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**Examination of Three Attentional Strategies  
on Pain Coping and Recovery  
From the Cold Pressor**

A thesis presented in partial fulfilment  
of the requirements for the degree  
of Masters of Arts in Psychology  
at Massey University

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1996

## ABSTRACT

The literature supports the role of attention diversion strategies in the modification of pain perception. Recently it has been suggested that the presence of an overt action is a necessary component of these often multicomponent tasks. Research has also indicated that attention distraction and suppression strategies may carry with them long term cost.

The present study compares the effectiveness of three attentional strategies in an attempt to isolate the necessity of an overt response. It also examines for the presence of a long term cost of these strategies in the form of a rebound effect.

Sixty eight subjects were randomly assigned to one of four strategies: suppression, distraction through visual detection, distraction through visual detection with a response, and control. There were no significant differences between the groups on pain tolerance and pain ratings or on recovery. The recovery from the cold pressor was found to be significantly related to the tolerance time. Subjects who were exposed to the cold water longer recovered more slowly. These results are discussed in terms of pain theory and future research.

## ACKNOWLEDGMENTS

I would like to thank my supervisor Malcolm Johnson for his expert advice and assistance, it was very much appreciated. Thank you to Steve Humphries for his practical help and patience with the experimental design and with the data analysis.

Thank you also to Cath who proof read the draft. Thank you for helping me at this important final stage. Thanks also to the people who volunteered for my study.

Thank you to family and friends who have been sources of support and inspiration over the years. Finally thank you to Michael, for your love and support and much needed understanding throughout the year.

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## CHAPTER 1

### INTRODUCTION

Research both internationally and in New Zealand reveals that pain is one of the most common and costly health care problems faced today. A study by James, Large, Bushnell and Wells (1991) reveals that of the urban New Zealand adult population sampled, 80% reported that they are affected by pain to the extent that it interfered with their life or activities, led to professional consultation, or necessitated the use of drugs. Von Korff, Dworkin, and Le Resche (1990) report that in America 37% of those surveyed reported recurrent pain, of whom 8% had severe and persistent pain. Similarly, Meinhar and McCaffery (1983) estimate that one third of the American population have recurrent pain problems. Bowsher, Rigge, and Sopp (1991) report that, in Britain, 7% of their random sample suffered from chronic pain. Although the prevalence of pain appears somewhat varied, Crombie, Davies, and Macrae (1994) suggest in their review of the epidemiological research that the discrepancy is at least in part due to differences in definitions of pain used. However, they conclude that there is overwhelming evidence that chronic pain represents a major public health care problem.

One of the most prevalent pain problems is back pain. Back pain (BP) is responsible for 25% of all work related injury claims in Australia (WorkCover Corporation, 1992). National statistics in European countries reveal BP has a yearly prevalence in the 25 to 45% range and chronic BP has a prevalence in the 3 to 7% range (Gunnar & Anderson, 1996). In the United States the yearly prevalence for BP is in the 15 to 20% range, and chronic BP is in the 1 to 2 % range (Gunnar & Anderson, 1996). In all industrial countries the life time prevalence of BP exceeds 70%. In New Zealand the Accident Compensation Corporation reports a trend of escalating incidences of back injury and nonspecific chronic back pain (Robinson, 1996).

For those people for whom chronic pain is part of everyday life, the costs in terms of suffering, for both the individual and the family can be incalculable (Turk and Rudy, 1992). Not only can persistent pain have profound physical effects such as impaired sleep and reduced appetite, it can also cause disruption in daily living, ability to work, financial security, and quality of life.

Over and above the human suffering resulting from pain, there is a large financial cost to society. Survey studies in America report that pain costs over US\$25 billion in direct health care (Nachemson, 1992), as well as accounting for over 700 million lost working days a year, at a cost of US\$60 billion dollars (Meinhart & McCaffery, 1983). The financial costs of pain to New Zealand are equally high. Indeed, approximately one third of the Accident Compensation Corporation (ACC) budget will be spent on low back sufferers. Compensation on new back strain claims increased by \$7.3 million from \$30.4 million in 1993-94 to \$37.7 million in 1994-95 (Robinson, 1996).

Advances in our understanding of pain will lead to more effective and efficient treatments of this vast health care problem. Clearly this would lead to a reduction in suffering as well as decreasing the financial cost.

Over the last 30 years there have been many changes in theories and treatments of pain. One of the most important changes is the move to looking at pain as a multi-dimensional experience. This has opened the door to the study of the psychological aspects of pain perception. Studies in this area have identified many psychological variables which exert an influence on pain and have used them to reduce or change pain perception in both laboratory and field settings. One variable which has been investigated extensively is attention.

Although significant progress has been made in terms of theory and understanding of the way attention effects the perception of pain, there are certain questions which remain unanswered. From the research it remains unclear which characteristics of the

many attentional strategies studied are necessary for the most effective and efficient treatment. Recently, the suggestion has also been raised from thought suppression theory that attentional strategies may, in fact, carry with them a cost in terms of recovery.

The present study will investigate the necessity of a response in a simple distraction task, as well as examining the possibility of a cost arising from the use of attentional strategies. The following chapters will include a description of the history current status of pain theory, a discussion of the role of attention in pain processing with a review of the relevant literature, and an outline of thought suppression theory and how this relates to pain. This will be followed by an outline of the current research, method, results, and discussion.