Cognitive Behavioural Models of Chronic pain

&

The Role of Selective Attention

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# Table of Contents

1 Chapter One ......................................................................................... 8  
1.1 Introduction .......................................................................................... 8 
1.2 Types of pain .......................................................................................... 9 
  1.2.1 Phasic pain .......................................................................................... 9 
  1.2.2 Acute pain .......................................................................................... 9 
  1.2.3 Chronic pain ....................................................................................... 10 
1.3 Prevalence, incidence, and costs of chronic pain ........................................ 11 
1.4 Theories of Pain .................................................................................... 13 
  1.4.1 Neuropathological models of acute pain ............................................... 13 
  1.4.1.1 Specificity Model .............................................................................. 13 
  1.4.1.2 Gate Control theory ......................................................................... 15 
  1.4.2 Neuropathological mechanisms of pain ............................................... 17 
  1.4.2.1 Peripheral mechanisms ................................................................. 17 
  1.4.2.2 Dorsal horn mechanisms ............................................................... 18 
  1.4.2.3 Supraspinal mechanism ................................................................. 19 
  1.4.3 Psychological theories of chronic pain ............................................... 20 
  1.4.3.1 Cognitive-behavioural theories ..................................................... 23 
  1.4.3.2 A cognitive model: Fear of pain ................................................... 24 
  1.4.3.3 Vulnerability Model ....................................................................... 30 
  1.4.3.4 Anxiety sensitivity (AS) and chronic pain ..................................... 36 
  1.4.3.5 Anxiety Sensitivity and Hypervigilance ......................................... 38 
  1.4.3.6 Is Anxiety Sensitivity different from Trait Anxiety? ....................... 40 
  1.4.3.7 Stress-Diathesis Model ................................................................. 44 
  1.4.4 Conclusion and overview of the thesis ............................................ 47 
2 Chapter Two ............................................................................................ 49 
  2.1 Introduction .......................................................................................... 49 
  2.2 Method .................................................................................................. 54 
  2.2.1 Measures .......................................................................................... 56 
  2.2.1.1 Fear of Pain Questionnaire – III (FPQ-III) (McNeil and Rainwater, 1998) 56 
  2.2.1.2 Anxiety Sensitivity Index (ASI) (Peterson & Reiss, 1992) ............... 57 
  2.2.1.3 Depression, Anxiety, and Stress Scale (DASS) (Lovibond & Lovibond, 1995) 58 
  2.2.1.4 Tampa Scale of Kinesiophobia (TSK) (Kori, Miller, & Todd, 1990) .... 58 
  2.2.1.5 Pain severity .................................................................................. 59 
  2.2.1.6 Roland and Morris Disability Questionnaire (RDQ) (Roland & Morris, 1983) 59 
  2.2.1.7 The Pain Responses Self Statements (PRSS) (Flor et al, 1993) .......... 60 
  2.2.1.8 Pain self-efficacy Questionnaire (PSEQ) (Nicholas, 1989) .............. 60 
  2.2.2 Subjects ........................................................................................... 61 
  2.2.3 Structural Models .............................................................................. 61 
  2.3 Results .................................................................................................... 64 
  2.3.1 Participants ........................................................................................ 64 
  2.3.2 Self-report data .................................................................................. 65 
  2.4 Discussions ........................................................................................... 73 
3 Chapter Three ........................................................................................ 81 
  3.1 Selective memory in chronic pain ........................................................ 82 
  3.2 Selective attention ................................................................................ 87 
  3.2.1 Stroop Task ....................................................................................... 88 
  3.2.2 Dot Probe Paradigm ......................................................................... 99 
  3.3 Summary of limitations of the research to date ...................................... 103 
4 Chapter Four ............................................................................................ 106 
  4.1 Introduction .......................................................................................... 106 
  4.2 Method .................................................................................................. 109 
  4.2.1 Design .............................................................................................. 109 
  4.2.2 Participants ...................................................................................... 109 
  4.2.3 Measurements ................................................................................. 110
Figure 2.6 reflects a model based on the combination of models one and two.

Table 6.1  Psychological profile of patients at pre, post, and follow up sessions. Means (SD) ... 158
Table 5.3 Means (SDs) of the chronic pain patients and healthy controls on self-reported measures.
Table 5.2 Presents the demographic characteristics of experimental groups. ............................... 138
Table 5.1 Word pairs used in the Dot-probe Task......................................................................... 136
Table 4.4 Mean reaction times (ms) of each word group (affective, disability, sensory, and threat),
Table 4.3 Inter-correlation between questionnaires ...................................................................... 119
Table 4.2 Characteristics of participants ....................................................................................... 117
Table 4.1 Word pairs used in the Dot-probe Task......................................................................... 114
Table 3.1 summarises the studies used Stroop task in chronic pain population.............................. 98
Table 2.2 Inter-correlation between measurements......................................................................... 66
Table 2.1 shows the means and (SDs) for self-report questionnaires.............................................. 65
Table 1.2 Contemporary models of chronic pain ........................................................................... 35
Table 1.1 Asmundson’s model of anxiety sensitivity and fear of pain.............................................. 34

Figure 2.5 shows the structural model of pain fear/avoidance and disability and the impact of pain
Figure 2.4 Shows the standardised path coefficients for the variables in the model 1. (all coefficients are significant, p<.001). R1-R8: residuals; Z1: equivalent with constant in regression equation; FPQ: Fear of pain questionnaire; TSK :Tampa Kinesiophobia Scale; PRSS-CAT: catastrophising subscale of PRSS; Avoidance: Fear/avoidance of pain (LV); PSEQ: Pain self-efficacy questionnaire; RDQ: Roland & Morris disability checklist. Pain: MPI pain severity subscale; ASI: Anxiety sensitivity scale; DASS-A & DASS-D: Anxiety and depression subscales of DASS respectively. .............................................................. 68
Figure 2.3 depicts predicted relationships based on model 2. Paths marked with “1” are fixed to identify the model. Neg/aff: Negative affectivity (LV); Avoidance: Fear avoidance (LV). ................................................................................................. 62
Figure 2.2 Structural model as predicted based on Vlaeyen et al. (1995) Theory. Paths marked with “1” are fixed to identify the model. Neg/aff: Negative affectivity (LV); Avoidance: Fear avoidance (LV). ........... 50
Figure 2.1 Fear avoidance model (Vlaeyen et al., 1995). ................................................................. 50

Figure 4.5 Pattern of attentional biases for different type of words. ............................................. 125
Figure 4.4 Mean reaction times for threat words by fear of pain group........................................ 123
Figure 4.3 Mean Reaction times for affective words by fear of pain group.................................. 122
Figure 4.2 Mean reaction times for disability words by fear of pain group.................................. 121
Figure 4.1 Mean reaction times for sensory words by fear of pain group..................................... 120

7.5.3 study four ........................................................................................................................ 182
7.5.2 study three ....................................................................................................................... 180
7.6 Theoretical implications....................................................................................................... 183
7.7 Directions for further research .......................................................................................... 185
7.8 Conclusion............................................................................................................................ 188
8 references .............................................................................................................................. 190
9 Appendices ............................................................................................................................ 215

Table of Figures

Figure 6.1 Demonstrates the change in attentional bias towards sensory-related pain words relative to other types of word at three occasions of assessment. .......................................................... 161
Figure 6.1 shows the structural model of pain fear/avoidance and disability and the impact of pain self-efficacy (All coefficients are significant, p<.001). .............................................................................................. 70
Figure 2.6 reflects a model based on the combination of models one and two.

Figure 5.1 presents the pattern of attentional biases for different word type for patients with chronic pain and healthy control subjects. ................................................................. 142
Figure 5.1 shows the structural model of pain fear/avoidance and disability and the impact of pain self-efficacy (All coefficients are significant, p<.001). .............................................................................................. 70
Figure 4.1 Mean reaction times for sensory words by fear of pain group..................................... 121
Figure 4.2 Mean reaction times for disability words by fear of pain group.................................. 122
Figure 4.3 Mean Reaction times for affective words by fear of pain group.................................. 122
Figure 4.4 Mean reaction times for threat words by fear of pain group........................................ 123
Figure 4.5 Pattern of attentional biases for different type of words. ............................................ 125

List of Tables

Table 6.1 Psychological profile of patients at pre, post, and follow up sessions. Means (SD) .... 158
Table 6.2 shows raw scores on dot probe at three occasions.

Table 6.3 Inter-correlation of change scores for clinical measures, demographic features, and sensory index.

Table 6.4 presents the regression model used to predict change score in attentional biases to sensory words from time 2-time 3. Predictor variables are change scores during the treatment period.
Abstract

Cognitive-behavioural based models of chronic pain contend that appraisals of harm affect the individual’s response to pain. It has been suggested that fear of pain and/or anxiety sensitivity predispose individuals to chronicity. However, other factors such as pain self-efficacy are believed to mediate between experience of pain and disability. According to this view, pain is maintained through hypervigilance towards painful sensations and subsequent avoidance. Four studies were conducted in order to evaluate the structure of fear-avoidance models of chronic pain, and also, to examine the role of hypervigilance as an underlying mechanism in maintenance of pain.

In study one, using a sample of 207 consecutive patients, two models were tested. First, fear of movement model as proposed by Vlaeyen et al. (1995a) was examined. It was found that negative affectivity has direct effects on the fear and avoidance of pain, which in turn, contributes to disability. In total, fear/avoidance accounted for a significant amount of the variance of disability. In addition, severity of pain was found to increase pain disability, while itself is influenced still by negative affectivity. These findings supported the model of fear of pain as described by Vlaeyen et al. (1995a). Further, we found that self-efficacy may mediate the impact of fear of pain on disability and reduces the perceived physical disability. At the same time, self-efficacy was shown to have direct reductive impact on disability. However, both studies indicated that people who are fearful in response to pain are more likely to develop disability, although self-efficacy may play a moderating role.
In the studies one, two, and three, the role of hypervigilance in over attending to pain was investigated. In study one a large sample of 168 chronic pain patients were studied. Questionnaires measuring different aspects of pain and a computerised version of the Dot-Probe Task were administered. Four types of words related to different dimensions of pain and matched neutral words were used as stimuli. Reaction times in response to the stimuli were recorded. A factorial design 3x4x2x2 and ANOVAs were employed to analyse the data.

Chronic pain patients showed a cognitive bias to sensory pain words relative to affective, disability, and threat-related words. However, contrary to expectations, those high in fear of pain responded more slowly to stimuli than those less fearful of pain.

These results suggest that patients with chronic pain problems selectively attend to sensory aspects of pain. However, selective attention appears to depend upon the nature of pain stimuli. For those who are highly fearful of pain they may not only selectively attend to pain-related information but also have difficulty disengaging from those stimuli.

In study two, 35 chronic pain patients were compared with the same number matched healthy subjects. Both groups completed measures of fear of pain, anxiety sensitivity, depression and anxiety, in addition to dot probe task. Results indicated that both groups show similar attentional bias to sensory words in comparison with other word types. However, the level of this biasness was higher for chronic pain patients. Lack of significant differences between patients and controls is discussed in the context of possible evolutionary value of sensitivity to
pain as an adaptive reaction in healthy controls, and contrary, as a maladaptive response to pain in chronic pain patients.

The results of the previous research suggest that chronic pain patients demonstrate cognitive biases towards pain-related information and that such biases predict patient functioning. The forth study examined the degree to which a successful cognitive-behavioural program was able to modify the observed attentional bias towards sensory pain words. Forty-two patients with chronic pain conditions for more than three months were recruited prior to commencing a cognitive-behavioural pain management program. Participants were assessed before the program, after the program and at one-month follow-up. Results confirmed that chronic pain patients exhibited biased attention towards sensory pain-related words at pre-treatment. These biases were still evident at post-treatment, but were no longer statistically significant at follow up. Multiple regression analyses indicated that the changes in attentional bias towards sensory words between post-treatment and follow-up were predicted by pre- to post- treatment changes in fear of movement (Tampa Scale for Kinesiophobia) but not other relevant variables, such as fear of pain or anxiety sensitivity. These results demonstrate that successful cognitive-behavioural treatments can reduce selective attention, thought to be indicative of hypervigilance towards pain. Moreover, these biases appear to be changed by reducing the fear associated with movement. Theoretically, these results provide support for the fear of (re)injury model of pain. Clinically, this study supports the contention that fear of (re)injury and movement is an appropriate target of pain management and that reducing these fears causes patients to attend less to pain-related stimuli.