

Treatment of pain-related fear in chronic (persistent) pain: the role of safety-seeking behaviour and imagery

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Abstract. It is widely recognized that psychological factors play a central role in the adjustment process and subsequent management of chronic pain. The role of anxiety, and specifically pain-related fear, has received particular attention. Paralleling developments in the anxiety disorders literature, psychological models of pain-related fear now highlight the importance of cognitive processes in its maintenance and treatment. However, theoretical and treatment advances in the anxiety disorders literature have not been widely applied to the pain field. In particular, certain cognitive processes, specifically safety-seeking behaviours and imagery, which appear to be involved in the maintenance of pain-related fear. This paper explores how these concepts may apply to pain-related fear and demonstrates how they may aid conceptualization and be used to guide a more cognitively orientated and efficacious treatment.

Key words: Chronic pain, imagery, pain-related fear, safety-seeking behaviours.

Introduction

Chronic, non-malignant (persistent) pain refers to pain that persists beyond the normal time scale for healing and is defined as comprising of sensory, affective and cognitive components. The meaning of pain changes from being a signal of damage in acute pain, to being more ambiguous in chronic pain. Consequently investigating the 'cause' of such persistent pain is often a long and frustrating process for both the individual with pain and health-care professional(s) commonly involving many investigations and failed treatments, resulting in physical, psychological and social problems. Evidence suggests that the link between reports of pain and identifiable pathology is highly questionable in chronic pain presentations (e.g. Jensen *et al.* 1994), leading to the recognition that pathology alone cannot explain reports of pain, pain-related disability and distress. The management of persistent pain, therefore, requires collaboration between patient and health professional(s) in a bid to understand the complex biological–psychological–social links for the particular individual and to identify factors maintaining the problem that may be amenable to change. It is logical that an individual

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who believes that their pain signals damage and who interprets the sensations they experience when they attempt a certain activity as harmful will become fearful of carrying out such activities. Understanding the difference between acute and chronic pain is central to its management and underpins the cognitive-behavioural approach as described in this paper.

The role of pain-related fear[†] in the development and/or maintenance of long-term disability has received much attention in the literature. Fear of pain has been proposed to be more disabling than even the pain itself (Waddell *et al.* 1993). The object of fear can be wide-ranging, encompassing fears such as the pain itself, movement and (re)injury, long-term disability, loss of identity and social isolation (Morley & Eccleston, 2004). The pain-related-fear literature has developed from a purely behavioural approach (Fordyce *et al.* 1982; Lethem *et al.* 1983) to the incorporation and emphasis of cognitive factors. This reflects a similar shift from behavioural to cognitive-behavioural models of anxiety disorders in non-pain populations.

Vlaeyen and colleagues' cognitive-behavioural model of pain-related fear (Vlaeyen *et al.* 1995*a, b*; Vlaeyen & Linton, 2000) pays attention to cognitive factors, such as pain catastrophizing and hypervigilance, in addition to behavioural factors. The model suggests that a vicious cycle becomes established as a result of negative appraisals about the pain and its consequences (specifically catastrophic thinking and misinterpretation), avoidance of the threat situation/object, hypervigilance to possible signals of threat, subsequent 'deconditioning' of the body as a result of reduced muscular activity, depression and long-term disability. To date, this model has provided the foundation for theory-driven cognitive-behavioural interventions of pain-related fear, with specific foci on education and graded exposure (e.g. Vlaeyen *et al.* 2002, 2004). Recent research developments, including a randomized controlled study (Woods & Asmundson, 2007) lend support to the hypotheses proposed in this model and suggest interventions based on the model to be effective. In contrast, other recent longitudinal research has questioned the validity of the model (e.g. Sieben *et al.* 2005), highlighting the need for further clinical research trials and both theoretical and clinical refinements of the model.

In order to achieve this, developments in other areas of psychological theory may aid the conceptualization and treatment of pain-related fear in the future. Literature focusing on the specific cognitive processes involved in vicious maintenance cycles, which allow anxiety disorders to persist, such as safety-seeking behaviours (Salkovskis, 1991; Clark, 1999) and imagery (Clark, 1999; Hackmann *et al.* 2000), appear equally as relevant to pain-related fear, but have received scant attention in the literature to date. Sharp (2001*a, b*) first raised this issue and proposed that safety-seeking behaviours in particular play a central role as a maintaining factor of pain-related fear. A recent study by Tang *et al.* (2007) supports the role of safety-seeking behaviours in chronic pain disability, albeit with a focus on health anxiety rather than pain-related fear. We are not aware of any other papers that address this neglected gap in the pain-related-fear literature. Our paper aims to further highlight the applicability of these constructs to pain-related fear, the need to further refine the model by incorporating these cognitive factors, and the clinical implications this has for both the assessment and treatment processes.

[†] We find the term 'pain-related fear' preferable to other terms such as 'pain anxiety' as the threat in pain is most commonly identifiable rather than remaining more elusive in nature. We note that the terms 'anxiety' and 'fear' are frequently used interchangeably in the anxiety disorders and pain literature, and that despite their superficial similarities are highly distinct in nature. (See Barlow, 2000, for further discussion.)

Safety-seeking behaviour and its application to pain-related fear

The term safety-seeking behaviour refers to ‘a behaviour, which is performed in order to prevent or minimize a feared catastrophe’ (Salkovskis, 1991), and is driven by cognitions such as underlying beliefs and assumptions. The construct has been applied to anxiety disorders such as panic disorder (Salkovskis *et al.* 1996; Thwaites & Freeston, 2005) and social phobia (Clark & Wells, 1995; Thwaites & Freeston, 2005), and empirical evidence supports the central role of safety-seeking behaviour in these disorders (Wells *et al.* 1995; Salkovskis *et al.* 1999). Sharp (2001*a, b*) highlights the role that safety-seeking behaviours play in maintaining pain-related fear, within a cognitive, rather than behavioural, framework. In their recent study, Tang *et al.* (2007) found that safety-seeking behaviours were a defining characteristic of chronic-pain patients in so far as those patients with high health anxiety employed more safety-seeking behaviours than those with low health anxiety. The prevalence of safety-seeking behaviours in those with high levels of pain-related fear has yet to be empirically investigated. Clinical observations (see case example), however, suggest that this construct may extend to pain-related fear as a powerful maintaining factor, and hence could prove to be a worthwhile target for intervention.

Salkovskis *et al.*'s (1996) classification of safety-seeking behaviours (‘direct avoidance’, ‘escape’, and ‘subtle avoidance’) can be applied to the behaviours evident in pain-related fear. *Direct avoidance* of movement, activities and situations is the most common and obvious and features heavily within Vlaeyen *et al.*'s (1995*a*) model of pain-related fear. For example, a person's belief that bending forward will result in (further) damage to their spine results in their avoiding all activities that involve bending forward in order to prevent further injury. *Escape behaviour* in pain-related fear is similar to direct avoidance and frequently reported. For example, a person cuts short a shopping trip to return home and rest due to their belief that prolonged standing in queues will damage muscles and nerves in their legs to the point of ending up in a wheelchair. *Subtle avoidance behaviours* are more difficult to identify and idiosyncratic in nature. These might include wearing a back brace to prevent ‘crumbling of the spine’[†], guarded walking in order to ‘protect my back so that I don't fall’, using walking aids to ‘prevent me from falling and damaging my leg’, or only walking with a companion so that ‘I can hold on to someone so that I am protected’. These safety-seeking behaviours are intended to prevent a feared catastrophe yet ultimately prevent any disconfirmation of the catastrophic cognition, hence serving to maintain, or even strengthen it. Interestingly, Tang *et al.*'s (2007) findings suggest that it may be the more subtle safety-seeking behaviours, rather than complete avoidance of activity, which are particularly prevalent in chronic-pain populations, and thus require careful identification.

Imagery and its application to pain-related fear

Intrusive images in which individuals ‘see’ a mental representation of their realized fears are common in anxiety disorders and play an important role in enhancing the perception of present and future threat (Beck, 1976; Hackmann & Holmes, 2004). Empirical evidence shows support

[†] The anecdotal quotes provided in this paper are based on a number of different patients' reports of their pain experience, and some of these are directly linked with the case example provided at the end of this article.

for this in anxiety disorders, such as panic disorder (Ottaviani & Beck, 1987), health anxiety (Wells & Hackmann, 1993) and social phobia (Hackmann *et al.* 1998).

There is a dearth of chronic-pain literature investigating the role of imagery as a cognitive process. Instead, to date the focus has been on using non-specific positive imagery within relaxation or as a distraction strategy. Our clinical observations would suggest that images may be a powerful cognitive process in pain-related fear which, similar to negative and catastrophic thoughts, play a part in the maintenance of the perception of threat. Individuals frequently describe their pain and pain site in graphic ways, involving both metaphor and imagery. Examples of such vivid descriptions include 'My bones are crumbling, rotting away', 'My spine feels fragile, as if it were made of glass', 'I see myself in a wheelchair in 5 years' time', and 'My pain is a gaping wound on my spine'. Such statements incorporate sensory information, which is reflected in an image and 'felt sense', hence reflecting more than simply verbal descriptions of pain. Equally, the use of metaphor is common in attempts to communicate what is a very personal, and often not well-understood experience (Schott, 2004).

Winterowd *et al.* (2003) suggest that individuals with chronic pain have images which fall into four categories: images of the pain itself (e.g. image of the spine as a cracking, rigid tree trunk), images of oneself in pain (e.g. image of oneself as a frail elderly person), images related to people interacting with the person with chronic pain (e.g. image of oneself alone and isolated), and images related to the future with pain (e.g. image of oneself in a wheelchair). Such negative images, similar to negative, automatic thoughts, may therefore link to differing emotional, and in turn behavioural, responses depending on the meaning of the image. Linking this to pain-related fear, such images may frequently occur in anticipation of, or when participating in, an activity. Due to threatening content, images may elicit an anxiety response in the individual, including a physiological reaction (which may intensify the pain experience). Safety-seeking behaviours that follow, such as avoidance or early termination of an activity, may then lead to a failure to update the image (Hackmann *et al.* 2000). Further empirical investigation in this area is needed to substantiate the clinical observations and to investigate the efficacy of treatment targeting images in addition to verbal thoughts.

Our proposal to incorporate safety-seeking behaviours and imagery into Vlaeyen and colleagues' (e.g. Vlaeyen & Linton, 2000) model of pain-related fear is represented diagrammatically in Fig. 1.

Assessment implications

The pain-related fear model highlights the benefits of screening individuals with chronic pain for high levels of pain-related fear in order to specifically target their fears with the aim of reducing distress, increasing meaningful activity and reducing long-term disability. A comprehensive multi-modal assessment is required in order to develop a collaborative, idiosyncratic formulation of the individual's pain-related fear problem, focusing on maintaining factors/cycles. Psychometric measures such as the Pain Anxiety Symptoms Scale (PASS; McCracken *et al.* 1992), the Fear-Avoidance Belief Questionnaire (FABQ; Waddell *et al.* 1993), the Tampa Scale for Kinesiophobia (TSK; Kori *et al.* 1990) and the Photograph Series of Daily Activities (PHODA; Kugler *et al.* 1999) aid the identification of individuals with high levels of pain-related fear. In addition, a detailed clinical assessment is required to identify the idiosyncratic nature of the individual's pain-related fears, with a

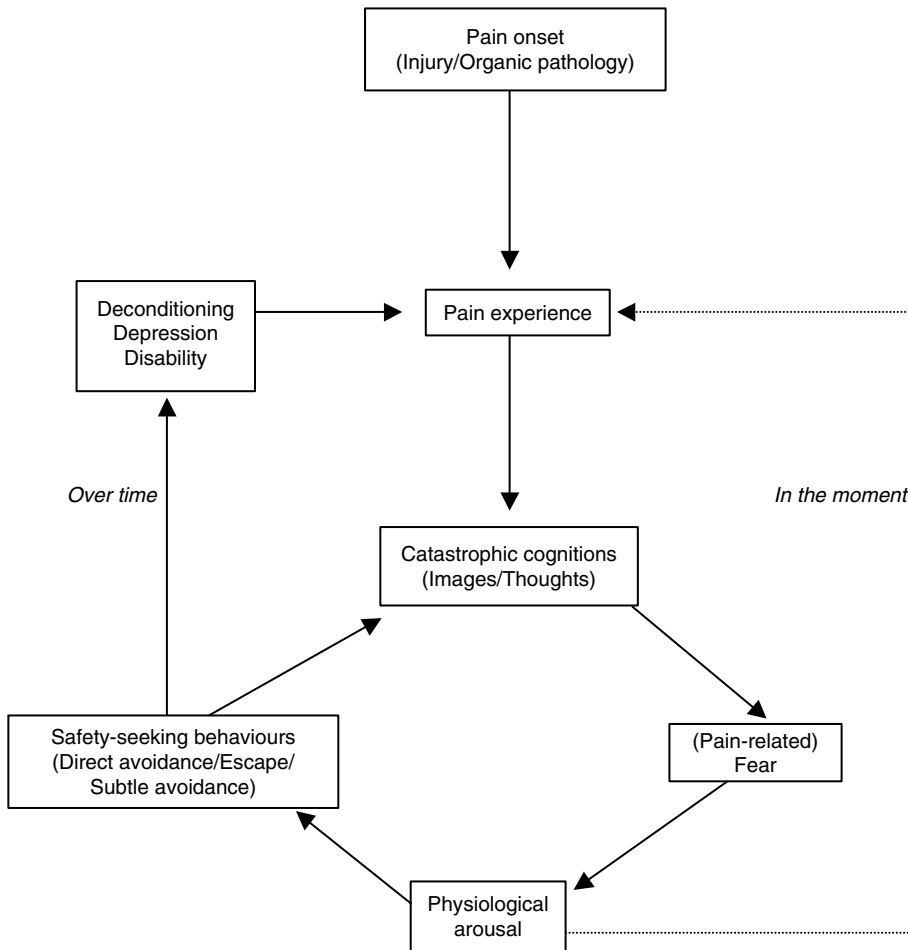


Fig. 1. Revised cycle of pain-related fear, incorporating safety-seeking behaviours and images (adapted from Vlaeyen & Linton, 2000).

specific focus on their cognitions and related behaviours. Once high levels of pain-related fear have been established with the aforementioned questionnaires, the inclusion of methods to assess cognitions in the form of imagery (in addition to verbal cognitions) and safety-seeking behaviours may further enhance assessment and guide a cognitively orientated intervention.

Identifying safety-seeking behaviours

The identification of safety-seeking behaviours requires detailed exploration of the meaning of certain behaviours. Here it is important to distinguish between a safety-seeking behaviour (which assumes the function of ensuring that a feared catastrophe is prevented) and a pain behaviour (which assumes the function of the communication of pain). Use of a stick, for example, could be termed either a pain behaviour or safety-seeking behaviour depending on the

cognitive context in which it is viewed and the meaning and function ascribed to the behaviour. Safety-seeking behaviours can also be mistaken for coping strategies (e.g. utilizing relaxation strategies) when in fact they may serve to maintain the fear of the pain (Thwaites & Freeston, 2005; Clyde & Williams, 2007). Identifying safety-seeking behaviours thus requires careful assessment. Questions such as ‘Did you do anything to stop the worst from happening?’, ‘What did you do to keep or make yourself safe?’ or ‘Did you do anything to protect yourself?’ may help to elicit specific safety-seeking behaviours utilized by an individual. It can be revealing to use video footage of the individual to aid the assessment process, specifically with regards to identifying overt safety-seeking behaviours and exploring beliefs attached to such behaviours. Of note is the subtle form that safety-seeking behaviours (e.g. distracting self, tensing stomach muscles) can take, as Tang *et al.*'s (2007) study highlights. Consequently, many safety-seeking behaviours will not be immediately obvious to the therapist (or the patient) and will require verbal questioning.

Identifying imagery

When exploring cognitions, specifically enquiring about images can be revealing. Enquiring as to the presence of both thoughts and images whilst an individual is participating in, considering or replaying in their mind a particular activity, can help to access and elicit pertinent cognitions. Specifically targeting incidents of change in pain levels and/or anxiety can be key in this process. Asking questions when high affect is experienced, such as ‘What is running through your mind?’, is likely to help elicit the idiosyncratic meaning of an activity/situation for a person. Such a question may elicit both verbal information and pictorial image. In addition, prompting questions to enquire specifically about images, such as ‘Are you seeing anything in your mind’s eye?’ or ‘Do you see any pictures in your mind?’ may be helpful as the person may otherwise not consider sharing such images with the therapist. Once an image has been identified, follow-up questions can be utilized to establish the idiosyncratic meaning (e.g. ‘What does that mean to you?’) and full sense in terms of visual, sound and felt modalities of the image (e.g. ‘How does that feel in your body?’). Care needs to be taken as highly emotive or traumatic images, as well as links to autobiographical memories (Holmes & Hackmann, 2004) may be discovered in the process.

Treatment implications

The main aim in the treatment of pain-related fear is to break the idiosyncratic vicious cycles, which maintain high levels of emotional distress, physical disability and associated reductions of meaningful activity. There is a central focus on modifying the processes which maintain these difficulties, and until recently education and graded exposure have been the core treatment ingredients. In order to specifically target safety-seeking behaviours and cognitions (both verbal and imaginal), however, a focused, cognitively orientated approach will also be required.

Recent outcome studies comparing cognitive therapy (with a cognitive focus on behavioural experiments and the elimination of safety-seeking behaviours) to exposure therapy (with a behavioural focus on habituation) in social phobia (Clark *et al.* 2006) and panic disorder (Salkovskis *et al.* 2006) have shown promising results. These studies suggest a cognitively

orientated approach is superior and leads to greater improvement than exposure-based treatments. Such empirical studies are now needed to explore similar hypotheses in the area of pain-related fear.

Using behavioural experiments

Behavioural experiments are an important treatment component (Bennett-Levy *et al.* 2004). They aim to advance graded exposure and generate cognitive change. Within the cognitive model, exposure (in the form of behavioural experiments) is explicitly used to test a person's predictions about the dangerousness of a situation. Hence, in order to target idiosyncratic, pain-related catastrophic cognitions, exposure to fear-provoking situations may need to be carried out with a focus on cognitive, rather than solely behavioural, change. Consequently, testing an individual's catastrophic beliefs, assumptions and predictions about activity and situations (e.g. 'If I make any bending movements, then my spine will break'), and ultimately helping the individual to develop more helpful beliefs (e.g. 'My spine is strong and my pain is not indicative of progressive damage. Fluctuations in my pain levels are part of my chronic pain, made worse by my use of safety-seeking behaviours and reduced activity') could be a key treatment component, with the aim of leading to primarily cognitive and consequent behavioural and emotional change. Explicitly sharing with patients a cognitive rationale is therefore pertinent and engaging. Ratings of specific beliefs need to be obtained (as is standard in cognitive therapy), allowing for the strength of the belief to be assessed and progress to be monitored, as shifts in beliefs take place.

Eliminating safety-seeking behaviours

Unless safety-seeking behaviours are eliminated during behavioural experiments, individuals may believe that they only escaped their predicted catastrophe or disaster 'by the skin of their teeth'. The safety-seeking behaviours thus prevent individuals from disconfirming their beliefs regarding the danger inherent in physical activities. It follows that behavioural experiments are required to test out whether what individuals predict will happen if they *do not* engage in their safety-seeking behaviours *actually* happens in reality. Our clinical work with individuals with pain-related fear has highlighted to us the need to eliminate safety-seeking behaviours which serve to maintain patients' catastrophic predictions, with the clinician's role focusing on assisting patients to drop their safety-seeking behaviours, both overt and more subtle in nature. Tang *et al.*'s (2007) study highlights the need to focus in particular on subtle, covert safety-seeking behaviours rather than more obvious avoidance behaviours. Again, behavioural experiments will be key in targeting such cognitive processes.

Modifying images

Although previously neglected within the pain-related fear literature, it is proposed that working directly with images to explicitly manipulate and/or restructure them may be an important adjunct to verbally restructuring cognitions. The meanings encapsulated in an image are key to informing individualized treatment and it has been proposed that such meanings can often be changed by directly altering the image, after establishing that it is unrealistic

(Hackmann, 1997). Although verbal discussion often produces an intellectual appreciation of something not being true (e.g. 'I *know* my spine isn't really made of glass') it often does not lessen the individual's distress. In order to change the emotional meaning of an image, therefore, the image may need to be worked with, modified and restructured directly (Hackmann, 1997; Hackmann & Holmes, 2004). We believe that working on individuals' distressing pain-related images can have a direct effect on their catastrophic appraisals of their pain experience and can lead to effective changes in the individual's ability to perform activities that cannot be explained by physical changes. Both verbal and behavioural techniques may need to be used in order to alter the meaning of the distressing image. Information and education can aid cognitive restructuring and the correction of biases, and a powerful adjunct, again, could be the use of behavioural experiments to test the assumption that the distressing image reflects reality. When working with images, in addition to working on the actual content of the image, treatment may also facilitate changes in meta-cognition and an awareness of other perspectives (Hackmann, 1997).

Winterowd *et al.* (2003) describe specific techniques aimed at working with pain-related images based on distraction and image modification. These include turning off/down the image, stopping the image (distraction techniques) to enhance short-term coping and reduce distress, and techniques aimed at controlling and changing the image, which they purport to be longer-lasting. Such strategies may be used to work on and restructure an image directly, or with the image and its associated meaning, in conjunction with verbal discussion techniques to modify unhelpful beliefs, e.g. eliciting evidence for and against it.

Finally, there is support for the use of imagery in anxiety disorders (e.g. in social phobia; Hackmann *et al.* 1998) and an accompanying base of experimental work (e.g. Holmes & Mathews, 2005). To date the use of imagery in pain-related fear still requires scientific investigation. Similar research methodologies used in anxiety disorders could be employed to explore the role of imagery in pain-related fear.

Case example

Our clinical observations suggest the value of working directly with safety-seeking behaviours and imagery when treating individuals with pain-related fear, in order to facilitate swift cognitive, affect and behaviour change. To illustrate this, consider the case of Mrs G (the case material has been altered to protect the identity of the individual involved).

Mrs G, a Caucasian woman in her 50s, had a 15-year history of chronic lower back, hip and leg pain, which she attributed to having frequently fallen in her adult years. Psychometric measures at initial assessment/baseline suggested high levels of pain-related fear (Tampa Scale for Kinesiophobia; Kori *et al.* 1990; TSK score = 42), moderate depression (Beck Depression Inventory; Beck *et al.* 1961; BDI score = 27), and high pain catastrophizing (Pain Catastrophizing Scale; Sullivan *et al.* 1995; PCS score = 32). At assessment she strongly held the following beliefs: 'Falling is dangerous as it causes you serious injury' (90% belief rating), 'My pain is a sign that my body is vulnerable and requires protection' (100% belief rating) and 'Using stairs unaided leads to serious injury' (100% belief rating). She utilized a number of safety-seeking behaviours in order to protect herself. She never walked unaided and used a stick. This served two purposes: first, to help steady herself and keep her balance in order to

prevent a fall, and second, as a 'symbol of disability' to warn others so that they would not jostle or bump her, thus again preventing a fall. In addition, she avoided walking as much as possible and particularly avoided using stairs. If she had to use stairs, she would hold onto the rail tightly and walk down each step carefully and slowly. She predicted that she would become paralysed if she endured another fall (80% belief rating), particularly if this occurred on stairs (100% belief rating). She reported an intrusive image of herself lying at the bottom of stairs on her back, completely paralysed. At assessment, she reported that this image occurred several times daily, particularly when faced with or thinking about stairs. She found the image intensely distressing, tried to suppress the occurrence of it (a further safety-seeking behaviour) and experienced high levels of anxiety (9/10) when it intruded.

Following a collaborative conceptualization of Mrs G's problems, treatment focused on the following areas: (i) Education on the nature of chronic pain, leading to increased understanding of chronic pain, pain-related fear and her idiosyncratic vicious maintenance cycles. She was able to recognize that her safety-seeking behaviours reinforced her fear long-term, and that utilizing them never allowed her to assess the accuracy of her beliefs. (ii) Through education on the nature of images and manipulating her images directly, Mrs G was able to recognize that her image was not reality or a prediction of her future, nothing to be feared and amenable to change. She was able to take her original image forward in time. She extended the image, getting up from the floor and walking away unhurt. (iii) The use of graded behavioural experiments further allowed Mrs G to test out her catastrophic beliefs and predictions. The behavioural experiments were particularly focused on reducing her use of safety-seeking behaviours, specifically her use of the stick and avoidance of stairs. Examples of behavioural experiments included walking down stairs whilst reducing her holding onto the rail, walking unaided, 'accidentally' bumping into someone on the street, and observing the occurrence of falling in other people. Interestingly, she had a fall during the last few weeks of treatment, which she herself spontaneously framed as an unplanned behavioural experiment.

Mrs G's beliefs were revisited throughout and at the end of treatment. At the end of treatment, 'Falling is dangerous as it causes you serious injury' reduced to 20% belief rating, 'My pain is a sign that my body is vulnerable and requires protection' reduced to 20% belief rating, and 'Using stairs unaided leads to serious injury' reduced to 20% belief rating. By the end of treatment she had developed several alternative beliefs: 'My pain is simply chronic pain and no indication of my body being vulnerable' (70% belief rating) and 'My body is strong and doesn't require protecting' (70% belief rating). Additionally, by the end of treatment her distressing image had reduced in frequency and her anxiety in relation to the image had dropped to 1/10. The meaning of her stick also changed from it being 'part of me and a necessary symbol of my disability' to 'an unnatural and unnecessary burden', and hence she decided to give it away. At the end of treatment, Mrs G's questionnaire scores reflected similar improvements: her pain-related fear and pain catastrophizing scores were low (TSK = 25; PCS = 8), and she was no longer depressed (BDI = 7).

Discussion and conclusion

This paper has proposed that recent developments within the area of pain-related fear may be further enhanced by the application of theoretical and treatment advances made in anxiety disorders in order to aid a more cognitively based conceptualization and efficacious

treatment. In particular, it has elaborated on the roles of safety-seeking behaviours and imagery as maintenance factors in pain-related fear, and the need to address these factors in conceptualization and treatment. Theoretical developments in pain-related fear, in particular those originally proposed by Vlaeyen *et al.* (1995a), have provided the foundation for cognitive-behavioural theory-driven treatment interventions to date. Although refinement of the model has taken place (e.g. Asmundson *et al.* 2004), we propose that further refinement may be necessary to focus primarily on cognitive maintenance factors (safety-seeking behaviours, verbal and imaginal cognitions), rather than behavioural factors (i.e. avoidance). This would guide a more cognitively orientated treatment focused first and foremost on cognitive change. As our paper is based exclusively on our clinical observations, we make such hypotheses tentatively. Research in this area will be invaluable in taking these hypotheses forward.

Summary of main points

- (1) Clinicians' knowledge of the conceptualization, assessment and treatment of pain-related fear may be further enhanced by applying recent cognitive theory and treatment advances made in anxiety disorders to pain-related fear.
- (2) An individual with pain-related fear may engage in idiosyncratic safety-seeking behaviours and experience intrusive and distressing images. The presence of such safety-seeking behaviours and images are related to the individual's catastrophic appraisal of their pain and may play an important role in the maintenance of the person's pain-related fear. Consequently, identifying these factors within an idiosyncratic conceptualization early in the assessment process may guide a cognitively orientated and efficacious treatment approach.
- (3) Behavioural experiments play a central role in the treatment of pain-related fear, predominantly for the purpose of eliminating safety-seeking behaviours and promoting cognitive change. Equally, the use of behavioural experiments may help to modify imagery. Verbal imagery modification strategies may also help in changing the meaning of distressing images in pain-related fear.

Declaration of Interest

None.

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References

- Asmundson GJG, Norton PJ, Vlaeyen JWS (2004). Fear-avoidance models of chronic pain: an overview. In: *Understanding and Treating Fear of Pain* (ed. G. J. G. Asmundson, J. W. S. Vlaeyen and G. Crombez), pp. 3–24. Oxford: Oxford University Press.

- Barlow DH** (2000). Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory. *American Psychologist* **55**, 247–1263.
- Beck AT** (1976). *Cognitive Therapy and the Emotional Disorders*. New York: International Universities Press.
- Beck AT, Ward CH, Mendelsohn MJ, Erbaugh J** (1961). An inventory for measuring depression. *Archives of General Psychiatry* **4**, 561–571.
- Bennett-Levy J, Butler G, Fennell M, Hackmann A, Mueller M, Westbrook D** (2004). *Oxford Guide to Behavioural Experiments in Cognitive Therapy*. Oxford: Oxford University Press.
- Clark DM** (1999). Anxiety disorders: why they persist and how to treat them. *Behaviour Research and Therapy* **37** (Suppl. 1), S5–S28.
- Clark DM, Ehlers A, Hackmann A, McManus F, Fennell M, Grey N, Waddington L, Wild J** (2006). Cognitive therapy versus exposure and applied relaxation in social phobia: a randomized controlled trial. *Journal of Consulting and Clinical Psychology* **74**, 568–578.
- Clark DM, Wells A** (1995). A cognitive model of social phobia. In: *Social Phobia: Diagnosis, Assessment and Treatment* (ed. R. Heimberg, M. Liebowitz, D. A. Hope and F. R. Schneier), pp. 69–93. New York: Guilford Press.
- Clyde Z, Williams A** (2007). The psychological management of persistent (chronic). pain. In: *Psychological Management of Physical Disabilities* (ed. P. Kennedy), pp. 80–103. New York: Routledge.
- Fordyce WE, Shelton JL, Dundore DE** (1982). The modification of avoidance learning in pain behaviours. *Journal of Behavioural Medicine* **5**, 405–414.
- Hackmann A** (1997). The transformation of meaning in cognitive therapy. In: *The Transformation of Meaning in Psychological Therapies: Integrating Theory and Practice* (ed. M. Power and C. R. Brewin), pp. 125–140. New York: John Wiley & Sons.
- Hackmann A, Clark DM, McManus F** (2000). Recurrent images and early memories in social phobia. *Behaviour Research and Therapy* **38**, 601–610.
- Hackmann A, Holmes E** (2004). Reflecting on imagery: a clinical perspective and overview of the special issue of *Memory* on mental imagery and memory in psychopathology. *Memory* **12**, 389–402.
- Hackmann A, Surawy C, Clark DM** (1998). Seeing yourself through others' eyes: a study of spontaneously occurring images in social phobia. *Behavioural and Cognitive Psychotherapy* **26**, 3–12.
- Holmes EA, Hackmann A** (2004). A healthy imagination? Editorial for the special issue of *Memory: Mental imagery and memory in psychopathology*. *Memory* **12**, 387–388.
- Holmes EA, Mathews A** (2005). Mental imagery and emotion: a special relationship? *Emotion* **5**, 489–497.
- Jensen MC, Kelly AP, Brant-Zawadzki MN** (1994). MRI of degenerative disease of the lumbar spine. *Magnetic Resonance Quarterly* **10**, 173–190.
- Kori SH, Miller RP, Todd DD** (1990). Kinesiophobia: a new view of chronic pain behaviour. *Pain Management* **3**, 35–43.
- Kugler K, Wijn J, Geilen M, de Jong J, Vlaeyen JWS** (1999). *The Photograph Series of Daily Activities (PHODA)*. CD-Rom version 1.0. Heerlen: Institute for Rehabilitation Research and School for Physiotherapy.
- Lethem J, Slade PD, Troup JDG, Bentley G** (1983). Outline of a fear-avoidance model of exaggerated pain perceptions. *Behaviour Research and Therapy* **21**, 401–408.
- McCracken LM, Zayfert C, Gross RT** (1992). The Pain Anxiety Symptoms Scale: development and validation of a scale to measure fear of pain. *Pain* **50**, 67–73.
- Morley S, Eccleston C** (2004). The object of fear in pain. In: *Understanding and Treating the Fear of Pain* (ed. G. Asmundson, J. Vlaeyen and G. Crombez), pp. 163–188. Oxford: Oxford University Press.

- Ottaviani R, Beck AT** (1987). Cognitive aspects of panic disorders. *Journal of Anxiety Disorders* **1**, 15–28.
- Salkovskis PM** (1991). The importance of behaviour in the maintenance of anxiety and panic: a cognitive account. *Behavioural Psychotherapy* **19**, 6–19.
- Salkovskis PM, Clark DM, Gelder MG** (1996). Cognitive-behaviour links in the persistence of panic. *Behaviour Research and Therapy* **34**, 452–458.
- Salkovskis PM, Clark DM, Hackmann A, Wells A, Gelder MG** (1999). An experimental investigation of the role of safety-seeking behaviours in the maintenance of panic disorder with agoraphobia. *Behaviour Research and Therapy* **37**, 559–574.
- Salkovskis PM, Hackmann A, Wells A, Gelder MG, Clark DM** (2006). Belief disconfirmation versus habituation approaches to situational exposure in panic disorder with agoraphobia: a pilot study. *Behaviour Research and Therapy* **45**, 877–885.
- Schott GD** (2004). Communicating the experience of pain: the role of analogy. *Pain* **108**, 209–212.
- Sharp T** (2001a). The ‘safety seeking behaviours’ construct and its application to chronic pain. *Behavioural and Cognitive Psychotherapy* **29**, 241–244.
- Sharp T** (2001b). Chronic pain: a reformulation of the cognitive-behavioural model. *Behaviour Research and Therapy* **39**, 787–800.
- Sieben JM, Vlaeyen JWS, Portegijs PJM, Verbunt JA, Van Riet-Rutgers S, Kester ADM, Von Korff M, Arntz A, Knottnerus JA** (2005). A longitudinal study on the predictive validity of the fear-avoidance model in low back pain. *Pain* **117**, 162–170.
- Sullivan MJL, Bishop S, Pivik J** (1995). The Pain Catastrophizing Scale: development and validation. *Psychological Assessment* **7**, 524–532.
- Tang NKY, Salkovskis PM, Poplavskaya Wright KJ, Hanna M, Hester J** (2007). Increased use of safety-seeking behaviours in chronic back pain patients with high health anxiety. *Behaviour Research and Therapy* **45**, 2821–2835.
- Thwaites R, Freeston MH** (2005). Safety seeking behaviours: fact or function? How can we clinically differentiate between safety behaviours and adaptive coping strategies across anxiety disorders? *Behavioural and Cognitive Psychotherapy* **33**, 177–188.
- Vlaeyen JWS, De Jong J, Geilen M, Heuts PHTG, Van Breukelen G** (2002). The treatment of fear of movement/(re)injury in chronic low back pain: further evidence on the effectiveness of exposure in vivo. *Clinical Journal of Pain* **18**, 251–261.
- Vlaeyen JWS, De Jong J, Leeuw M, Crombez G** (2004). Fear reduction in chronic pain: graded exposure in vivo with behavioural experiments. In: *Understanding and Treating Fear of Pain* (ed. G. J. G. Asmundson, J. W. S. Vlaeyen and G. Crombez), pp. 313–343. Oxford: Oxford University Press.
- Vlaeyen JWS, Kole-Snijders AMJ, Boeren RG, Van Eek H** (1995a). Fear of movement/(re)injury in chronic low back pain and its relation to behavioural performance. *Pain* **62**, 363–372.
- Vlaeyen JWS, Kole-Snijders AMJ, Rotteveel A, Ruesink R, Heuts PHTG** (1995b). The role of fear of movement/(re)injury in pain disability. *Journal of Occupational Rehabilitation* **5**, 235–252.
- Vlaeyen JWS, Linton SJ** (2000). Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. *Pain* **85**, 317–332.
- Waddell G, Newton M, Henderson I, Somerville D, Main C** (1993). A Fear-Avoidance Beliefs Questionnaire (FABQ). and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain* **52**, 157–168.
- Wells A, Clark DM, Salkovskis P, Ludgate J, Hackmann A, Gelder MG** (1995). Social phobia: the role of in-situation safety behaviours in maintaining anxiety and negative beliefs. *Behaviour Therapy* **26**, 153–161.
- Wells A, Hackmann A** (1993). Imagery and core beliefs in health anxiety: content and origins. *Behavioural and Cognitive Psychotherapy* **21**, 265–273.

Winterowd C, Beck AT, Gruener D (2003). Eliciting and modifying imagery. In: *Cognitive Therapy with Chronic Pain Patients*, pp. 183–207. New York: Springer Publishing Co.

Woods MP, Asmundson GJG (2007). Evaluating the effects of graded in vivo exposure for the treatment of fear in patients with chronic back pain: a randomised controlled trial. *Pain* **136**, 271–280.

Learning objectives

- (1) To familiarize the reader with the cognitive behavioural conceptualization of pain-related fear, highlighting in particular the relevance of idiosyncratic (i) safety-seeking behaviours and (ii) imagery to the model.
- (2) To acquaint the reader with the assessment process of pain-related fear, with a focus on identifying safety-seeking behaviours and imagery.
- (3) To familiarize the reader with specific treatment strategies to modify and eliminate these maintenance factors. The reader's focus will be drawn specifically to the utility of behavioural experiments and the modification of images.
- (4) A case report will serve to illustrate the clinical applicability of identifying and working with safety-seeking behaviours and imagery in pain-related fear.