale and place the findings in context. Papers were also obtained by screening reference lists of key articles and from recommendations from other researchers. The evolving focus of the searches (Table 1) was influenced by training (Table 2), and examples of search strategies are presented in Tables 3 and 4.

Table 1: Evolution of the literature searching focus

Aim of search	Key search topics
Initial literature review	
Identify gaps in practice knowledge Explore current evidence, underlying theories and mechanisms of effect Develop the study's rationale Refine the research questions	Chronic/persistent musculoskeletal pain Biomedical and biopsychosocial care Multidisciplinary pain management Psychological flexibility theory of ACT Mindfulness-informed intervention
Methodological literature review	
Develop researcher knowledge/skills Qualitative research methodologies Methods of data collection/analysis Reflect on personal beliefs and position to enhance transparency	Thematic Framework Analysis Descriptive Phenomenology and IPA Interpretation and Constructionism Different Discourse Analysis methods Reflexivity and Auto-ethnography
Data analysis and interpretation	
Site analyses in theoretical context Identify social interaction processes Explore communication-as-action Explore non-verbal communication	Complex behavioural interventions Therapeutic roles and relationships Linguistic Ethnography, Sociolinguistics Touch, perception and embodiment
Discussion of the results	Topics
Explore the context of the findings Identify potential implications for osteopathic practice and education Identify directions for future research	Complexity science and healthcare Embodied cognition, praxis, reasoning Mindfulness, touch, neurophysiology Quantitative research, pragmatic RCTs

Table 2: Researcher training

Course	Duration	Location	Date
PG Cert in Research Methods	6 months	University of Bedfordshire	Jan 2012
Interpretive Phenomenology	2 days	London IPA Training	Feb 2012
Discourse Analysis	2 days	University of Nottingham	Feb 2014
Acceptance & Commitment	2 days	Dr Russ Harris, London	July 2014
Acceptance & Commitment	2 days	Dr JoAnne Dahl, Brussels	Oct 2014
Interpretive Phenomenology	1 day	Dr Russel Ayling, London	Jun 2015
Acceptance & Commitment	2 days	Dr Russ Harris, London	July 2015
Linguistic Ethnography	5 days	Kings College London	July 2015
Micro Discourse Analysis group	20 hours	Kings College London	2015-16
Linguistic Ethnography	10 hours	Kings College London	Feb 2016

Table 3: Literature search details

Databases	Search limits
PubMed, AMED, Cinahl Hand searches of the BSO library Resource section of ACBS website	English, Human, Adults, Published in the last 10 years, Abstract available. Systematic reviews, RCTs
MeSH terms	Other search terms
Chronic Pain; Musculoskeletal Pain; Pain, Intractable;	Persistent pain
Osteopathic Physicians; Osteopathic Medicine; Musculoskeletal Manipulations; Physical Therapy	Osteopathy; Manual Therapy; Physical Therapy Modalities
Mindfulness; Nervous System Physiological Phenomena	Meditation
Behavior Therapy; Cognitive Therapy; Acceptance and Commitment Therapy; Pain Management Clinics	Multidisciplinary programmes; Complexity

Table 4: Examples of PubMed literature searches

Search strategy - MeSH heading and search terms	Hits
("Chronic Pain"[MeSH Terms]) OR "Persistent Pain"[Text Word]) AND "Mindfulness"[MeSH Terms]) OR Meditation[Text Word] Limits: Abstract; published last 10 years; English; Adult:19+	1189
("Chronic Pain"[MeSH Terms]) OR Pain, Intractable) OR Musculoskeletal pain[MeSH Terms]) OR Persistent Pain) AND Musculoskeletal Manipulations) OR Osteopathic Medicine) OR Physical Therapy Modalities) Limits: Abstract; published last 10 years; English; Adult:19+	432
("Chronic Pain"[MeSH Terms]) AND "Behavior Therapy"[MeSH Terms]) AND "Physical Therapy Modalities"[MeSH Terms]) Limits; None	74

## Appendix 2: Participant Information Sheet

### Developing a Mindfulness-Informed Pain Management Programme

**Invitation:** We would like to invite you to take part in our research study. Before you decide, we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have, which should take about 5 minutes. Please talk to other people about the study if you wish and ask us if anything is not clear.

**What is the purpose of the study?:** Research has found that people with chronic pain can benefit from multi-disciplinary healthcare approaches and that self-management programmes which explore the consequences of pain can help people to create more fulfilling lives. We are therefore developing a new course in the British School of Osteopathy (BSO) clinic to help patients with long term pain develop more flexible ways of living with their conditions, despite experiencing ongoing symptoms. The course is being run by Hilary Abbey, an experienced osteopath and clinic tutor, who is conducting this research as part of a Professional Doctorate programme. We aim to obtain feedback about patients' experiences of the course, in order to improve osteopathic care at the BSO.

**Why have I been invited?:** You have been invited to take part in this study because you are an existing BSO patient who has had pain for more than six months and you are interested in taking part in the pilot study to develop a new programme for persistent pain. The programme includes a combination of osteopathic treatment and mindfulness-informed activities, which aim to help you understand and manage pain more effectively. It is open to existing BSO patients, who will be invited to attend a series of six, individual sessions and then return to their usual osteopathic treatment in the General Clinic, if appropriate. Four other BSO patients with persistent pain will be invited to take part.

**Do I have to take part?:** We are developing the course as a new option for patients and it is up to you to decide if you wish to join this research stage of the course. We will describe the study and go through this information sheet with you to answer any questions. The next stage would be a face-to-face or telephone interview to explore your participation in more depth. The Introduction Interviews will be audio-taped and, if we agree that it is appropriate for you to join the course, we will ask you to sign a consent form to allow your data to be used in the study. If we decide that it is not appropriate for you to join the course at this time, you will be advised to continue with your existing treatment in the General Clinic and your audio-tape will be deleted. You are free to withdraw from the course at any time, without giving a reason, and return to osteopathic treatment in the General Clinic, if you wish. Your decision to take part in the course or not, or to withdraw part way through the course, will have no detrimental effects on your standing as a patient or your future treatment at the BSO.

**What will happen to me if I take part?:** You will be invited to attend a face-to-face meeting or telephone interview with the researcher to discuss, firstly, what the 'Living Well with Persistent Pain' course involves and whether it might be relevant to you and, secondly, what the research study involves. Patients who join the course will be asked to attend six, individual, one hour sessions, consisting of a combination of osteopathic treatment and mindfulness-informed activities, which aim to help you understand and manage your pain more effectively. Patients will be asked to pay their usual fee for BSO treatment for each session (e.g. either the standard, subsidised or community partnership fee) and will be responsible for their own travelling costs for attending the clinic, as usual.

**What do I have to do?:** You will be invited to attend six individual course sessions with Hilary Abbey, either weekly or fortnightly if preferred. Sessions will last for approximately one hour,

starting in April 2013. Each session will involve a combination of osteopathic treatment and guided mindfulness-informed discussion and activities aimed at improving your understanding of pain and what your symptoms mean. The objective is to help you return to a more flexible and fulfilling way of living your life, despite pain, and to devise a personal Living Plan for managing your pain and living well in the future. This course works best if you are willing to actively engage with the ideas and explore different ways of coping with pain but the activities are optional and you do not have to do anything that you do not feel comfortable doing. You will not be treated by BSO students during the six week course, as osteopathic treatment forms part of the course sessions with Hilary but you will be able to resume treatment with your usual student in General Clinic when the course ends, if you wish. If you miss a session, we will call to find out if you are OK and to check whether you are having any problems with the course. We will encourage you to attend all six sessions in order to get maximum benefits but you can withdraw from the course at any time, without giving a reason, and with no detrimental effect on your standing as a BSO patient or your treatment in the General Clinic. You can also withdraw from the course at any time, without giving a reason and without detriment, and you can ask for your data to be destroyed. You can then choose to return osteopathic treatment with students in the General Clinic or take a break from treatment at the BSO, as you wish. At the end of the course, we will discuss your ongoing support needs and resources and create a Valued Living Plan. Sharing your learning from the course with the students and tutors who normally treat you in the General Clinic may enhance the benefits of osteopathic treatment by focusing our care more effectively on your personal goals. This research study is based on the theory that you are the expert in your own life experiences and we want to understand the aspects of living with persistent pain that are important to you. You will be asked to give us consent to use data from your pre-course interview, six course sessions and three month follow-up interview. You will be asked to check your interview transcripts for accuracy and amend your responses, if needed, to ensure that they accurately reflect your experiences. Tapes and transcripts will be stored securely on a password protected computer or locked filing cabinet in the researcher's office in the main BSO building. Pain management notes will be stored separately and securely and participants' details will not be shared with clinic staff or students until the end of the six week course, at which point we will discuss together what kind of information you would like to include in your Living Plan and share with others to guide your future osteopathic care.

**What are the possible benefits of taking part?:** Research shows that people who engage with mindfulness-informed activities feel empowered to cope more effectively with, and adapt to, painful symptoms and stress. Our objectives are to help you return to more flexible, fulfilling ways of living your life, despite pain and we hope you will gain a better understanding of the ways that pain impacts on your life and develop greater autonomy in managing it. As this is the research stage of a new course, we are looking for patients who are willing to be active participants in the research process to help us develop the course. Although we hope the course will be helpful, participating in the research study may not be of direct personal benefit but you will be contributing to the development of more effective long term pain management services for future osteopathic patients. Taking part in collaborative research also provides an opportunity for your voice to be heard, which some people find empowering.

**What are the possible disadvantages and risks of taking part?:** The course involves osteopathic treatment which will be very similar to that which you are already receiving in the BSO General Clinic. The treatment approach on the course will be guided by your existing case history and your feedback about what seems to work best for you. You will also be encouraged to explore different ways of experiencing your body and responses to pain, including mindfulness meditations and mindful movements, during course sessions and as home exercises. Mindful movements have been used successfully on similar programmes and are considered as a low risk of causing harm, as they usually consist of movements performed as part of normal daily living. All the course activities are optional and, although we would like to you to explore different ways of managing your pain, you will not be asked to do anything you feel uncomfortable about.

The course will encourage you to think about how pain affects your life, which some people may find upsetting, and it is not uncommon to feel worse at the start as you are encouraged to become more mindful of your situation. This can feel frustrating but it is an important, and often necessary, part of the process. If you are unsure about anything, please discuss it with Hilary. In the unlikely event that you feel distressed, we will discuss whether you wish to continue on the course and if there is a need for additional GP support.

**What if there is a problem?:** If there is a problem between the course sessions, Hilary Abbey can be contacted at the BSO. The contact details are at the end of this leaflet. She will be able to provide advice or inform you about appropriate sources of community support, in the unlikely event of an emergency. If you have concerns about any clinical aspects of the course, please contact Simeon London, the Head of Clinical Practice at the BSO (details below). If you have any complaints or feel harmed in any way as a result of the research process, please contact the study supervisor (details below).

**Will my taking part in the study remain confidential?:** Your attendance on the course may not be completely confidential as the students and tutors who provide your usual osteopathic care may have been involved in discussions with you about the course or may notice that you are not attending for your regular treatments. However, all the information you provide for research purposes will be kept strictly confidential. The only people with access to interview and session tapes will be members of the research team. No data from interviews or course sessions will be available to the students or tutors who provide your usual osteopathic care until the end of the course when you can decide for yourself what information you would like to share with them. Anonymity is assured in the research study, as all names will be deleted and participants will be referred to by number or pseudonym in written reports and publications. Direct quotes will be anonymised and any other identifiable information will be changed to maintain confidentiality. At the end of the study, data will be stored securely at the BSO for six years and then destroyed.

**What will happen to the results from the study?:** Data from interviews and course sessions will be analysed to explore participants' experiences and the ways in which the course may have changed their ability to manage persistent pain and develop more flexible and fulfilling way of life, despite pain. The grouped results will be written up as a research paper for publication in a professional journal, as part of the requirements of the Professional Doctorate programme, and findings may also be presented at relevant healthcare conferences. If you would like to receive a summary of the results at the end of the study, we anticipate this will be available by February 2014. You can request an email copy or a paper copy by post by completing the tear-off section on the Consent Form.

**Who is organising the research?:** This research is being organised by Hilary Abbey, a senior BSO clinic tutor, who is undertaking this study as part of a Professional Doctorate programme at the University of Bedfordshire. She is being supervised by Dr Lorraine Nanke, a Clinical and Health Psychologist with experience of running pain management programmes in NHS and osteopathic healthcare settings. The research has been developed in accordance with national healthcare research guidelines and the study was screened and approved by the British School of Osteopathy Research Ethics Committee. Thank you for taking the time to read this information sheet. Our contact details are below if you have any questions or would like further information.

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# Osteopathic Mindfulness Programme for Persistent Pain

## Patient Workbook

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## INTRODUCTION

**Osteopathy** is a system of diagnosis and treatment that works on the principle that well-being depends on maintaining a state of balance between body structures and functions. Osteopaths use touch, massage, stretching and joint manipulation to relieve muscle tension, increase movement and improve blood and nerve supply to help the body's own healing mechanisms. They offer advice on posture and exercises to promote health and try to stop symptoms recurring and aim to help people achieve treatment outcomes relevant to their own goals, needs and current physical capabilities.

When pain persists for more than 3 months, the best outcomes are achieved when people actively adapt, finding ways to maintain or enhance their quality of life and well-being which work with their physical capacities and life situation. This kind of work is often carried out by multi-disciplinary teams in hospitals, or in educational programs. This course is a new six session programme which integrates osteopathic treatment with new evidence-based Mindfulness and Acceptance based approaches to chronic pain to help people adapt to pain in more flexible, gentle and effective ways, based on mindful awareness of their body, movements, and actions.

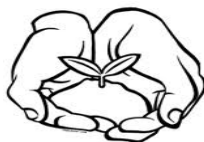
The course is designed for people with chronic pain who feel ready, willing and able to participate more actively in their osteopathic treatment process, by developing mindful self awareness and exploring possibilities for change. We have found that people who are willing to spend about 2 hours a week (i.e. 15-20 minutes per day) practising the mindfulness exercises at home are more likely to gain benefits.



## Mindfulness

Mindfulness has been described as paying attention, in a particular way, on purpose, non-judgmentally, in the present moment. The aim is to bring an attitude of kindly and curious acceptance to present moment experiences, which reduces our tendency to react automatically to pain. Mindfulness exercises help to create spaces between noticing habitual thoughts or feelings and automatic responses and expands the scope for choosing how best to respond in this moment. This course includes different exercises designed to cultivate mindfulness, which can be practised in different positions including sitting, standing, lying down, walking or performing other common daily movements. Exercises will be introduced during each session and adapted, if necessary, for your home practice. Mindfulness is an important part of this course but all the activities are optional and if you have any concerns, please feel free to discuss them with us.

Developing mindfulness skills usually involves making changes to our normal thinking patterns, and these can only be changed by putting time and effort into learning new ways of thinking and by practising responding differently to similar situations. It is helpful to adopt the attitude of approaching everything with an open, curious mind and assessing if it has been helpful at the end of the course. We will discuss your practice experiences at the start of each session, to explore any difficulties and suggest changes to support you in developing new skills. This approach has been described as being like gardening - you have to prepare the ground, plant seeds, water them and wait patiently for the results.



**Acceptance-based pain management** has three main principles

1. **Be present** - be aware of what is happening inside and outside you, right now
2. **Open up** - be willing to accept all the pleasant and unpleasant experiences you are aware of right now, without trying to get rid of or control them
3. **Do what matters** - live actively in accordance with your personal values, despite pain, right now

We believe that you are the 'expert' in your own life. We will continue to use our osteopathic knowledge and skills to help you explore if there are better ways to live with pain but, on this course, we aim to be guided more strongly by your personal values and life goals. This approach involves different roles for both of us and we may drop back into old habits and start giving advice or instructions. Part of the process will be noticing when that happens, deciding if it's working or not, and choosing actions based on our aims to work together, mindfully.

### **How to use this workbook**

This workbook sets out the course approach in six sessions but the ideas in each session are inter-related in real life, so activities overlap and we will use the workbook flexibly in the way that is most appropriate for you. This type of course works best for people who are willing to spend time developing the skills needed to respond differently to pain; so simply reading the workbook is unlikely to create real change for you. We cannot tell you what to do or how you to do it but the course aims to provide you with a map and compass to explore new possibilities and make choices about how you would like your life with pain to be in the future.

The course aims to help you develop and practice the skills to:

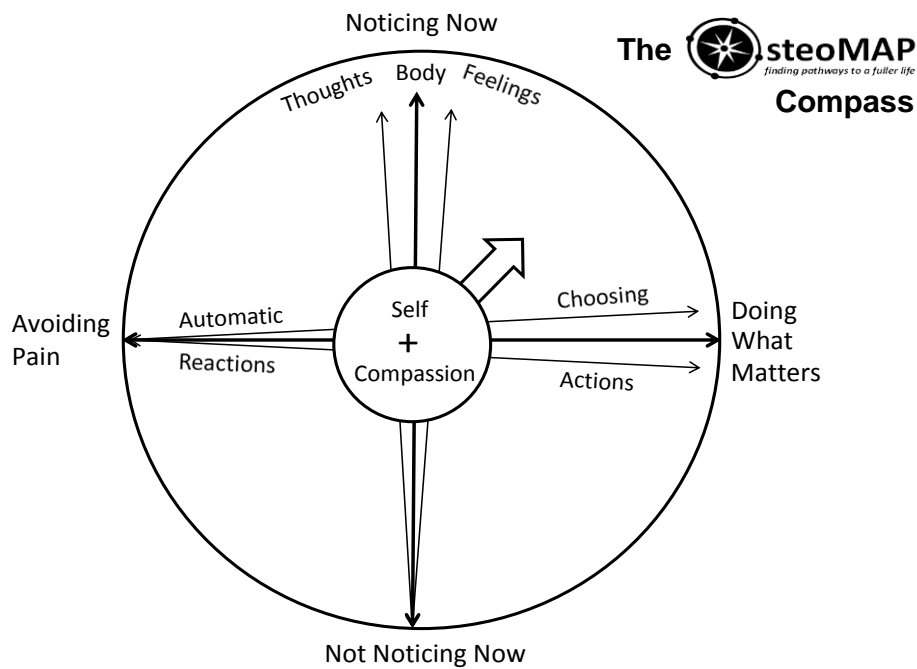
1. Notice your thoughts, feelings and physical sensations in the present moment

2. Make space for all present moment experiences, without trying to control or get rid of them

3. Identify what really matters to you, and

4. Live more fully, in accordance with your personal values.

The compass diagram, below, will be used to guide the direction of our work in each of the six course sessions.



## PRE COURSE EVALUATION SESSION

Before starting the course, it can be helpful to spend some time thinking about your pain and health problems and how they have evolved over time. Rather than focusing simply on what the pain feels like or where it is, the course will focus on its' consequences and how it impacts on your life.

How does pain affect your life?	
What does it stop you from being or doing?	
What have you tried to cope with the pain?	
How well have these strategies worked?	
What have the short term and long term benefits been?	
What has the struggle to cope with pain cost you?	

Our work together will be guided by your values and goals.

What do you hope to get from this course?	
If you had less pain in 6 months time, what would be different in your life?	
What would you be doing that you're not doing now? What would you start doing or do more of?	

If managing your pain by trying to control it has not worked completely, and has limited other important aspects of your life, are you ready to try a new approach and do the things that matter to you, despite ongoing pain?

What things would be worth doing <u>now</u> , even with the pain?	
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## What does the course involve?

This course differs from osteopathic care you've had before because it involves trying out different activities, even if they seem silly or uncomfortable at first, in order to develop new skills. Mindfulness exercises help us become more aware of *all* our experiences in the present moment, so you are likely to become more aware of pain and difficult thoughts and feelings at the start. This is a necessary, inevitable part of the change process, so we also need to work on the ability to make space for these feelings without having to control or get rid of them.

Imagine what happens when you see scary or distressing images on TV late at night, if it's dark and you are on your own. How do these images affect you?



Now imagine seeing the same images when the sun is shining and you're busy with friends. How do they affect you now?

This course aims to have similar effects on the way pain affects your life; difficult thoughts and feelings won't go away but they will have less impact on how you feel and what you do.

**Home practice:**

Please spend some time thinking about what matters to you.

List some of the roles and activities that you value in life.

Health and personal growth	
Relationships	
Social roles and leisure activities	
Work and education	
The other things that I value are...	

On the Life Values Circle on the next page, think about how closely you are currently living in accordance with your values. This will help us to identify one or more of your personal goals to guide our work together in the following 6 course sessions.



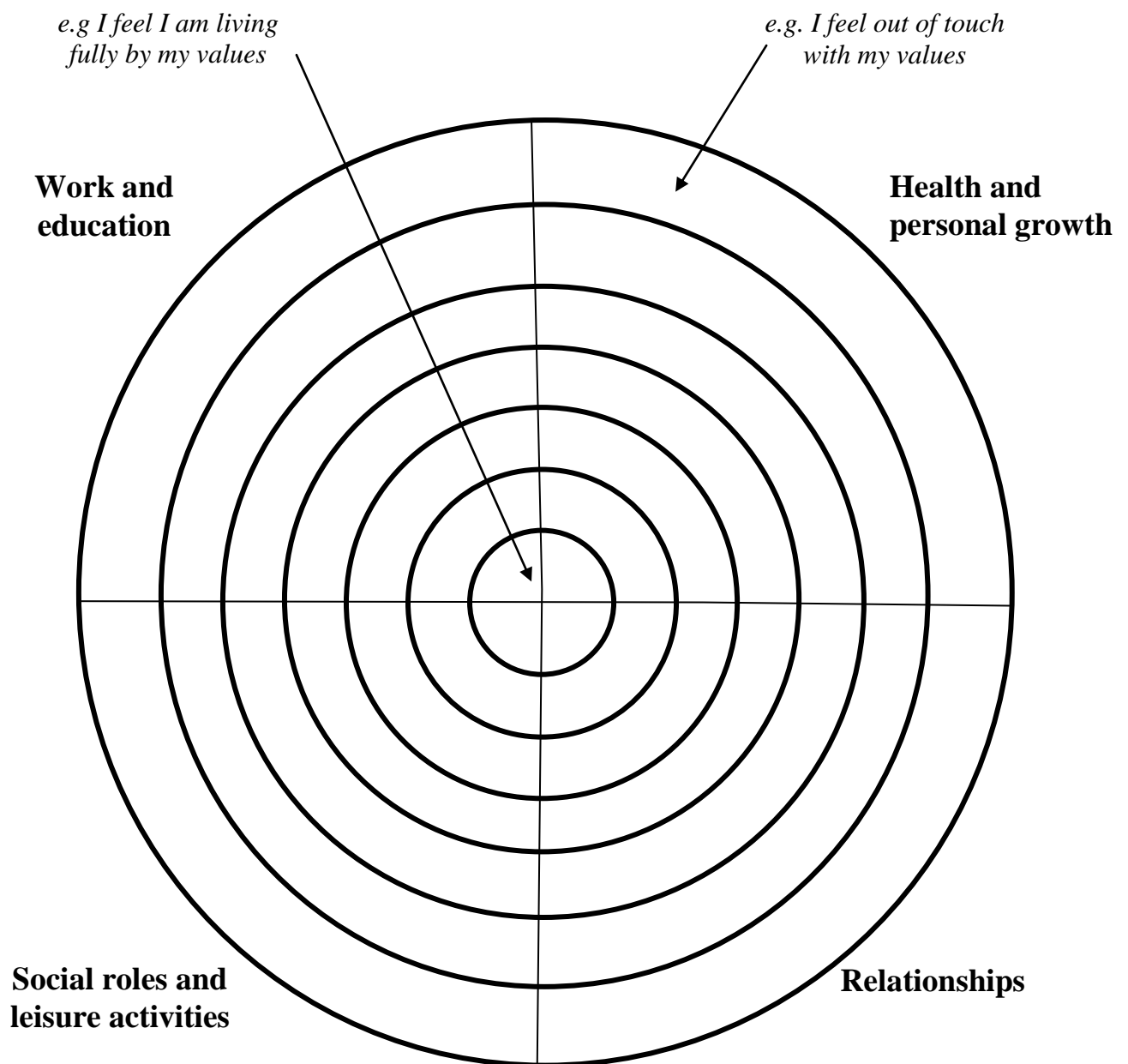
## The Life Values Circle

Think about the four areas of your life on the diagram below.

Mark an X in each quarter to show where you feel you are today.

An X in the centre means you feel that you are living fully by your values in that area of life.

An X on the outside edge means you feel far away from living by your values in that area of life.



## SESSION 1: LIVING WITH PERSISTENT PAIN

The aims of this course are to -

1. Learn new skills to deal with painful or distressing thoughts, feelings and sensations more effectively
2. Explore what matters to you and the kind of life you want
3. Help you become more able to do the things that matter
4. Practice ways to create and maintain a more fulfilling life

**Mindfulness** helps us to focus on what's happening right now.

Start with F O F B O C - Feet on floor, bottom on chair

Get as comfortable as you can, but move around if you need to

### **Sitting Meditation**

Try to be with any pain you feel, but move if you need to. There is no right/wrong way to do this.

Set a timer for about 10 minutes.

Sit on a chair and adopt an alert but comfortable posture.

Let your eyes gently close.

Focus on your breathing, noticing the gentle body movements with each in breath and out breath.

Experience what 'is' right now, whatever it may be.

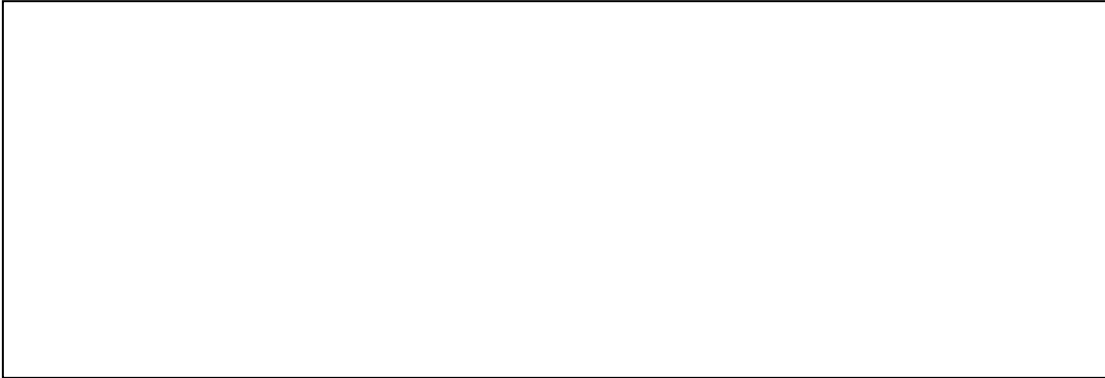
Allow space for your feelings and body sensations but keep bringing attention back to your breathing.

When your thoughts go elsewhere, as they are bound to do, just keep gently bringing the focus back to your breathing again, to help anchor you in the present.

If you feel sleepy, open your eyes. Keeping them lowered and focus your gaze softly on a neutral object in the room.

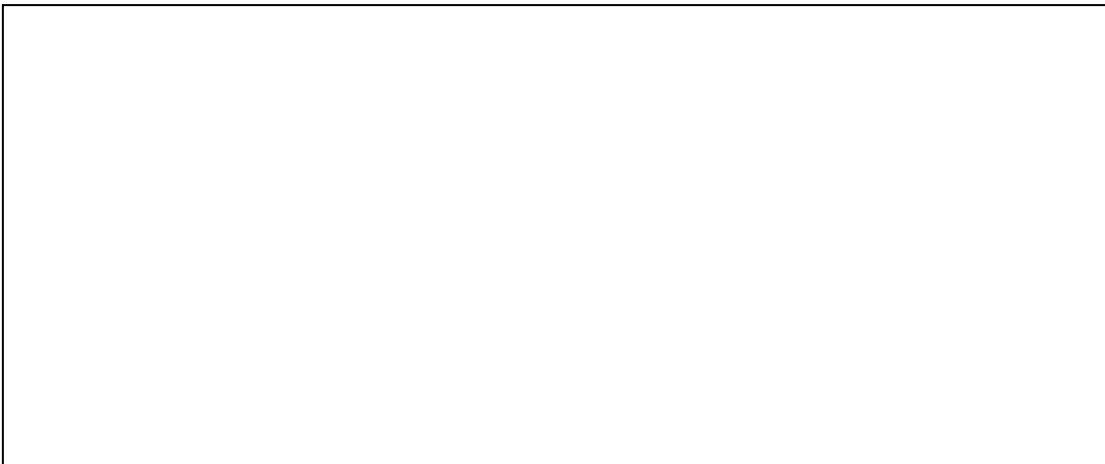
Continue being with what 'is' for about 10 minutes.

**What was that like?**



**Since the last session**

What has been going well? What have you been doing? What were you willing and able to do and to feel, despite your pain?



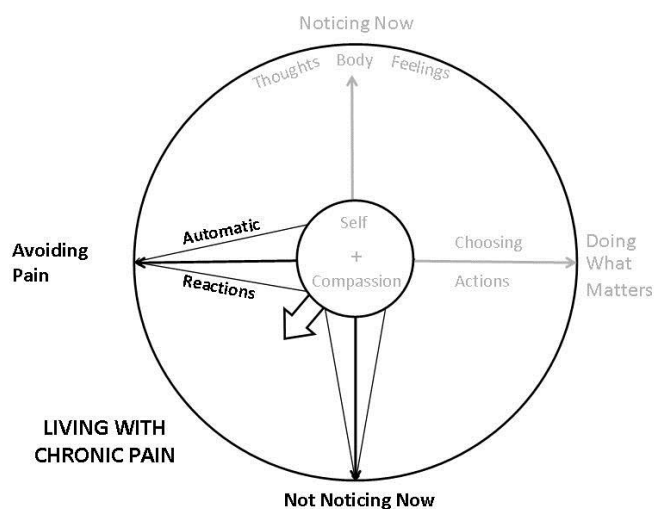
What has been going less well?



## What works for you?

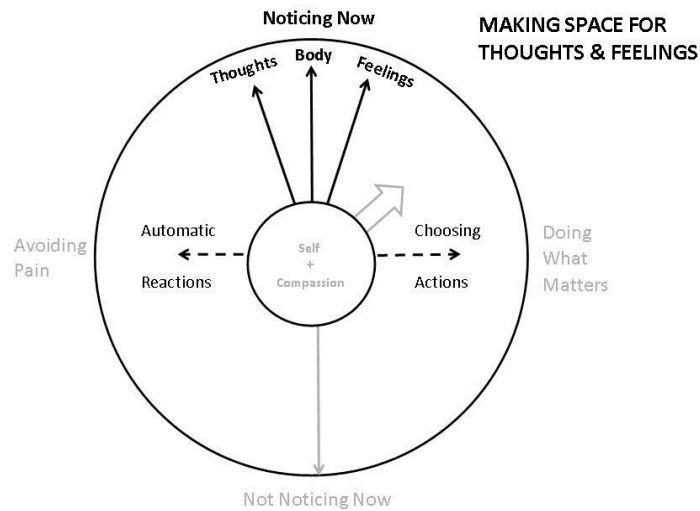
It's normal to try to avoid things we don't want and hold onto experiences we do like. It's also normal to think we can control pain but it's an illusion and the continual fight to get rid of unwanted experiences prevents us from being present in other aspects of our lives. This course aims to cut down the time and effort spent on trying to change things that can't be changed, in order to help you find ways of doing more of what matters. Today's session is about the thoughts and feelings that are often associated with persistent pain to assess if, and how, they affect your life and to explore other ways of responding.

The human mind has evolved as a 'don't get hurt' machine, scanning the horizon for potential danger. Negative thoughts and automatic survival reactions were necessary to protect us from being eaten by wild animals but unfortunately, avoidance reactions can persist long after danger has passed. Acute pain protects us from further harm but in chronic pain, the brain continues to react automatically, even when avoiding pain is no longer necessary or possible. The compass diagram below shows how this leads to a limited life focus, driven by past experience and attempts to avoid pain.



**Noticing** all the thoughts and feelings we can be aware of right now opens up a much wider range of experience.

And asking '*Does this thought help me to do what matters in my life, or not?*' can help us to choose the most appropriate response in this moment.



### **Making space for difficult thoughts and feelings**

Write down a negative thought about yourself.

- Say the thought            "I'm ..."
- Then say                    "I'm having a thought that I'm ..."
- Then                         "I notice I'm having a thought that I'm..."

What happened when you just 'noticed' that thought?

**Acceptance**, on this course, doesn't mean giving up or becoming resigned to the way that things are in your life. It means being willing to accept the feelings that you have right now, and allow space for them to be there as they are, without spending time and energy trying to change or get rid of them.

These feelings may include a range of different pain sensations and you may also notice other feelings like anxiety, sadness or anger which are often associated with long-term pain. Research suggests that health and well being are related to being able to experience a range of emotions, rather than striving to be positive or happy all the time, and we will focus on helping you to make space for all the feelings associated with your pain.

### **Osteopathic treatment**

In session 1 we will explore some of the thoughts and feelings you notice during the examination and treatment process.

For example, if you feel pain standing still, what does that pain really feel like? Where are the areas of tension and relaxation around the pain, the hard and soft edges? What happens if you breathe gently into it?

What thoughts come up when painful areas are touched or moved?  
How do these thoughts affect your body and your sense of self?

## Home practice:

**Practice** 'being present' by doing the sitting meditation mindfulness exercise for about 10 minutes each day.

**Plan** an activity for this week - something that you're willing to do despite pain. What will you do? When? Where?

What thoughts or feelings might come up and get in your way?

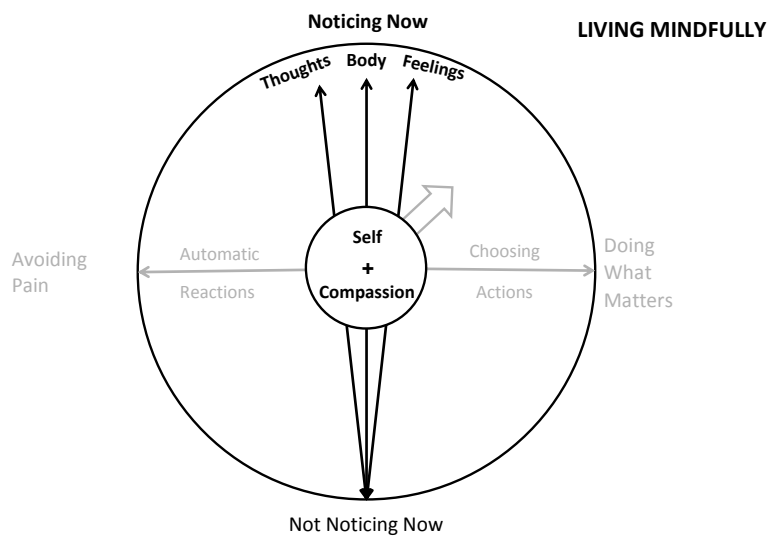
**Try** this 10 second acceptance exercise for difficult feelings

NOTICE	Where's the feeling? Where's it most intense?
BREATHE	Gently breathe into the feeling
EXPAND	See if you can open up around the feeling a little bit to give it some space
ALLOW	Even though you don't like this feeling, see if you can just let it sit there for a moment. You don't have to like it - just allow it to be there.

Whether you do the activity or not, it doesn't matter; just notice what happens. If you have difficult thoughts or feelings, see which ones you are able to carry with you and make a note of any thoughts, feelings or sensations that seem to stop you.

## SESSION 2: LIVING IN THE PRESENT MOMENT

Mindfulness has been described as simply paying attention in a particular way, on purpose, non-judgmentally and in the present moment. Meditation exercises aim to bring awareness and a kindly, curious acceptance to all present moment experiences, to increase the ability to experience life more fully, as shown in the compass diagram below. In session 2, we will be focusing on noticing and working with the body sensations that arise during your osteopathic treatment and exploring mindful movement exercises for your home practice.



### Since the last session

What has been going well? What have you been doing? What were you able to do and to feel? What has been going less well?



## Mindfulness Body Scan

Lie down on your back in a comfortable place, if you can, or make yourself comfortable in a sitting position. Make sure that you will be warm enough.

Allow your eyes to gently close. Feel the rising and falling of your stomach area with each in breath and out breath. Take a few moments to feel your body as a whole, from head to toe, the envelope of your skin and the sensations associated with touch and pressure in the places where you are in contact with the bed or the floor.

Now bring your attention to the toes of your left foot. As you focus on your toes, see if you can direct or channel your breathing into them, so it feels like you are breathing *in to* your toes and *out from* your toes. It may help to imagine your breath travelling down from your nose into your lungs and then continuing down through the abdomen and left leg all the way to the toes and then back again and out through your nose. Allow yourself to *feel* any and all sensations from the different toes. If you don't feel anything, that's fine too. Allow yourself to feel 'not feeling anything'.

When you are ready to leave your toes and move on, Take a deeper deliberate breath in all the way down to your toes and on the out breath allow them to 'dissolve' in your mind's eye. Stay with your breathing for a couple of breaths and then move on in turn to the sole of your foot, the heel, the top of the foot and then the ankle. Continue to breathe *in to* and *out from* each part as you notice the sensations you are experiencing, and then letting go and moving on.

Each time you notice your mind has wandered off, just observe without judging what you were thinking or feeling and gently bring your attention back to your breath and the region of your body you are focusing on. Continue the body scan by moving up through your left leg, then your right leg, your abdomen and chest, arms, neck and head.

Finish by take a few moments to feel your body as a whole again and the sensations of touch and pressure where you are in contact with the bed.

Practice the body scan several times a week. Let go of any expectations and don't worry about what happens. If you fall asleep, try doing it with your eyes open. If your mind '*wanders off*', just notice your thoughts as passing events and remember that coming back to the breath is as much a part of the practice as staying with the body. Imagine that you are planting a seed; the more you poke around, the less it will develop. All you need to do is provide the right conditions of quiet, regular practice.

## **Home practice:**

**Practice** either a *Sitting Meditation* or a *Body Scan* each day.

**Try** the '3 Minute Breathing Space' when you feel stressed

1. Bring yourself into the present moment by adopting an alert but comfortable posture. If possible, close your eyes.

Ask yourself: "What is my experience right now... in thoughts... in feelings... in bodily sensations? Just notice and accept this as your experience right now, even if it is unwanted.

2. Narrow your focus by gently placing your attention on your breathing. Notice each in-breath and each out-breath as they follow, one after the other. Breathing helps to anchor us in the present and to tune into a state of awareness and stillness.

3. Expand your awareness around your breathing so that it now includes a sense of your body as a whole, your posture and facial expression. Gently widen your awareness to notice the sounds and smells inside and outside this room and when you feel ready, gently open your eyes.

**Plan** a mindful movement activity for this week.

What are you willing to do, despite pain? When? Where?

Whether you do the activity or not, doesn't matter; just see what happens. Notice which difficult thoughts or feelings you are able to carry with you and which ones seem to stop you.

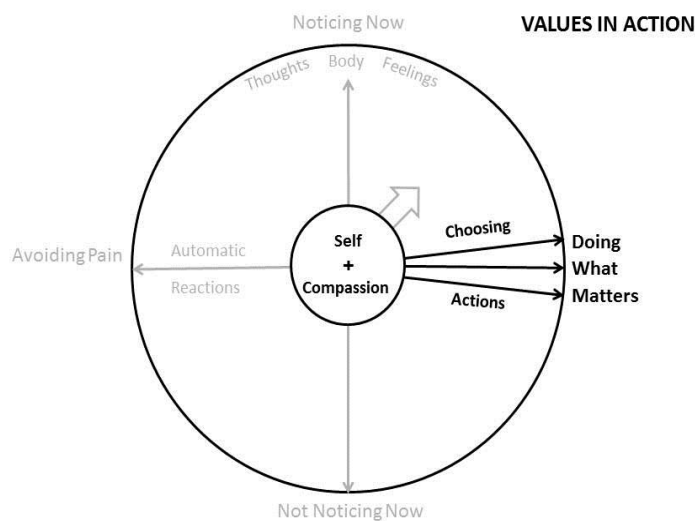
## SESSION 3: LIVING A MEANINGFUL LIFE

### Since the last session

What has been going well? What have you been able to do? What has been going less well?

### Values

This session is about doing what matters - finding new ways of living more actively in accordance with your personal values, with the way that your body is right now, despite pain.



You may already know the things that are important to you in areas like health and personal growth; relationships; social roles and leisure activities; and work and education. You can use the diagram on page 9 to identify one life area to focus on.

If it's more difficult to identify the things that really matter to you, imagine that you can 'fast forward' into the future and look back on what your life has been about...

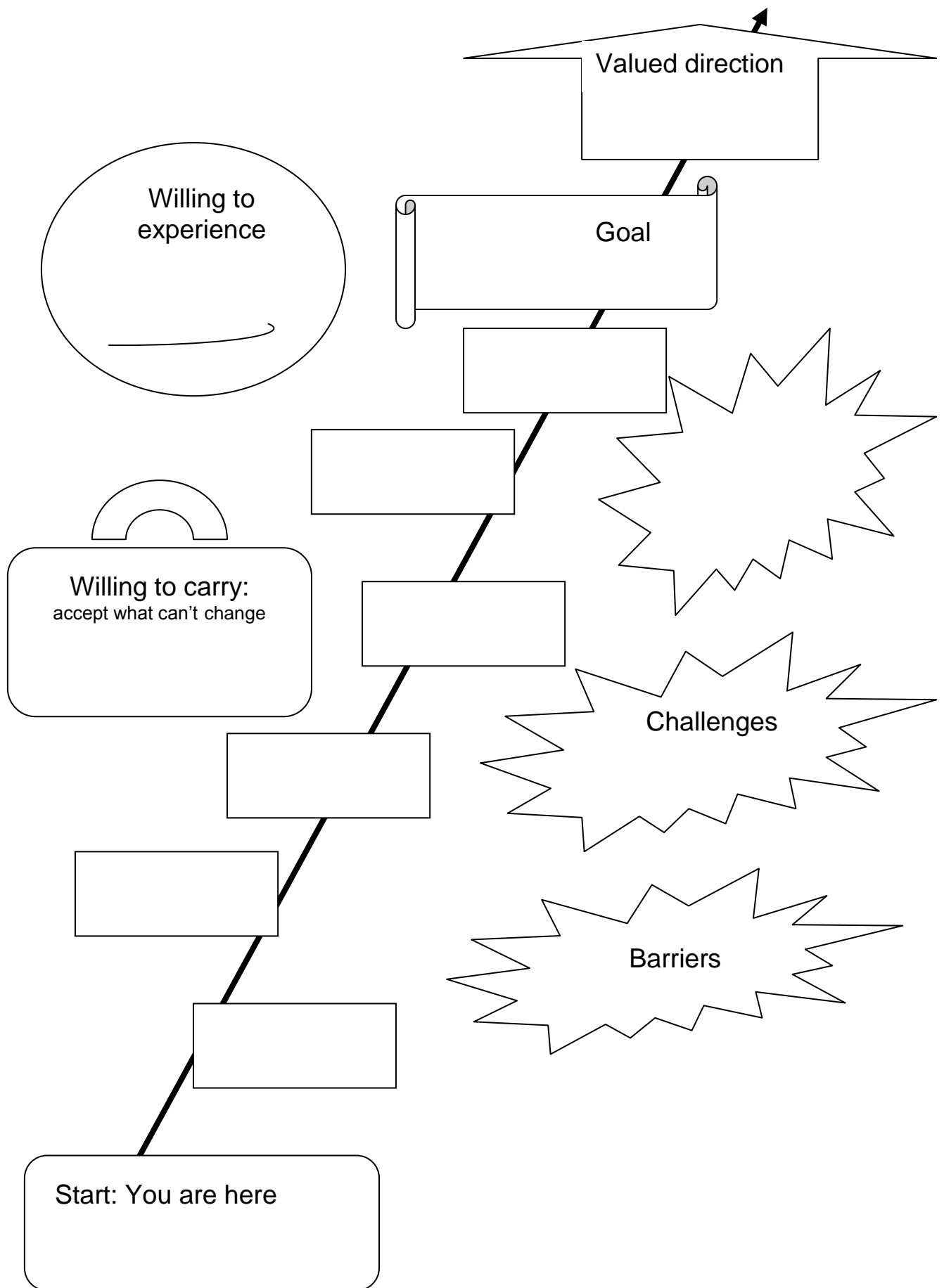
Imagine you are an 'invisible observer' at your own funeral or at your 80th birthday. Look around and see who you would like to be here. What does this group of people show you about what's important in your life? (e.g., family, friends, work colleagues, people in your community etc.).

Imagine that the people who are most important to you are speaking about you. What would you like them to say? What would you like to be remembered for?

Write down 2 or 3 of those qualities and values. How fully are you living in accordance with these life values at the moment?

What would you like to be different? What goals would help you live a more valued life, right now, despite pain?

What might get in your way? What thoughts, feelings or physical barriers might stop you from achieving your goal?



Start planning the first small steps towards a goal that you value...

**Home practice:**

**Practice** either a *Sitting Meditation* or a *Body Scan* each day.  
Notice what happens.

**Use** the '*3 Minute Breathing Space*' when you feel stressed.  
Notice what happens.

**Plan** an activity that will take you one small step closer to living more fully in accordance with your value.

Whether you do the activity or not, doesn't matter; just see what happens. Notice any difficult thoughts or feelings that you are able to take with you and carry on, despite the pain.

Notice any thoughts and feelings which seem more difficult to carry and which seem to stop you from achieving your plans.

## SESSION 4: LIVING A FULLER LIFE

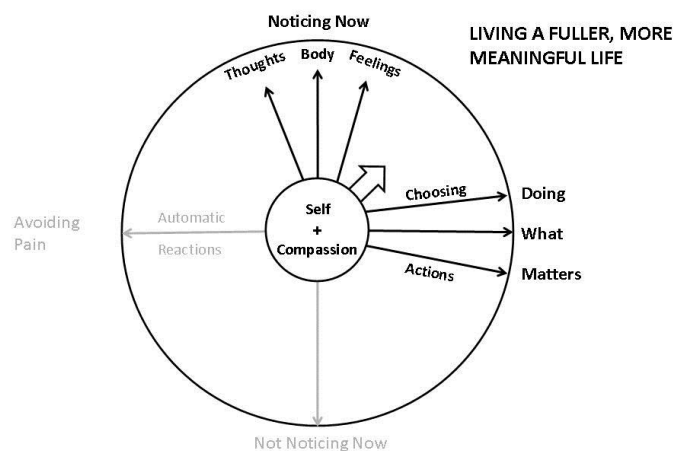
### Since the last session

What has been going well? What have you been able to do? What has been going less well?

Mindfulness can help us to notice what's happening right now, which may be very different from what we think or fear is happening on the basis of past experience. Awareness of all our thoughts, feelings and bodily sensation in the present moment can then open up possibilities for choosing responses and actions that are not available if we are reacting on 'auto-pilot'.

Identifying our values and what is meaningful in our lives can help provide direction, in planning to do the things that matter.

When we combine mindfulness and awareness of our values with committed action, life can expand to be fuller and more meaningful and 'ordinary' activities become more interesting.



## Informal Mindfulness Exercises

### 1) Mindfulness in your morning routine

Pick an activity that's part of your daily morning routine e.g. brushing your teeth, shaving or having a shower. When you do it, focus totally on what you're doing: body movements, taste, touch, smell, sight, sound etc. For example, when you're in the shower, notice the sounds of the water as it sprays out, and as it hits your body, and gurgles down the hole. Notice the water temperature and the feel of the water in your hair and on your shoulders and running down your legs. Notice the smell of the soap and shampoo and the feel of them against your skin. Notice the sight of the water drops on the walls or shower screen, the water dripping down your body and the steam rising upwards. Notice the movements of your arms as you wash or scrub or shampoo. When other thoughts arise, just notice them, let them be, and bring your attention back to the shower. Again and again, your attention will wander. This is fine, it's what minds do. As soon as you realise it's happened, gently acknowledge it, note what distracted you and bring your attention back to the shower.

### 2) Mindfulness in your day to day jobs

Pick a job you normally rush through or distract yourself from or one which you 'grit your teeth' and try to 'get through it' e.g. washing dishes, cooking food, cleaning up. Aim to do this chore mindfully e.g., when you're cooking, notice the colour, shape and smell of the food, the feel and weight of the cooking utensils. Notice the hiss of steam from water boiling, sizzling sounds of food cooking, changing smells and textures as it cooks. Notice the grip of your hand on a spoon or knife and the movement of your arm and shoulder. If boredom, frustration or other thoughts arise, just notice what has distracted you and bring your attention back to what you are doing right now. Again and again, your attention will wander. As soon as you realize it has happened, gently bring your focus back to what you're doing.



## Home practice:

**Practice** either a Sitting Meditation or a Body Scan each day. Notice what happens.

**Plan** an informal mindfulness exercise or mindful movement. Whether you do it or not, doesn't matter; just see what happens. Notice what kind of thoughts and feelings distract you from the thing you are focusing on. Notice any thoughts or feelings that seem to stop you from carrying on your activity.

**Choose** another aspect of your life that you value but are not living as fully as you would like (e.g. on the diagram on page 9). Write down a goal and an action that could take you one step closer to living more fully in accordance with that value.

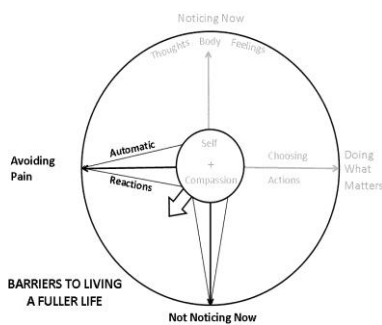
## SESSION 5: OVERCOMING OBSTACLES

### Since the last session

What has been going well and what has been going less well?

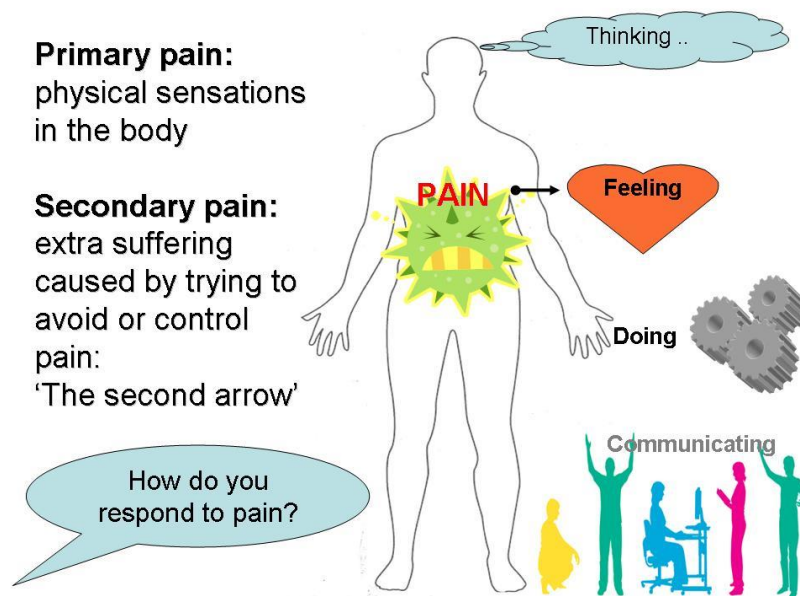
This session is focused on identifying the things that might get in the way of doing what matters to you, and finding ways to overcome or manage these obstacles. What difficulties have you noticed over the last four weeks? Have you noticed any patterns in difficult thoughts or feelings or problems in your interactions with other people over the last four weeks?

Barriers can bring the whole focus of life back on to pain and how to avoid it, at the cost of experiencing things more fully. But making space for difficult thoughts and feelings can be one way of opening up new possibilities for overcoming obstacles.



## Pain and suffering

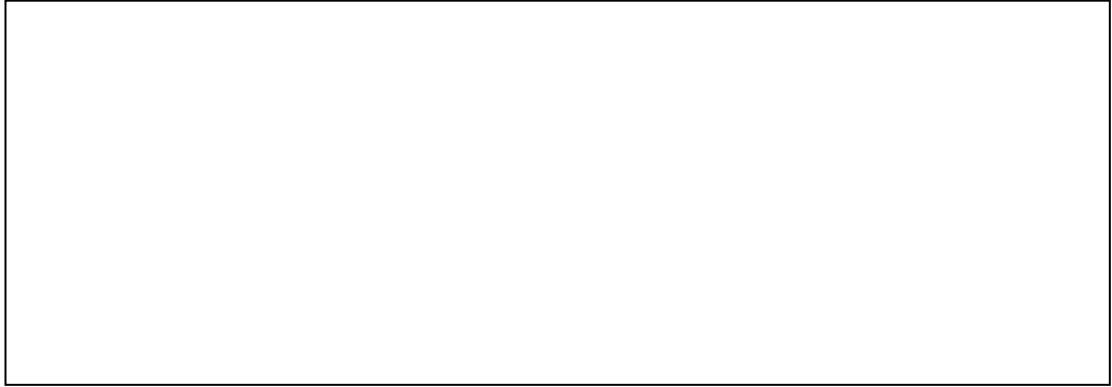
Some barriers cannot be overcome and we have to accept what can't be changed. At other times, it's helpful to recognise that physical pain and suffering are different and are described in Buddhism as the '1<sup>st</sup> and 2<sup>nd</sup> arrows'. Painful thoughts and feelings often accompany long-term pain but regular mindfulness practice can help to support different responses.



## Explaining pain

Pain is usually invisible to other people and it can be difficult to explain what living with long-term pain is like. Without a clear understanding, other people's attitudes and responses might also become barriers. Are there any ways in which the people in your life who matter could support you in managing pain better and living a fuller life? What would you like them to know?

**Physical obstacles** may also limit you from living as fully as you would like. How could osteopathic treatment and exercises be focused more effectively to help you achieve your goals?



**Home practice:**

**Practice** either a Sitting Meditation or a Body Scan each day.

**Plan** a mindful movement activity that would take you one step closer to living more fully in accordance with your values. Whether you do the activity or not, doesn't matter; just see what happens. Notice the thoughts or feelings that you are able to carry with you, despite pain, and those that stop you.



**Write a letter** about what your life now is like to someone who matters (you don't have to send it) and explain how they could support you in managing pain effectively and living a fuller life.

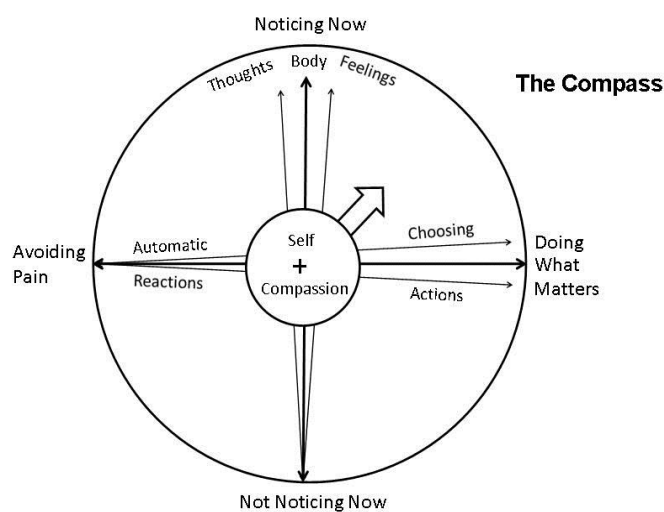
## SESSION 6: MOVING FORWARD

### Since the last session

What has been going well? What have you been able to do? What has been going less well?

This is the last course session and it is focused on reviewing what has changed in the ways that you now manage pain. You will be creating a plan to guide your self-care and healthcare after the course ends, including strategies for overcoming obstacles and accessing support, if needed.

The plan will be based on your personal goals, with mindfulness practice to help you to choose the most appropriate response for each moment, and the commitment to act in accordance with your values to live a fuller life. At the centre of your plan, like the Compass, are kindness and self compassion and an awareness of yourself as a calm, grounded 'observer'.



## Valued Living Plan

Name:	Date:
The area of life I aim to focus on is...	
The values I want to express more fully are...	
My goals are...	
The steps I will take to achieve my goals are...	
The challenges and barriers I may encounter are...	
The things I am willing to experience and carry with me are...	
My plans for self care are...	
My other sources of support are...	
The ways osteopathic treatment can support my plans are...	

## Home practice:

**Practice** one mindfulness exercise of your choice each day (e.g. a Sitting Meditation, a Body Scan or a mindful movement exercise). Make this a regular part of your daily routine.

My daily mindfulness practice will be:

I will practice in: the morning / the evening / at            o'clock

**Plan** one activity each week that will take you closer to living more fully in accordance with your values. Notice the thoughts and feelings you can carry and the familiar ones that stop you.

The difficult thoughts and feelings that might stop me are:

**Use** the exercises in this workbook to help you make space for difficult thoughts and feelings and to manage the barriers that seem to block your pathway to leading a fuller life.

**Share** whichever parts of your Valued Living Plan you wish to with people who matter (e.g. friends and family, GP, osteopaths and other health carers who can help you to manage your pain). Enlist their help in supporting you to live a fuller life and to find ways of overcoming the obstacles that will appear.

The people I want to share my plans with are:

## FOLLOW UP EVALUATION SESSION

How are you? What is your life like at the moment? How much are you able to use the mindfulness techniques and awareness of your present moment thoughts and feelings to manage pain?

What's been going well since the course? How easily have you been able to put your Valued Living Plan in action? What has improved in your life since the course ended?

What has been going less well? What physical or emotional or other barriers have you encountered? What has become more difficult or stayed the same since the course ended?



Remembering that this course is based on having:

*'The courage to change what can be changed,  
The serenity to accept what can't  
And the wisdom to know the difference'*

How would you like your life now to be different? What are your valued life directions and action plans?

What resources are available to help you on the journey?  
(e.g. self-care, home practice, other people, books, courses...)

Finally, are there any ways in which osteopathic treatment could be more effective in supporting your life values and goals? Is there anything you would like to tell us about how to help you to manage your pain, in order to live a fuller life?

Thank you for taking part in this course.  
We are happy to receive any feedback about your experiences.

## RESOURCE LIST

### Books

David Butler & Lorimer Moseley. 2003. *Explain pain*. Noigroup Publications.

Vidyamala Burch. 2008. *Living well with pain and illness: the mindful way to free yourself from suffering*. Piatkus Books.

JoAnne Dahl. 2005. *Living beyond your pain. Using Acceptance and Commitment Therapy to ease chronic pain*. New Harbinger Publications.

Margaret Caudill. 2002. *Managing pain before it manages you*. The Guildford Press.

Russ Harris. 2009. *ACT Made Simple*. New Harbinger Publications.

Jon Kabat-Zinn. 1990. *Full catastrophe living: how to cope with stress, pain and illness using mindfulness meditation*. Piatkus Books.

### Websites

<http://www.pathoutofpain.com>

<http://www.livinglifetothefull.com>

<http://www.breathworks-mindfulness.org.uk>

<http://www.thehappinesstrap.com>

<http://www.expertpatients.nhs.uk>

## Appendix 4: Patient Application Form

### Research Study - Mindfulness Programme for Persistent Pain

The British School of Osteopathy is developing a new mindfulness-based pain self-management course to help patients manage long term symptoms more effectively and improve quality of life and well being. If you have read the Participant Information Sheet (which is available at the clinic reception desk) and would like to explore whether this course may be of help to you, please complete this form and return it to the reception desk. You will then be contacted by Hilary Abbey, the clinic tutor who is running the course and conducting research into its effects, to arrange an Introduction Interview.

Date	
Name	
Address	
Best contact phone number	
Email address	
Date of birth	
GP name & address	
How long have you had pain for?	
Please tell us a little about how long term pain currently affects your life.	
Please tell us what you would hope to get from taking part in this course.	

## **Appendix 5: Pre-course Interview Recording Consent Form**

I understand that healthcare therapists monitor their work to learn from experience how to improve services and standards of care. One way to do this is to make audio-recordings of meetings and review them later to see how services can be improved.

I understand that the researcher, Hilary Abbey, would like to record my assessment meeting for the Mindfulness-Informed Pain Management Programme.

I understand that whether or not I give permission for the meeting to be recorded will have no influence on the quality of care I receive from the BSO.

If I do consent to be recorded, I understand I can ask for the recording to be stopped at any time during the meeting, without giving a reason, and that this will have no bearing on my standing as a patient at the BSO, the outcome of the meeting, or on my future care.

I understand the recording will be heard only by Hilary Abbey and her supervisors and will be kept securely and will not be accessible to others, including BSO staff or students.

At the end of this meeting, if I do not decide to join the course, I understand that the audio-tape of my assessment interview will be deleted immediately.

If I do decide to join the course, I understand that the tape of this interview will form part of the data collected about me during the study. It will be deleted at the end of the study in February 2014 and will not become part of my BSO records. I understand my interview recording will be deleted sooner, if I request.

I give permission for my assessment session with Hilary Abbey to be audio-recorded.   
(1 copy for patient; 1 copy for researcher)

Patient name:

Signed:

Date:

(Patient)

Researcher name:

Signed:

Date:

(Researcher)

## Appendix 6: Pre-course Interview Schedule

1. Please tell me a little about how long term pain has affected your life?
2. What have you been struggling with?
3. What have you tried so far to get rid of or control the pain?
4. How well have those approaches worked?
5. How much has the struggle to get rid of or control the pain cost you?  
(e.g. Time, energy, work, family role, social life, lost opportunities etc.?)
6. If you were less troubled by this pain, what would you be doing differently?  
(e.g. What matters most to you in life? Is there scope for change?)
7. If your struggles have not got rid of the problem or taken you closer towards the life that you want, how do you see your options?
8. If there was an opportunity to try something different, would you be willing to work on building a more fulfilling life, despite the pain?  
(e.g. motivation, readiness)

Discuss how this course differs from medical pain management courses because it aims to increase awareness of habitual responses and increase flexibility in responding but not to reduce or control pain.

Discuss the need to engage with mindfulness-informed course activities and commit to trying a new approach for six weeks.

Discuss the mix of osteopathic treatment and other activities and explain that normal treatment in the General Clinic stops for 6 weeks.

Discuss that this is the research stage of developing a new course and involves audio-taping sessions and an interview after three months.

9. Would you like to join the course at this stage and participate in the research study to develop it?
10. Do you have any other questions you would like to ask?

## Appendix 7: Study Consent Form

**CONFIDENTIAL**

**Participant Identification Number:**

### CONSENT FORM

**Title:** Developing an Osteopathic Mindfulness Programme for Persistent Pain

**Researcher:** Hilary Abbey

**Contact:** [H.Abbey@bso.ac.uk](mailto:H.Abbey@bso.ac.uk)

*Please tick where appropriate*

1. I confirm that I have read the Participant Information Sheet for this study and I have had the opportunity to ask questions and to have them answered
2. I understand that the pre-course and follow up interviews and the six sessions of the pain management course will be audio-taped and transcribed
3. I understand that I will be asked to review my interview transcripts to check for accuracy and to amend any of my responses, if appropriate
4. I understand that information about osteopathic treatment will be recorded on my BSO case notes as usual but additional pain management information will be kept separately and securely for the duration of the study and then destroyed
5. I understand that my data will be used anonymously for the purpose of this study only, and that I will not be identifiable in any written reports
6. I understand that my participation in this research is voluntary and that I am free to withdraw from the study, at any time, without giving any reason
7. I understand that I can withdraw from the study and request that all my data is destroyed and return to treatment in the BSO General Clinic, if I wish to
8. I agree to take part in the above study
9. I would like to receive a summary of the results

Name of Participant

Date

Signature

Name of Researcher

Date

Signature

## Appendix 8: Post-course Interview Schedule

It's been about 6 months since we worked together and I would like to learn from your experience about how to improve the course, so

Please could you tell me a bit about how you have been since the course.

Focus on verbs – the way they have responded to things that happen such as increased pain, and things they have done to take care of themselves

Prompts: how you have coped with pain levels, general health changes, feelings of well-being, things that have gone well or less well, problems and flare-ups

Was there anything that you remembered or found helpful about the course? What? Do you practice? Could you give me an example?

Was there anything you found confusing or unclear or unhelpful?

Was there anything that you think was missed out or would have been worth paying more attention to?

2. What was your experience of the mindfulness exercises during and after the course? Has it been useful? If so how?

What have you found helpful or difficult about it? Have you carried on any kind of regular practice?

Do you use informal mindfulness in day to day life? Focus more on the function of mindfulness in their life rather than doing exercises for own sake. Can you tell me more about what you do .and how that helps?

3. Is there anything you do now that you didn't do before? Can you tell me more about how you live with pain now?

Prompts: being present, accepting difficult feelings, noticing thoughts, experiencing your 'resilient self', acting on your values, achieving goals

4. Since attending the course, have you made any changes in your lifestyle? Did you create a VLP? Did you find it helpful? How? Why? Why not?

5. Have there been any changes in your osteopathic treatment at the BSO or other healthcare since you participated in the course?

If yes, how has it changed? Prompt: treatment goals, type, frequency?

If no, what's helpful? Is there anything you would like to be different?

6. Do you think the course has helped you to live better with your pain?

If yes, how did it help? What did it help you to do that you weren't doing before?

If no, what would you have like to have been different? What would have helped you to get more from the course?

7. What are your thoughts about the future and what might help you to live well?

Prompts: new goals, barriers, need for additional support or resources

8. If you chose to check the transcript of your first interview, is there anything that you would like to say about it?

Prompts: things to change, surprises

9. Is there anything else you would like to say?

Thank you very much for your time and participation in this study.

## Appendix 9: Reflective field note questions

1. What are my immediate experiences of this session?  
Her story  
Her presence (mind and body)  
Her awareness  
Her values  
Her motivation
2. Rapport and relationship.  
What aspects of her might have influenced me?  
What aspects of me might have influenced her?
2. Content /story. How close am I to her material?
3. My mindfulness and ability to be present.
4. My fusion with thoughts and avoidance of feelings.
5. My values and meaning.
6. What were my 'fore-understandings' about this patient?
7. How might they have influenced me in this session?
8. Where am I in the research process?
9. How might this have affected the session?
10. What do I think went well? How?
11. What do I think went less well? Why?
12. What might I need to check on the tape?
13. What do I need to consider for her next session?
14. What do I need to consider for me?
15. Anything else?



## Appendix 10: Example of a field note

My reflections on my first course session with A immediately afterwards.

Wow! That was a session. I have no idea if that was an ACT and mindfulness session. I think it's probably the closest I've got to one so far and it felt really deep and very powerful partly because of his generosity in being willing to share how he was feeling. I feel very moved by it and a bit tearful. I know the focus is supposed to be on helping people develop their own resilience and not on pain relief but I was bloody glad that he felt a bit of relief when he got up. I don't know how I would have coped if he'd actually felt the same or worse but he did move a bit better and he looked a bit lighter, so something shifted. I'm not sure whether the act suggestions I made were sensible but it seemed reasonable to begin to get him to notice and objectify the thoughts about his pain and I'm hoping to, if he chooses to bring some of the cards in, that we can use those to identify some of the thoughts he might be really fused with and find a way of making some space in them and that the breathing exercise rather than fighting through things might lead him a bit more towards a more compassionate sense of acceptance for the pain in his neck.

I think I was reasonably creative in being able to adapt, not the whole body scan, or not the sitting meditation, into something that seemed relevant and do-able for him. Interested that he commented that it seemed a bit quick to go through the exercise. My choice to go quickly was because I felt like he might get upset staying with the pain or very uncomfortable physically, so I deliberately didn't leave him there too long, but I was perhaps over-cautious. He lives with it, he's used to it. I'm aware that I'm worried that opening up like this might make him crash a bit lower. Nothing I can do about that. It might be part of the process. He's got my number if he chooses to use it and I guess he's got other support networks but, for some reason, it's making me think of D's adverse events stuff.

My stage fright disappeared once we got going. I've got the Die Hard movie metaphor images to keep an eye on and play with in the future. I felt that the soft tissue work I was doing was mindful for me and I kept checking in with him so I think it was, although we were talking about other things, I think intermittently it was connecting him with what was happening rather than just kind of wrenching his neck around. Although I'd written on my plan to stop and be mindful myself and pause, I don't think I did any of that, consciously, but I think it was slow enough and I think that was really useful, although we've talked about this being turbo-charged osteopathy which suggests really speeding up and doing lots, actually, for me, it's about slowing stuff down to make the spaces, to feel and see and think what's going on. There was something else I wanted to say and I can't think what it was ...

I need to be aware and modify that booklet thing, the patient workbook, so that people don't feel that they have to suddenly start fitting everything, doing everything, and I need to put a health warning on it and go through it with people in the first session, not just give it to them. I've been a bit lazy and negligent, maybe because I was slightly embarrassed about whether it's clunky, and I'm trying to teach people things that they already know much better than I do, so I need to have a workbook that I'm comfortable with rather than one I'm a bit embarrassed about. It's getting there and this is useful feedback for making it less harmful.

## Appendix 11: Example of a research diary entry

11/01/15 Preliminary thoughts from starting analysis on the A transcripts

I chose to start with A because I thought I had done the best work with him, as he seemed to have the best outcome. I can now see that a lot of that was down to his attitude and way of working systematically through the workbook material himself and throwing himself enthusiastically into mindfulness, rather than what went on in the session. So at least we know the first draft of the written material had some effect! It's been interesting and a bit depressing to see, from the perspective of what I have learned over the last year and what I know now, how many opportunities I lost to explore present moment body experiences and promote exposure. It's hard to see how often I had my osteopath head on and ignored or derailed opportunities to explore his experiences. I can see why L feels crazy listening to us talk to much. The good stuff is that a lot of my non-osteopath talking is aiming to bring out ACT related stuff and it seems to make sense to him but is it 'about' the past or the future or 'out there'. The bad stuff is that I add in a lot of my own feelings, thoughts and interpretations and often say what I think something is or means before I have explored his experience. There are relatively few instances (in Sessions 1 to 5 so far) where we are talking about what he is noticing and what that's like for him in the moment while I have my hands on. The good part of this is that there will be relatively few critical body-based incidents on which to focus a deeper IPA and/or CA analysis of exposure interventions.

Part of me wishes I had had the time to analyse the transcripts in between sessions, as originally planned, as this could have speeded up my/our learning process a lot and led to better outcomes for the PD participants. However, I also think that I was feeling so uncertain and anxious about how to combine ACT and osteopathy, and whether I could do either of them well, that I might not have 'seen' or understood what was in the data because I was so close to it, and that getting a lot of constructively critical feedback from Lorraine would have been hard to cope with at the same time. I have a bit more distance between me and the data now and a little more understanding and confidence in myself, so it is easier to see my errors and accept them as part of the learning process.

In doing DA first, I am hoping to see the bigger context of socio-cultural and medical discourses about chronic pain and healthcare relationships within which my one-to-one sessions with these four people occurred, and therefore the expectation and rules which guided the way that the data were co-created and constructed. I hope this will help me to identify my assumptions and beliefs as part of the fore-understandings included in the double hermeneutic cycle of the IPA analyses. It will be important to be able to describe the wider context of my analyses, as IPA apparently gets more difficult in longitudinal studies because of the increasing relationship between participants and the practitioner/researcher. It's hard just to read the transcripts looking for DA relevant bits so I am writing down things as I spot them, in the hope that this will be useful for IPA and may save some time...? I have already had a couple of thoughts that might help to make our current clinical processes better...

## Appendix 12: Overview of other data analysis methods

Analysis started with IPA because of the researcher's familiarity with this approach, and began with Patient A's transcripts because his pain responses changed the most. Notes were added to transcripts to highlight non-verbal utterances and transcripts were read iteratively to gain familiarity (Smith et al 2009). Notes about language structure, content and perceived purpose were added to transcripts, followed by a second layer of conceptual comments which aimed to map relationships between concepts and emergent themes (Starks and Trinidad 2007). IPA is typically conducted on interview transcripts which focus on one individual's experience, but this data was from communication in therapy sessions, so the plan was revised using IPA plus Discourse Analysis to analyse interactive patient-practitioner discourses. A four-stage Discourse Analysis plan was developed (ten Have 2010) with the aim of using Relational Frame Theory as a language-based bridge between IPA analyses of participants' experiences and discourse analyses.

Table 1: Combined methodological approaches and research questions

	IPA	RFT and Metaphors	Discourse Analysis
Patient	What are the patients saying about lived pain experience on the course?	How do metaphors about pain relate to patient's beliefs and actions?	What are patients' discourses about the body, self and responses to pain?
Osteopath	What is the osteopath saying about lived pain experience on the course?	How do metaphors about pain relate to osteopath's beliefs and actions?	What are the osteopath's discourses about the body, pain, and pain responses?
Intervention	How do these experiences link with ACT exercises?	Are the experiences, metaphors and different discourses related	How do different pain discourses arise or change?
Interaction	How do their individual experiences influence the therapeutic relationship?	How do the metaphors and discourses influence responses to pain?	How do 'critical incidents' illustrate tensions? What discourses 'work' best?

Adapted from Smith et al (2009) and Wooffitt (2005)

This analysis process raised questions, however, about whether the macro-level focus of DA could identify changes in communication processes over a relatively short intervention period, so Conversation Analysis (CA) was also explored as a potentially suitable micro-analytic method. Meanings in CA, however, are not usually considered to be generalisable beyond the context in which they occur (ten Have 2007), which can limit transferability to other settings (Rampton et al 2014). CA and DA therefore both offered partial solutions for analysing the discourse data but they were based on different methodologies which could not congruently be combined with each other, or with IPA. An alternative approach which could do justice to the interactive nature of the data and address the process-based research questions more effectively was required. Linguistic Ethnography was chosen as it provided a principles-based approach with systematic methods for integrating layered analyses of social context and interaction (Copland and Creese 2015).





Figure 2: Colour coding of the six treatment session transcripts



Table 1: Example of colour coding (O = Osteopath; P = Patient)

Transcript text A1 - lines 219-229	Coding category
O: ... what would have changed in your life?	Approach values
P: What would have changed in my life?	Clarifying
O: What do you want to be different?	Approach values
P: Umm ... I'd like ... I'd like not to be second guessing my pain and the	Awareness
P: reaction that I'm...	Awareness
P: of the thing that I'm going to do so I'd like not to be stopping before I	Approach values
start	Acknowledging
O: Okay.	Unclear
P: If that makes sense?	Unclear
O: Yes.	Unclear
P: I'd like the ...	Unclear
O: So you kind of predict, if I do this, it's going to hurt.	Clarifying
P: If I do this, umm, it's ... it's going to be a negative, so I'm not going to	Avoidance
do it	

Table 2: Example of an avoidant response to an interview question

Transcript text A1 - lines 10-13	Coding category
O: So it would be really helpful if you could just kind of tell me a bit about what you're struggling with at the moment	Question
P: Well the biggest thing for me, the biggest problem I've got at the moment, is walking because my calcaneals are just so sore. They get worse towards the end of the day and, by the end of the day, it's like walking on bloody stumps, so I end up just lying down and putting my feet up in the air	Avoiding pain

Table 3: Example of rapid shifts in focus

Transcript text A2 - lines 417-419	Coding category
P: I am getting better at saying no	Approaching values
P: but then saying no just means you cut out your life	Avoiding pain
O: Yes, it's trying to get that balance isn't it	Awareness

## Appendix 14: Linguistic coding tables

Table 1: Key of abbreviations in the coding tables

O	Osteopath	P	Patient
I	Interview session	T	Treatment session
Q	Question	A	Answer
S	Statement	R	Receipt
CP	Choice point	MO	Missed opportunity
PM	Present moment		

Table 2: Descriptive statistics for questions and statements (n=966)

Session	O Q % (n)	P Q % (n)	O S % (n)	P S % (n)
Pre-course Interview	6 (19)	13 (8)	5 (18)	3 (6)
Treatment 1	16 (55)	16 (10)	18 (67)	17 (34)
Treatment 2	12 (41)	18 (11)	14 (52)	14 (28)
Treatment 3	19 (64)	11 (7)	13 (45)	9 (18)
Treatment 4	15 (50)	19 (12)	14 (50)	14 (28)
Treatment 5	11 (37)	13 (8)	11 (41)	18 (38)
Treatment 6	13 (44)	5 (3)	19 (68)	23 (47)
Follow-up interview	8 (27)	5 (3)	6 (23)	2 (4)
Total	100 (337)	100 (62)	100 (364)	100 (203)

Table 3: Descriptive statistics for language structure characteristics

Category	O Q % (n)	P Q % (n)	O S % (n)	P S % (n)
Open question	26 (87)	5 (3)		
Closed question	73 (248)	87 (54)		
Rhetorical question	1 (2)	8 (5)		
Informing statement			43 (158)	60 (120)
Advising statement			31 (113)	7 (15)
Accepting statement			13 (46)	1 (2)
Disclosing statement			12 (42)	30 (61)
Other/incl. jokes			1 (5)	2 (5)
Present focus	38 (127)	27 (17)	28 (101)	19 (39)
Past or future focus	56 (189)	66 (41)	67 (243)	76 (155)
Unclear focus	6 (21)	7 (4)	5 (20)	4 (9)
During face-to-face talk	42 (142)	61 (38)	52 (188)	51 (103)
In hands on treatment	58 (195)	39 (24)	48 (176)	49 (100)

Table 4: Changes in osteopath's statements over six sessions (%)

Category %	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
Inform	56	60	53	43	38	33
Advise	11	13	18	19	17	11
Explore	26	21	24	32	32	52
Disclose (osteopath)	7	6	6	5	12	4
Disclose (patient)	22	26	42	29	22	26

Table 5: Differences between interviews and treatment sessions

Category % (n)	Interview S	Treatment S	Interview Q	Treatment Q
Patient's problem	53 (27)	82 (426)	67 (38)	85 (290)
Research study	41 (21)	8 (40)	31 (18)	4 (15)
Interpersonal/other	6 (3)	10 (50)	2 (1)	11 (37)
Open question			21 (12)	23 (78)
Closed question			79 (45)	77 (257)
Informing statement	47 (24)	50 (254)		
Advising statement	37 (19)	22 (109)		
Accepting statement	6 (3)	9 (45)		
Disclosing statement	10 (5)	19 (98)		
Present focus	4 (2)	27 (138)	2 (1)	42 (143)
Past or future focus	94 (48)	68 (350)	24 (96)	51 (175)
Unclear focus	2 (1)	5 (28)	2 (1)	7 (24)

Table 6: Language differences between hands-off and hands-on interactions

Category % (n)	Hands off S	Hands on S	Hands off Q	Hands on Q
Patient's problem	71 (196)	88 (257)	73 (132)	90 (196)
Research study	18 (50)	4 (11)	17 (30)	1 (3)
Interpersonal/other	11 (30)	8 (23)	10 (18)	9 (20)
Present focus	16 (44)	33 (96)	20 (29)	80 (115)
Past or future focus	79 (219)	62 (179)	62 (142)	38 (88)
Unclear focus	5 (13)	5 (16)	36 (9)	64 (16)
Outcome CP or MO	24 (66)	24 (70)	14 (25)	30 (66)

Table 7: Changes in the osteopath's linguistic patterns over six sessions (%)

Category %	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
Present moment focus	27	12	28	30	15	16
Open questions	12	9	21	13	10	9
OC and PM focus	12	7	20	27	19	12
Familiar questions	62	42	60	50	74	45
Longer response	44	75	51	36	64	63
CP or MO	28	15	19	46	26	15

Table 8: Factors associated with statement type (%)

Coding category %	Hands-off	Hands-on	Present	Past	Familiar	Strange
Inform	32	56	64	37	59	41
Advise	12	16	13	15	17	13
Explore	49	22	16	41	21	38
Disclose (osteopath)	7	6	7	6	3	8



## Appendix 15: Ethnographic coding tables

Table 1: Descriptive statistics for ethnographic characteristics

Category	O Q	P Q	O S % (n)	P S % (n)
Patient's problem	88 (296)	52 (32)	77 (281)	85 (172)
Research process	6 (20)	21 (13)	12 (45)	8 (16)
Inter-personal/other	6 (21)	27 (17)	11 (38)	7 (15)
Ethnographically familiar	50 (170)	65 (40)	34 (122)	37 (75)
Ethnographically strange	48 (162)	35 (22)	65 (237)	62 (127)
Ethnographically unclear	2 (5)	0 (0)	1 (5)	1 (1)
Brief response < 5 words	45 (152)	66 (41)	54 (196)	44 (89)
Longer response	53 (179)	24 (15)	28 (104)	30 (61)
Change of topic/ new Q	1.5 (5)	8 (5)	8 (28)	24 (49)
No space to respond	0.5 (1)	2 (1)	10 (36)	2 (3)
Outcome was CP or MO	24 (81)	16 (10)	22 (80)	28 (56)

Table 2: Focus of the osteopath's questions in the six treatment sessions

Category % (n)	Hands-off	Hands-on	Familiar	Strange	CP or MO
Present moment	24 (19)	55 (101)	46 (27)	34 (43)	67 (49)
Past or future	70 (55)	38 (70)	42 (25)	60 (77)	29 (21)
Unclear	6 (5)	7 (13)	12 (7)	6 (8)	4 (3)
Total	100 (79)	100 (184)	100 (59)	100 (128)	100 (73)

Table 3: Example of coding of auto-ethnographically 'strange' extracts

T	O Q room	P Q room	O Q life	P Q life	O S room	P S room	O S life	P S life	Potential line groups identified from listening to the recordings
2					189 191				189 - 199
	219 236						199		219 - 240
					260		265 279		252 - 264 265 - 279
	283							305	283 - 291
						313	311		305 - 320
					380			421	380 - 395 421 - 431
							430	434	432 - 439
						454		459	454 - 462
						461			

### Key to Table 3

T = transcript number O = osteopath P = patient Q = question S = statement

Room = conversation about something in the present moment in the room

Life = conversation focused on an event in the patient's past or future life

Table 4: Examples of extracts grouped into stanzas

\* = relating to pain arising during the hands on part of a treatment session

'Strange'	'Familiar'	'Choice point?'	Transcript selections
189 - 199	183 - 191 193 - 201 202 - 209		
219 - 240*	220 - 240 242 - 248*	228 - 235*	A2.1 219 - 240* A2.2 240 - 251*
252 - 265*	252 - 264*		A2.3 252 - 265*
265 - 279	265 - 280		
283 - 291*		281 - 290	A2.4 281 - 291*
291 - 305*	291 - 303*	291 - 295*	A2.5 291 - 305*
305 - 323*		320 - 323*	A2.6 320 - 323*
	324 - 395		
		343 - 345*	A2.7 343 - 345*
		355 - 356*	A2.8 355 - 356*
		378 - 382*	A2.9 378 - 382*
380 - 395		403 - 407*	A2.10 403 - 407*
	400 - 403 407 - 413		
421 - 431	414 - 431		
432 - 439	432 - 439		
	436 - 439		
454 - 462	439 - 462		
		463 - 469*	A2.11 463 - 469*
186 - 206*	141 - 170 186 - 207*		A3.1 186 - 207*
208 - 235	208 - 235		
261 - 307	260 - 310 311 - 313		
315 - 342	321 - 342 352 - 370	351 - 370	
371 - 388*	371 - 401*	372 - 388*	A3.2 371 - 401*
391 - 420	401 - 417		
421 - 437	423 - 437		
449 - 460	440 - 460		
461 - 470*		474 - 481*	A3.3 461 - 470*
		481 - 494	A3.4 474 - 481*
120 - 139*	120 - 139*		A4.1 120 - 139*
143 - 146	141 - 146	133 - 139*	
157 - 167	157 - 166		
168 - 190*	169 - 190*	176 - 179	A4.2 168 - 190*
191 - 201	198 - 207		
236 - 247	210 - 233	224 - 227	
249 - 281*	236 - 247		A4.3 249 - 294*
282 - 294*	264 - 281*	268 - 276	
299 - 305*	282 - 298*		A4.4 299 - 305*
309 - 325	302 - 322		

### Appendix 16: Extracts selected for qualitative Micro Discourse Analysis

Session	Chosen line extracts	Categories	Selected for MDA
1  n = 11	A2.1 219 - 240* A2.2 240 - 251* A2.3 252 - 265* A2.4 281 - 291* A2.5 291 - 305* A2.6 320 - 323* A2.7 343 - 345* A2.8 355 - 356* A2.9 378 - 382* A2.10 403 - 407*	S / F / CP / MO F S / F S / CP / MO S / F / CP / MO S / CP / MO CP / MO CP / MO CP / MO F / CP / MO	A2.1 219 - 240*         A2.10 403 - 407*
2  n = 4	A3.1 186 - 207* A3.2 371 - 401* A3.3 461 - 470* A3.4 474 - 481*	S / F S / F / CP / MO S CP / MO	A3.2 371 - 401* A3.3 461 - 470*
3  n = 9	A4.1 120 - 139* A4.2 168 - 190* A4.3 249 - 294* A4.4 299 - 305* A4.5 349 - 360* A4.6 361 - 371* A4.7 383 - 393* A4.8 405 - 407* A4.9 418 - 421*	S / F S / F / CP / MO S / F S / F F F / CP / MO S / F CP / MO CP / MO	A4.1 120 - 139*  A4.3 249 - 294*
4  n = 11	A5.1 172 - 185* A5.2 190 - 193* A5.3 201 - 212* A5.4 217 - 249* A5.5 258 - 276* A5.6 291 - 332* A5.7 335 - 352* A5.8 379 - 383* A5.9 394 - 398* A5.10 419 - 420* A5.11 436 - 454*	S / CP / MO S / CP / MO S / F / CP / MO CP / MO F / CP / MO S / F / CP / MO F / CP / MO S / F S / F / CP / MO CP / MO S / F	A5.7 335 - 352*         A5.11 436 - 454*
5  n = 7	A6.1 160 - 172* A6.2 225 - 229* A6.3 263 - 275* A6.4 290 - 309* A6.5 310 - 330* A6.6 349 - 354* A6.7 377 - 384*	S / F / CP / MO S / F / CP / MO S / CP / MO S / F S / F / CP / MO S / F S	A6.3 263 - 275* A6.4 290 - 309*
6  n = 12	A7.1 221 - 244* A7.2 257 - 278* A7.3 282 - 300* A7.4 304 - 332* A7.5 333 - 344* A7.6 356 - 365* A7.7 372 - 384* A7.8 415 - 423* A7.9 432 - 452* A7.10 457 - 463* A7.11 474 - 481*	S / F / CP / MO S / F / CP / MO S / F S / F / CP / MO S / F F / CP / MO S / F / CP / MO S / F / CP / MO S / F / CP / MO S / F S / F	A7.5 333 - 344*      A7.7 372 - 384*

## Appendix 17: Conversation Analysis transcription notation conventions

Adapted from Jefferson, G. (1984). Transcription Notation, in J. Atkinson and J. Heritage (eds), *Structures of Social Interaction*, New York: Cambridge University Press.

Convention	Name	Use
[ text ]	Brackets	Indicates the start and end points of overlapping speech.
=	Equal Sign	Indicates the break and subsequent continuation of a single utterance.
(# of seconds)	Timed Pause	A number in parentheses indicates the time, in seconds, of a pause in speech.
(.)	Micropause	A brief pause, usually less than 0.2 seconds.
. or down arrow	Period or Down Arrow	Indicates falling pitch or intonation.
? or up arrow	Question Mark or Up Arrow	Indicates rising pitch or intonation.
,	Comma	Indicates a temporary rise or fall in intonation.
!-	Hyphen	Indicates an abrupt halt or interruption in utterance.
>text<	Greater than/Less than symbols	Indicates that the enclosed speech was delivered more rapidly than usual for the speaker.
<text>	Less than/Greater than symbols	Indicates that the enclosed speech was delivered more slowly than usual for the speaker.
°	Degree symbol	Indicates whisper, reduced volume, or quiet speech.
ALL CAPS	Capitalized text	Indicates shouted or increased volume speech.
underline	Underlined text	Indicates the speaker is emphasizing or stressing the speech.
:::	Colon(s)	Indicates prolongation of a sound.
(hhh)		Audible exhalation
•or (.hhh)	High Dot	Audible inhalation
( text )	Parentheses	Speech which is unclear or in doubt in the transcript.
((...))	Double Parentheses	Annotation of non-verbal activity.

## Appendix 18: Differences in linguistic form and function

### Characteristics of extracts that opened up opportunities for new learning (n=10)

Transcript and line/s	Open question	Curiosity > checking	Present body sense	Space to talk	Agency and self context	Not Q answer	Total
3.3:2-10	X	X	X	X			4
4.1:5-20	X	X	X	X			4
4.3:3-17	X	X	X	X			4
4.3:18-20	X	X	X	X	X		5
4.3:58		X			X		2
4.3:100-110	X	X	X	X			4
5.7:1	X	X	X	X			4
6.4:7	X	X	X		X	X	5
7.7:2-8	X	X	X	X			4
7.7:9-12	X	X	X	X	X		5
Total / 10	9 / 10	10 / 10	9 / 10	8 / 10	4 / 10	1 / 10	

### Characteristics of extracts that closed opportunities for new learning (n=15)

Transcript and line/s	Change of topic	Closed Q, check OK	Not body sense	Past, future or timeless	Passive patient	Explain or state	Total
2.1:41-49	X	X	X		X	X	5
2.10:2-6	X		X	X			3
3.2:12-14		X	X		X		3
3.2:26	X		X			X	3
3.2:37-38	X		X			X	3
3.3:27			X	X	X	X	4
4.1:31		X	X	X	X	X	5
4.1:43-44	X	X	X				3
4.3:76		X	X	X			3
4.3:101-122	X	X	X			X	4
5.7:21-23			X	X		X	3
5.11:18-23	X	X	X			X	4
5.11:32			X		X	X	3
6.3:13-18	X	X	X	X		X	5
7.5:13-16			X	X		X	3
Total / 15	8 / 15	8 / 15	15 / 15	7 / 15	5 / 15	11 / 15	

### Characteristics of extracts that were mixed or missed opportunities (n=3)

Transcript and line/s	Body sensation	Space to talk	Active pt	Open total	Closed Q, statement	Passive patient	Change of topic	Closed total
4.1:21-30	X	X		2	X			1
5.7:31-41	X			1	X	X	X	3
6.4:26-32		X	X	2	X			1
Total / 3	2 / 3	2 / 3	1 / 3		3 / 3	1 / 3	1 / 3	

## Appendix 19: Coding of expert or collaborative extracts

Choice point patterns by line (n=31)

Familiar = 9	Strange = 12	Familiar = 3	Strange = 7
2.10:6	2.1:48	3.3:2	4.3:18
3.3:9	3.2:14	4.1:15	4.3:58
3.3:27	3.2:25	4.3:107	5.7:1
4.1:31	3.2:37		6.4:7
4.1:43	4.3:76		6.4:28
4.3:120	5.7:23		7.7:7
6.3:11	5.7:31		7.7:11
6.3:18	5.7:35		
7.5:13	5.7:40		
	5.11.18		
	5.11.21		
	5.11.32		
Expert stance	Expert stance	Collaborative	Collaborative

### A2.1

Familiar		Strange
Closed		Open
Known		New
Choice	< L48	Missed
Expert		Collab

### A4.1

Familiar		Strange
Closed	L15 >	Open
Known		New
Choice	< L31 < L43	Missed
Expert		Collab

### A7.7

Familiar		Strange
Closed	L7 >	Open
Known		New
Choice	L11 >	Missed
Expert		Collab

## Appendix 20: Four Stage Discourse Analysis Framework

### Stage 1: What is being said? (adapted from ten Have 2010)

**Topics and Themes:** What is the topic and theme for each clause? Why? When the theme is not the main topic of the previous sentence, what is the 'deviation' and why was it chosen?

**Deixis:** Deictics are 'pointing words' and 'shifters' relating to a person, place or time which the speaker assumes the listener will understand from the context of the previous sentence or conversation e.g. 'the', 'he', 'there', 'then'. What does the speaker assume the listener already knows? Which words are pointing to the things that are assumed? What 'regular' words need to be considered in a special context?

**Fill In:** What the speaker says + Context = What the speaker means. What needs to be filled in by the listener to make the meaning clear? What is not being said explicitly but assumed to be known or guessable? What knowledge, assumptions and inferences does the listener need to bring to understand this message in the way the speaker intended?

**Making Strange:** What speaker says + Context = What speaker means. What would an 'outsider' find strange, confusing or worth questioning here, if they did not share the same knowledge and assumptions about the context that make this communication natural and taken-for-granted by the speaker? Be a 'resistant listener'.

**Stanzas:** How is information clustered into blocks? How do they influence data interpretation and display?

### Stage 2: How is it being said?

**Subject:** Why has the speaker chosen this word/phrase/topic? What other choices could they have made and why didn't they? Why organise information this way? How does it highlight some things and hide others?

**Vocabulary:** What types of words are being used? e.g. everyday, formal, or specialised technical words? Why?

**Intonation:** How does the way the speaker say the word illustrate meaning e.g. emphasis, intonation, contour?

**Intertextuality:** How are words used as direct/indirect quotes from other texts, languages? Switching voices?

**Why this way and not that way?** How else could they have said this? What different outcome? Why this way?

**Topic Flow and Chaining:** What are the topics of the main clauses, how are they linked or not to create a chain of information? How does the speaker signal that they are changing topic, or that they have linked back to the previous topic? What are the topic shifting structures and how are they used?

**Integration:** In this communication, how have the phrases and idea units been packaged together? What was included and what was left out? What perspectives are being communicated by the way in which information has been arranged into main clauses and subordinate clauses? How have smaller phrases have been used to convey the sense of a larger clause? e.g. what has been emphasised, assumed or taken for granted?

**Context is Reflexive:** How is what the speaker says creating what the listener will take to be relevant? How is it helping to recreate this type of context? Is this being done consciously or not? Is it what the speaker intends? To what degree is the way the speaker is speaking replicating or transforming context like this?

### Stage 3: Why is it being said (in this way, in this context)?

**Doing and Not Just Saying:** What is the speaker trying to 'do'? May be more than one thing.

**Building Significance:** How are words/grammar used to build significance, lessen importance of some things?

**Building Connections:** How are the words/grammar used to connect/disconnect things or ignore connections? How are the words used to make things relevant or irrelevant to each other or ignore to relevant connections?

**Building Cohesion:** How does cohesion connect pieces of information together and in what ways? How does it fail to connect other pieces of information? What is the speaker trying to communicate or achieve using cohesion this way?

**Building Identities:** What social identity is the speaker trying to enact or get the listener to recognise? How does the speaker's language treat the listener's identity? What identity or position is the speaker inviting the listener to take up?

**Building Relationships:** How are the words/ grammar used to build or change relationships with the speaker or others?

**Building Activities:** What activities or practices is this communication building? What activities does the communication seek to identify as 'accomplished'? What social or cultural groups set the norms for the type of activity being built?

**Building Knowledge and Sign Systems:** How are the words used to privilege specific sign systems? e.g. technical versus everyday language, words versus images etc. How are words used to privilege certain ways of knowing or believing?

**Building Politics:** How are the words/grammar used to build, or assume what count as 'social goods', and to distribute or withhold them? How are the words being used to build a view about how social goods are or should be distributed?

### Stage 4: What are the different Discourses?

**Situated Meaning:** What are the situated meanings of the words and phrases used? What specific meanings does the listener attribute to these words in this context? And how the context is being construed?

**Figured Worlds:** What typical stories or figured worlds are being assumed or inviting the listener to assume? What participants, activities, ways of interacting, language, people, objects, environments, institutions and values are here?

**Big Discourses:** How is the speaker using language to enact a specific socially recognisable identity and engage in socially recognisable activities? What Discourse is this language part of? What sorts of actions. Interactions, values, beliefs, objects, tools, technologies and environments are associated with this sort of language within a particular Discourse?

**Frame Problem:** After finishing the first stage of DA, look at the wider context and see if this changes the analysis.

## Appendix 21: Summary of MDA for extract A4.1

Location	Participant A Session 4 Extract 4.1
<p>Macro context</p> <p>What's going on here? Who, when, why?</p> <p>What purpose?</p>	<p>I am examining the patient at the start of our 3rd treatment session together. He is going away on holiday to Spain tomorrow. He is sitting on the treatment table and I am standing behind to look at his spine. My overall purpose is to assess how to work with his neck today and continue the ACT learning approach</p>
<p>Meso activity</p> <p>What's happening?</p> <p>Activity type/s</p> <p>Genre/s</p> <p>Discourse trajectories</p> <p>Roles</p> <p>Opportunities</p> <p>Constraints</p>	<p>Participating in a shared activity using osteopathic/medical discourses with practitioner and patient roles. Discourse trajectory in this session is moving from biomedical and ACT case history information (variable pain levels, noticing body sensations more, doing more social activities) towards my agenda to talk about why he values going away (impact on sense of self) to prepare for next values-based session. Opportunities are to build on awareness from previous two sessions and his ability to describe sensations. Constraints are not wanting to 'over do it' (treatment or activities) before he goes on holiday tomorrow.</p>
<p>Micro interaction</p> <p>How do I know?</p> <p>Utterance forms</p> <p>Turn taking</p> <p>Adjacency pairs</p> <p>Pre-sequences</p> <p>Assessments</p> <p>Repairs</p> <p>What, how else?</p> <p>Forwards and back</p>	<p>Main utterance forms are Q&amp;A, his assessments, receipt/clarification and my instructions about moving. Turn taking is fairly predictable but I pass my turns and leave time for him to verbalise sensations at the start. I use 'OK' as a pre-sequence or frame change cue when I am about to ask/tell him to do something different. I clarify his assessment about site of pain. No obvious repairs? I could have explored his experience much more than I did. Possibly looking back to previous sessions where I could hardly touch, my agenda to go deeper? Looking forward to his holiday tomorrow, me feeling cautious about not making worse?</p>
<p>Micro meaning</p> <p>Inter-actional moves</p> <p>Meaning constructed?</p> <p>Or rejected?</p> <p>Aligned purposes?</p> <p>Future influences?</p>	<p>We are co-constructing a description of body parts which he notices but are described as separate (e.g. 'it feels', 'it goes'), and constructing an interaction where I am in charge of collecting his sensory experiences to guide my decisions about what's wrong and what to do - limited exploration of where (but not what or how) and not collaborative. We seem aligned in a shared purpose (in this moment) to work on the 'block' not yet clear if this is to explore or change.</p>
<p>Meso meaning</p> <p>Personal and institutional patterns</p> <p>What 'worked'?</p> <p>What didn't?</p> <p>What happened next?</p>	<p>This extract shows up my fear avoidant behaviour and unwillingness to place or leave the patient in a position which might aggravate his pain. He gives no verbal clues that he is unwilling to explore his own pain but lack of video data makes it hard to know if I was responding to non verbal cues. What worked was giving him time to articulate the solid block but I didn't use it (in this moment) to help us both learn about his reactions to pain. After this I treated him and we did explore the block in a more fruitful way.</p>
<p>What does it mean?</p> <p>Cultural practices</p> <p>Wider relevance</p> <p>Change in body or pain discourses?</p>	<p>He was able and willing to describe unusual (?) and counter intuitive sensations, and I was willing to give him time to do so. I sounded surprised and a bit stuck in knowing how to proceed. It looks like missed opportunities for learning here but I do come back to the sensations in the later treatment and use them more effectively. The body discourse remains biomedical with separated parts of the object body (it) separated from the patient's self and few examples of 'I feel..?'</p>



## Appendix 22: MDA transcript for extract A2.1

1 O: when you feel ready, gently open your eyes and come back to the room  
2 O: (9) Mindfulness exercise I asked A to explore sensations in areas that felt painful, nice or neutral  
3 O: okay (.) what was that like? OK = frame change e.g. I'm in charge of questions  
4 P: umm (.) it felt quite quick A hesitates, implied criticism that I went too quickly?  
5 O: ahuh 'Neutral' receipt  
6 P: umm (hhhh) (2) Exploring feelings, thinking how to verbalise or 'hedging'?  
7 O: you felt like you needed longer [ to ] (unclear) I blamed him for being slow?  
8 P: [an I] an I was able to go to uh (1)  
9 P: I was able to go to uh (.) Talking through process or being 'good' patient?  
10 P: uh (.) each part of the body an (.) an (.) just t- t- (hh hh)  
11 P: didn't go in any (2) pre-thoughts if you know wh- (hh)  
12 P: I didn't go on to the table with any pre-thoughts (hhh)  
13 P: my lungs were the place that I went to (.) for the nice place  
14 O: mhm Statement & receipt, high tone suggests I was surprised as he has asthma etc.?  
15 P: un (.) my thighs were the place I went to (.) for the neutral place.  
16 O: mhm  
17 P: un (.) but the pain in my neck (1) was um (1) uhh (2)  
18 P: it's still the:re (hh hh) (laugh?) Expectation pain should have gone? Complaint?  
19 O: mhm Is this mhm receipt different? Acknowledging but not sounding surprised?  
20 P: but it's umm (3) uh it was like chomping (2) like ch- (.)  
21 P: you asked what it was like umm (.)  
22 P: ah (hhh) it feels quite black (.) Interesting and unexpected  
23 O: mhm My mhm sounds neutral, rather than curious?  
24 P: um although I don't want (hh hh) that to sound racist Orient to recorder?  
25 O: [mm] quite Another neutral mm  
26 P: [it ] feels black  
27 P: and it feels like it's biting my neck (.) but uh er it feels jagged  
28 O: aha Clear image of black, biting, jagged.  
29 P: it feels like (.)  
30 O: like there's some kind of animal teeth I added teeth. Didn't give him time  
31 P: teeth t- (hh hh) Laughing  
32 P: tearing [away (...)]  
33 O: [animal or] a person [teeth?] (smily voice?) I added person, sex?  
34 P: [it could] be it could be a (.) animal,  
35 P: it could be a (1) yeah (.) [it could] be an animal  
Agreement or hedging? Repeated could be = dis-preferred disagreement?  
36 O: [mm]  
37 O: so its a real savage [feeling] I added savage because...?  
38 P: [ yeah ] yeah Said quickly, repeated = agreeing?  
39 O: mhm (.) as you stayed with it (.)  
40 O: although I probably didn't leave you there (.) very long  
Veiled apology from me for doing the exercise too quickly - I thought he had gone to sleep!  
41 O: did it change in any way or has it carried on being (.)  
42 O: [savage and chomping?]  
43 P: [ uh its carried its ] carried on umm (2) (hhhh)  
Is his pause doing intra-personal work to describe an inner sensation, or inter-personal work to find something to please me as my question implies I was hoping for some sign of a change?  
44 P: but in some in some ways it's slightly (1)  
45 P: uh its different, but uhh (2) it feels like (.)  
'in some ways, in some ways' and 'slightly' is qualifying before the dis-preferred response 'still there?'  
46 P: it feels slightly (.) more outside now than inside (1)  
47 P: but it's still its still inside as well  
Different spatial perspective, missed opportunity because I was anxious to 'give' him some treatment?  
48 O: right (.) okay. (.) 'Right' = receipt (stuck?) OK = my signal for frame/role change.  
49 O: I would like to (.) start doing some treatment very [gently]  
50 P: [yeah]  
51 O: to that [area]  
52 P: [yeah]  
He interrupts at 'gently' predicting end of my sentence implies he is happy rather than simply compliant?  
53 O: are you okay [for] me to do [that?] Could ask what he needed! No options given  
54 P: [okay] [yeah] Wobbly? Left with unfamiliar sensations?

## Appendix 23: MDA transcript for extract A7.7

2 O: how's this.

*FPPQ, vague 'this' means my present moment hand pressure on his shoulder or his pain level? Was this question prompted as a familiar 'consent check' during treatment or in response to palpatory cue?*

3 P: it- it's uh it's good I can feel there's uh. (2)

4 P: i- the its (.) there's err (.)

*SPPA, 'good' = pref response to me? He continues with no gap but 'works' to give me more details*

5 P: the front of my. (.) chest (.) in the middle (.) or breast bone. (0.5)

*Account of location but changes from ordinary to emphasised anatomical term to elicit a response?*

6 O: mhm.

*TRP? I give minimal acknowledgement and pass my turn to encourage more detail?*

7 P: is kind of umm (1) I can feel it (.)

8 P: i- i- I can feel how I'm holding on to it

*Is his hesitation inter-personal interaction work or intra-personal? e.g. hesitant because he has unfamiliar bodily sensations and is having to interpret them first and then tell me? Or is it interactional work if 'holding on' (implied as 'against' me or my treatment intentions) is a dis-preferred response?*

9 O: aha.

*Said how? Sounding interested or minimal acknowledgement to pass my turn back to him?*

10 P: f- fromm.= (unknown if he gestures here)

*Continued 'work' as he explores his own bodily sensations more deeply?*

11 O: =is there anything you feel like you or your body want to do

*FPPQ but I interrupt before TRP either because I predict where he is holding (from previous palpatory cue or possible gesture in line 8) or because I choose (as the expert) to try to increase his awareness of tension and promote his ability to respond more consciously to this sensation of 'holding on'? CHA 'Holding where?' I didn't which implies that I already knew from palpation or thought I knew.*

12 O: that would help you t- [(.)] let go of that a little bit

*My hesitation and qualifier ('a little bit') may be inter-actional work to save his face if he can't let go? It's a question but also a command and the preferred response is implied as yes, letting go is better*

13 P: [(hh)]

*Is his out breath an SPPA to my question/implied instruction in line 9 or responding to his experience in lines 4 and 6? Is his sigh predicting my 'let go'? e.g. following instructions from previous sessions?*

14 P: I th- (.) well I- I think I am. (.) un there's uh (.)

15 P: I can f- feel it just here.

*SPPA to Q in lines 9-10, preferred response is yes (I think I am). He continues with an account to describe or justify his statement that he is relaxing but his hesitation implies interactional or intra-personal work – so is he making it up to please me or is he really feeling something changing but struggling to verbalise what it feels like? He focuses on site of sensation, rather than quality or nature of the feeling because where is easier to verbalise than what it feels like?*

16 O: †aha.

*TRP. Is my tone in line 13 doing more work than simple acknowledgement of site and turn pass. Am I signalling interest and prompting him to continue with more detail?*

17 P: and I can feel (.) I can feel it (0.5) umm (1)

18 P: I can feel it relaxing.

*Extended turn with 'work'. The emphasis and falling tone in relaxing suggests this is enough detail?*

19 (9)

*This long gap is probably attributable to me as there was a TRP. The expected response would be my acknowledgement that he is relaxing or that I heard his statement about relaxing. Absence of a response is dis-preferred and would normally be interpreted as meaning I disagree. Its possible that I did disagree and was palpating tension somewhere else, or I was unsure and exploring my sense of his 'holding on', or that I just changed the 'frame' and my focus was on osteopathic*

treatment?

20 O: as it relaxes / are you aware of any associated thoughts or feelings†

TRP. Pre-sequence acknowledges his statement in line 14 and sets up the condition for my FPPQ which is also an implied request to tell me his thoughts and feelings. CHA 'What are you thinking and feeling?' Being indirect ('aware of') could be saving his face in case he doesn't have 'associated' thoughts or doesn't want to tell me about them. The context for this is our previous work related to habitual right shoulder tension to protect from childhood abuse and his recent violent mugging.

21 P: I'm feeling I'm fee- I'm really feeling quite pleasant. (.)

TRP. SPPA. Does he sound surprised? 'Pleasant' could be the preferred response to me but his hesitation suggests 'work' that may be intrapersonal?

22 O: °kay°

TRP? Minimal quiet acknowledgement might mean encouragement to carry on or surprise if I was expecting him to notice difficult thoughts about going from holding on to letting go. Context is previous work on opening up and feeling vulnerable. Additional context is possible ambivalence because my personal fear-avoidant preference is that people feel better from my treatment and are not 'harmed' (i.e. made uncomfortable) by hands on work or potentially 'invasive' questions versus my professional obligation on this course to create opportunities for A to be exposed to, and learn from, discomfort in the present moment. So I could have been/was both relieved and disappointed!

23 P: umm (3) I don't know to whom to attribute this pause.

24 P: and I feel qu- (.) I feel er I (.) I feel quite warm. (.)

TRP (How long is the gap?) A continues 'working' (inter/intra?) to describe how he feels in response to my question, may be starting a list e.g. expanding description from 'pleasant' to 'warm'.

25 P: I feel like y'know the you have when you've got the:r sun on you:r back (