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Evaluation of a cognitive-behavioural pain management programme with severely chronic pain patients

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EVALUATION OF
A COGNITIVE-BEHAVIOURAL
PAIN MANAGEMENT PROGRAMME
WITH SEVERELY CHRONIC PAIN PATIENTS

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ABSTRACT

Cognitive-behavioural group therapy and self-help materials are frequently used in therapy with chronic pain patients, but have received little systematic investigation when used with severely disturbed chronic pain patients.

The present study stands in contrast to others working with more selected groups. Patients investigated here had severe psychological problems, particularly depression in addition to high levels of chronic pain and disability. Self-help materials were provided before group therapy. Therapeutic interventions were evaluated by McGill Pain, Oswestry Disability and Pain Locus of Control Questionnaires, B.D.I., self-recording diary episodes and memory recall test. No significant changes in pain or disability measures were found, but there were significant cognitive changes as assessed by raised control and memory for nonpain words. Assessments which predicted change were also identified. The need to match interventions to individuals, limitations of group therapy with highly disturbed individuals and the importance of multidisciplinary work for success are noted. The results are discussed within a development of the transitional model described by Karoly and Jensen (1987).

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CHAPTER ONE: PSYCHOLOGICAL THERAPY WITH CHRONIC PAIN

INTRODUCTION

The nature of pain itself is confounded by uncertainty. It was originally conceived of as an emotional rather than sensory state, at least by Aristotle who distinguished pain from the five senses, classifying it as a "passion of the soul" (Dallenbach, 1939). This thinking prevailed until the 19th Century, after which pain was explained by the existence of specific nerve impulses transmitted along pain pathways to the cortex which were then perceived as pain sensations. These specific theories have resulted in sometimes successful medical procedures which have been of great value in treating acute pain, but less so in treating chronic pain, for example, low back pain.

As Main (1983) points out, difficulties in medical diagnostic explanations of chronic pain together with poor response to medical treatment have resulted in greater interest in psychological aspects of pain.

There is now substantial evidence from various sources including neurological and experimental (for example, Melzack & Wall, 1965) that pain has affective and cognitive components as well as sensory. This is particularly so when pain is chronic, that is, lasting more than six months. In chronic pain social and interpersonal factors play an important part and rewards and punishment from significant others can affect the pain response (for example, Fordyce, 1976).

The notion that psychopathology leads to chronic pain and vice versa has absorbed psychology and psychiatry for some time. There are undoubtedly significant relationships between pain and personality traits, such as self-esteem, anxiety, depression, hysteria, hypochondriasis, neuroticism and locus of control (Nigl, 1984). However, the pursuit of these relationships has proved of much less value than other assessment and therapeutic approaches in the treatment and understanding of pain.

Generally, it can be said that it is now recognised by most disciplines that pain involves not only physiological but social and psychological factors. This is typified by Melzack and Wall's (1965) Gate Control Theory combining anatomical and psychological variables. Attention, mood, expectation and past experiences can vary the level where sensory stimulation activates the pain experience to open the pain threshold, or 'gate'. If any theory can begin to reduce the uncertainty inherent in the puzzle of pain by taking account of multidisciplinary knowledge, Melzack and Wall's theory goes a long way towards this.

Acute pain can nearly always be relieved by analgesia or anaesthesia. Chronic pain, however, is different; it can indeed be defined, in addition to duration, by the fact that effective medical procedures are no longer salient to improve the physical pathology (for example, rheumatoid arthritis or advanced malignancies) or, indeed, by default because it is not possible to identify the pathology in a treatable way (the case with many people suffering low back pain).

Psychological methods of pain relief have achieved more rapid widespread popularity than other medical specialties. This is a consequence of the significantly large numbers of patients who fail to find pain relief from medicine (Main & Parker, 1989).

PSYCHOLOGICAL THERAPIES

Aristotle stated that pain could be overcome by "the permeation of reason" (Turk, Meichenbaum & Genest, 1983). The concept of psychological remedies is not fundamentally new. Much later, Beecher (1946) researching pain experienced by soldiers wounded in battle, noted that the personal meaning of pain determined the amount of pain felt; for some soldiers wounded in battle, injury meant a 'ticket home'. Cognitive therapists today would recognise the cognitive strategy of reinterpretation, one of a range of coping strategies which aims to change the patient's appraisal of the painful situation. Behaviourally orientated workers would, on the other hand, take account of the significance of this powerful reward in relation to the soldiers' pain behaviours.

This section of the review covers psychological approaches used in the treatment of pain, labelled for convenience behavioural (including relaxation and biofeedback) and cognitive (including hypnosis). These approaches may be and often are combined as in cognitive-behavioural or hypnotic-cognitive and may also be applied in individual, family or group settings. The various psychological treatments can also be combined with medical procedures and should not be conceived of as alternative, but rather additional therapeutic strategies.

Behavioural Therapies

Fordyce (1976) developed thinking and practice on the role of conditioning and learning in pain behaviour, particularly in chronic pain where there is prolonged and continuous opportunity for it to come under the control of environmental contingencies. The operant viewpoint asserts that pain is mainly a problem of behaviour. Fordyce expounded an operant rather than respondent model of pain positing chronic pain in particular to be subject to positive and negative reinforcers which could include attention from the family, doctor or financial compensation. According to this model, pain behaviours are reinforced, for example, by lying down, which can become an established pattern of behaviour. When the patient is active and involved in distracting activities, intensity of pain will reduce as attention to sensations are reduced.

Research has given considerable support to the operant model of treatment for chronic pain which involves primarily changing the reward contingencies provided by family, friends and significant others (Fordyce, 1976). Patterns of behaviour have been shown in a large number of studies to be highly responsive to environmental contingencies and verbal reinforcement; tolerance to exercise in particular is shown to change. The major pain management task is to encourage the patient to end undesirable pain behaviours and substitute with well or adaptive behaviours.

There are three procedures to this end: the first is to identify and eliminate the reinforcement of undesirable pain behaviours, the second is to reduce medication and the third is to increase activities. Therapy typically involves daily self-monitoring, structured occupational therapy, instructing significant others in reinforcing more appropriate behaviours and systematically decreasing medication.

One illustrative study was carried out by Cairns and Pasino (1977) using verbal reinforcement for exercise behaviour. Three patients were verbally reinforced on daily exercise levels, three had publicly displayed graphic feedback and a control group of three had no special treatment. The two operant groups showed significant increase in exercise with verbal reinforcement shown to be the most active intervention component.

While most of these studies have taken place in an institutional setting, Fordyce (1976) also emphasised the importance of the natural environment by involving family members taught to apply operant procedures at home. Behavioural work with pain after Fordyce became less inpatient focused using a range of techniques individually tailored to the patient's needs. Relaxation, stress management, assertion training and biofeedback became popular components of behavioural pain management programmes in the seventies and eighties.

Relaxation

The treatment rationale simply is that muscles involved with pain inevitably tense up thereby maintaining and increasing pain sensation as well as preventing normal activity. However, it is also of use where muscle tension is not the primary cause of pain. Relaxation may reduce muscle tension throughout the body and if this is associated with reduction of anxiety it can reduce the pain experienced since it has been demonstrated that anxiety can increase ratings of pain intensity (Hall & Stride, 1954). Moreover, there is a cognitive effect as relaxation acts as a distraction and relaxation can increase perceived control by the patient; belief in control or mastery of pain have been shown in a number of studies to have the effect of increasing pain tolerance (for example, Thompson, 1981).

Relaxation has been widely studied in tension headache and generally shown to be effective (Tasto & Hinckle, 1973). Gessel and Alderman (1971) have described successful relaxation in myofacial pain dysfunction and Linton (1986) has reviewed studies showing success with low back pain.

Biofeedback

Different types of feedback are used. These include Electroencephalogram (E.E.G.) where the aim is to increase alpha wave activity. The nature of the process is unclear and explanations include operant conditioning, skills learning, relaxation, discrimination learning and cognitive theory. Again, control may well be the most important aspect. With mixed chronic pain patients, Melzack and Perry (1975) showed hypnosis plus alpha feedback to be better than either on its own.

Skin temperature feedback has been widely used for migraine. Increases in skin temperature occur with increase in peripheral blood flow which in turn is believed to be associated with decreased cranial sympathetic activity. Increased muscular responsiveness may cause migraine and the theory is that reducing cranial sympathetic activity should reduce migraines, but research results are ambiguous.

Temperature feedback has also been used in other disorders such as arthritis (Denver, Grove, Leblond & Latulippe, 1979).

Heat is regularly reported as helpful in many pain conditions and is often used in physiotherapy. Again, it is likely that the more localised the pain, the greater the probability that biofeedback or heat will be effective.

Electromyographic biofeedback (E.M.G.) has been the most widely used of these procedures because muscle activity is involved in so much pain. For example, Carlsson and Gale (1977) demonstrated that nine patients out of eleven with temporomandibular joint pain improved to various degrees. E.M.G. has been used mainly with tension headache but only one study has shown it to be better than relaxation alone for this problem (Budzynski, Stoyva, Adler & Mullaney, 1973). It is considered most useful where a clear link exists between tension and pain, for example, in myofacial pain-related to jaw muscle tension, rather than for nonspecific low back pain. The more recent and substantial study by Flor and Birbaumer (1993) provides support for this view. These researchers allocated fifty-seven patients with chronic back pain and twenty-one with temporomandibular pain randomly to either E.M.G. biofeedback, cognitive-behaviour therapy or medical therapy. The E.M.G. biofeedback group showed most improvement which was maintained over a two year period. However, evidence is lacking to support the assumption that muscle change activity relates to changes in pain perception.

Like purely operant methods, biofeedback may take insufficient account of broader affective and cognitive factors. This together with lack of evidence for relationships between the physiological process and pain report casts doubt on the usefulness of biofeedback as the sole treatment method.

Behavioural Therapies: Conclusions

Although behavioural principles will be used by most workers to some extent, the literature suggests that behavioural treatment programmes work best where there has been direct encouragement for pain behaviour by others, and the known disease does not account for the pain behaviour observed (Tyrer, 1992). Many patients are locked into long term lifestyles with significant others; the pain behaviour of these patients provides them with very positive assets. These behaviours are probably the most difficult to change by any approach, and an operant programme may provide the best chance.

Conversely, it seems clear from a study by Waddell, Bircher, Finlayson and Main (1984) that staff's treatment behaviour is heavily influenced by patient's behaviour. Studying 380 back pain patients these authors showed that the amount of treatment received was influenced more by their illness behaviour than the physical disease itself thereby demonstrating the significant role played by significant others working in health care. These authors reiterate an important theme later stressed in this review, namely that better assessment is required to heal people as well as their disease.

Karoly and Jensen (1987) have emphasised the complexity of pain experience, and it is often stated that a purely behavioural approach to pain deemphasises both this complexity as well as the experience of the sufferer. Fordyce (1976) himself acknowledged that his operant methods might change only the amount of pain verbally reported and not the experience, and it is possible that all that has changed in these studies is verbal behaviour in response to withdrawal of social reinforcers to verbal pain complaints. Psychological coping styles and individual differences may not be given due credence in a purely behavioural programme and largely in recognition of this, the cognitive-behavioural approach has generally replaced the more limited model. The importance of behavioural assessment, however, remains an important component of the total assessment.

Cognitive Therapies

The concern here is with the way people conceptualise their pain, including beliefs about the cause, development of the illness as well as treatment outcomes. These cognitions relate to how the sufferer adapts to illness, how the person interacts with medical services and most importantly, their mood state. Cognitions may be accurate and logical but even if 'correct', it may be unhelpful to continually dwell on them. Broadly, the aim of cognitive therapy is to help the patient change such beliefs.

Most research on the efficacy of pain management programmes has focused on the operant-conditioning approach of Fordyce described above and the cognitive-behavioural approach developed by Meichenbaum and Turk (1976). The latter approach to pain grew hand in hand with the growth of cognitive-behavioural theory generally as applied to the wide range of psychological problems. Moreover, the cognitive-behavioural approach was considered compatible with the Gate Control Theory of Melzack and Wall (1965) taking into account the sensory, affective and cognitive components of pain and emphasising the need for multifaceted treatment.

The roots of cognitive therapy relating to pain also lie partly in dissatisfactions with a restricted behavioural model for pain as described, particularly difficulties of generalising results out of the treatment unit. Another early influence on cognitive therapy for pain came from observations made from hypnotic analgesia in the 19th Century (Wardel, 1985).

Self-control research, for example, Kanfer and Goldfoot (1966) gave an early impetus to developments in cognitive therapy for pain. Stress inoculation developed by Meichenbaum and Turk (1976) provides a wider context within which to work with pain problems. Here pain patients are introduced to a cognitive approach emphasising record keeping and education, followed by training in cognitive strategies including self-talk procedures (Meichenbaum, 1977). The emphasis in this approach is on coping rather than curing, with pain self-management the goal. Sustained mental effort is implied in such programmes. Holzman, Turk and Kearns (1986) summarised the four major objectives:-

a) Reconceptualise the patient's view from hopelessness to hopefulness
b) Encourage patients to monitor their thoughts, feelings and behaviour in order to establish links between these and the environment and symptoms
c) Ensure patients have resources in terms of behaviour to deal with problems
d) Learn and put into practise more effective ways of thinking, feeling and responding.

Since cognitive and cognitive-behavioural methods are often combined, it may be useful to make clear the distinction. Cognitive methods aim directly at changing thought processes - cognitions determine experiences and emotions; faulty cognitions can increase anxiety, depression and pain. Cognitive methods of pain control may therefore provide information, identify maladaptive responses and train in specific cognitive coping skills. On the other hand, cognitive-behavioural approaches are more comprehensive and include cognitive strategies, but also traditional behavioural strategies such as desensitisation, contingency management, assertion training and relaxation. The distinction between cognitive and cognitive-behavioural is largely arbitrary. The term 'cognitive methods' has been widely used to describe a range of coping skills and provision of information. These will now be reviewed, followed by a review of cognitive-behavioural methods.

Cognitive Methods

Coping Skills

Idiosyncratic cognitive coping skills are employed by people with pain in their daily lives, unprompted. Such "self-taught" strategies have caused some problems in research, because people in experiments have reverted to their use and ignored those taught by the experimenter (Scott & Barber, 1977) and supposedly 'no treatment' control groups use their own strategies.

Turk (1978) divides cognitive coping skills into the following six categories. Imaginative inattention involves ignoring the pain by using incompatible imagery, for example, enjoying a walk in the forest. Imaginative transformation involves a reinterpretation either as one which is different from the pain or which minimises it as unimportant, for example, relabelling pain as numbness or tightness. In imaginative transformation of context, the patient is asked to imagine that the pain experienced is occurring in a different context.

Attention diversion can involve <u>external diversions</u> like counting pavement stones or <u>internal diversions</u> such as reciting poetry or carrying out mental arithmetic. <u>Somatisation</u> is a cognitive technique where the patient is taught, while acknowledging the pain sensations, to consider them in a detached way, for example, as though she was writing a report or a magazine article about the experience. Studies involving such methods typically compare a group which has been instructed in a strategy with a control group which has had no such instruction. These are usually laboratory studies where pain levels can be systematically altered.

Examining a large number of studies employing the above coping skills, Turk (1978) has concluded that the data is largely inconclusive, however, imagery strategies have been shown to be more effective than others. However, Tann (1982) points to methodological shortcomings in Turk's study, for example, treating different dependent measures as equivalent.

Within a clinical framework, Rybstein-Blinchik (1979) studied the effects of cognitive strategies with people suffering chronic pain. Cognitive strategies which involved reinterpreting pain experiences were shown to be superior, compared to attention diversion or somatisation. Tann (1982) concludes that the results of such clinical pain studies are "quite encouraging but still somewhat equivocal", emphasising the need for better controlled studies in this area.

McCall and Marlott (1984) have made a strong case for the value of distraction to reduce distress, both in clinical and experimentally induced pain. These authors have defined the conditions under which distraction is thought to work best and conclude that distraction requiring more attentional capacity is more effective, and has stronger effects on low intensity pain. Distraction is more effective than strategies redefining sensation for mild pain, but the reverse is true for intense pain. They provide research data supporting these principles. For pain of increasing intensity it follows from above that it would be most effective to start with distraction when pain is mild, but as pain increases and distraction is not sufficiently powerful to compete, redefinition would then become the more effective strategy. Taking an example from childbirth, distraction would be useful for early labour, moving to redefinition when stronger contractions begin.

Information

Provision of information is important prior to painful medical procedures which can be clearly and predictably described. The aim is to alter positively the patient's cognitive appraisal of events. Johnson and Leventhal (1974) showed, for example, that providing information before operations reduced the length of postoperative hospitalisation as well as experienced pain. The success of the approach is, however, subject to individual differences; Auerbach, Kendall, Cuttler and Levitt (1976) showed that dental patients with high internal locus of control reacted better to information than low internal controllers.

Information obtained by assessing beliefs about pain can relate to choice and compliance with therapy (Williams & Thorn, 1989). An example of this is a study by Schwartz, DeGood and Shutty (1985) who asked pain patients to watch an informational video tape on pain therapy. Those who later rated this information as relevant to their own particular pain benefited more from therapy. Those in disagreement with the rationale had, after therapy, higher reported pain level, lower activity level and expressed less satisfaction with the treatment.

Hypnosis

Hypnosis can be interpreted within a cognitive framework with social and affective factors involved. A number of laboratory investigations by Spanos, Stam, D'Eon, Pawlak and Radtke-Bodorik (1980) suggest that hypnosis is the result of very active cognitive processes, similar to complicated cognitive strategies; but when questioned later, participants insist they had 'done nothing'. Hypnotic subjects similarly define their pain reduction strategies as effortless. Hypnosis may therefore be a much more active process, more like cognitive therapy, than is generally believed. Reported self-perception of 'effortlessness' may simply be a response to the demand characteristics of the hypnotic situation. Turk and Holzman (1986) believe the development of such thinking will bring hypnosis directly into cognitive-behavioural therapy framework.

Early reports have existed of the effectiveness of hypnosis or hypnotherapy in pain relief, although the scientific validity of hypnosis has remained in doubt. However, a number of older but well controlled studies, such as McGlashan, Evans and Orne (1969), concluded that hypnosis can be effective in reducing experienced pain. Hypnosis has been used in many painful conditions, but is often regarded as more effective for acute than chronic pain (Turner & Romano, 1984). However, it has been used with chronic pain caused by cancer, severe burns, headaches and phantom limb pain (Hartland, 1971).

Cognitive-Behavioural Methods

The approaches deriving from these two areas are frequently combined. Providing preparatory information plus coping skills has been found particularly useful in reducing stress (Tann, 1982). Multifaceted cognitive-behavioural programmes are frequently used. Gottlieb et al. (1977) studied seventy-two chronic back pain inpatients within a programme which included education, biofeedback, relaxation, assertion training and group therapy. The impressive results showed that 79% had unimpaired functioning levels and 82% were employed at discharge. Other studies suggest the value of combining cognitive-behavioural interventions with traditional medical treatment, for example, Turk (1978). One problem in these multifaceted approaches is that it is not clear which aspect of the therapy is effective, however, they do provide a range of strategies from which patients select whatever works best for them. This is the case with stress inoculation.

Stress Inoculation

This is a skills oriented cognitive-behavioural range of strategies which has also been used in relation to anxiety and anger management (Meichenbaum & Turk, 1976) where patients are given a variety of skills from which they choose. For pain management, the first phase in stress inoculation is the provision of a theoretical framework, usually the Melzack-Wall Gate Control Theory. This is followed by the rehearsal phase where patients are taught a variety of cognitive and behavioural techniques, for example, distraction and relaxation. Patients choose from the range themselves, thereby making allowance for their individual differences. In the final phase, patients put these skills into action by role playing, rehearsal or applying to real life pain.

Some laboratory studies evaluating stress inoculation have been favourable, for example, Hackett and Horan (1980), but there is a paucity of evaluation studies in chronic pain generally. Despite this fact, cognitive-behavioural methods have become the most widely used with pain. One reason is the link of pain with depression where cognitive therapy is often regarded as the treatment of choice.

Beliefs

Williams and Thorn (1989) developed the Pain Beliefs and Perceptions Inventory designed to assess the beliefs chronic pain patients hold. Factor analysis has revealed three factors: time, that is the belief that pain will last throughout life; mystery, that their pain is poorly understood and self-blame, the belief that the pain is maintained or caused by the patient. Using this scale, the authors showed that those scoring high on the time factor had low compliance with physical and behavioural therapy. Those high on the mystery factor showed lowered self-esteem and higher somatisation with poorer treatment compliance compared to patients who felt they understood their pain. The conclusion is that reported pain, therapy compliance and psychological functioning are directly related to the beliefs that patients hold. A further study by Williams and Keefe (1991) using their inventory, showed that patients high on the mystery dimension were less likely to make use of cognitive coping strategies and were more likely to catastrophise.

The conclusion is that understanding coping strategies is greatly facilitated by assessing patient's beliefs. Furthermore, development of chronic pain and associated depression may be related directly to cognitive factors, for example, Rudy, Kerns and Turk, (1988). Cognitive factors can influence the result of rehabilitation and purely medical therapy, for example, Rosenstiel and Keefe (1983).

Group Therapy

Most of the leading pain clinics in the country use groups as part or the main component of therapy. All the traditional values and advantages of groups can be employed. There develops an esprit de corps, a mutual sharing of feelings, experiences and support often extending beyond group meetings. Groups are economical in terms of therapist time and are particularly useful to raise awareness of psychological pain games, allowing members to analyse their own behaviour.

Groups can be particularly useful in challenging pain games (Sternbach, 1974b). Sternbach followed up 61 patients six months after group therapy - a goal oriented behavioural approach where pain games, for example, attention seeking, were actively challenged. The groups reported reduced pain, increased activity and reduced analgesic medication, although one third of the group members were nonresponders and could have been treatment failures. A considerable number of other studies bear out the value of group cognitive-behavioural therapy (for example, Herman & Baptiste, 1981).

Pain groups have also been reported, by virtue of their support and enabling functions, to help participants change their lifestyles, for example, Turner (1979). Again, this is done by group members identifying payoffs which are not consciously perceived by the patient. This process is much more effective than when it is carried out by staff. Activity is another important area of lifestyle and patients may be persuaded by the group that if inactivity and other strategies have failed, increased activity will help. Basically, the therapeutic strategy is to manipulate the social system so that patients receive greater rewards for a normal lifestyle and less rewards for pain behaviours.

Skills training is yet another important function of groups. Such skills include relaxation, social skills and assertiveness; there is little point in providing advice if patients lack the skills to put this into practise. Inability of patients to elicit sufficient information from health care providers about treatment and medication is common and this in itself may encourage a sense of being out of control and low esteem; communication skills may be taught in groups to improve this particular skill.

Groups are very useful in combating depression, loneliness and social withdrawal often encountered in chronic pain patients. By giving support to other members a sense of self-efficacy and restored confidence develops, reducing overreliance on partners. Modelling coping behaviour and observational learning become possible (Meichenbaum, 1971).

Pain groups as part of multidisciplinary pain management programmes are traditionally educational in nature; bibliotherapy is a useful device often used to reduce resistance and increase adherence (Turk, 1978). As an active process, bibliotherapy encourages involvement and participation and is therefore likely to reduce helplessness. It is important, however, to prepare for the written material so that it is discussed before and after distribution. It is also important to emphasise that some of the material will be relevant for some and not for others. Audio and videotapes may form part of the material provided. Genest (1979) used a bibliotherapy format with written and audiotape material and minimal experimenter contact within a laboratory pain format. The training was primarily stress inoculation. The treatment group pain tolerance time increased 56% compared to a no treatment control group of 2%.

The current study made use of relevant reading and audio materials within a group format. Two published pain management programme materials heavily influenced structure and process of both groups, namely, The Psychological Management of Chronic Pain (Philips, 1988) and The Pain Management Programme Training Manual of the Gloucestershire Royal N.H.S. Trust (n.d.)

Psychological Therapies: Overview

Turk and Holzman (1986) make the valid point that of the range of therapies, some of which are described above - from medical through psychological to alternative, some patients benefit and some do not. Nowhere has it made less sense to separate psychological factors from physical ones than in working with pain, a fact demonstrated in the widely accepted view of the need for multidimensional perspectives, for example, Melzack and Wall's (1965) Gate Control Theory. As observed in the opening paragraph of this thesis, remarkably little is known about pain. From the medical point of view, the true cause of low back pain is usually unknown (Nachemson, 1979). Green (1980) makes a similar observation in relation to myofacial pain.

Turk and Holzman (1986) identify the commonalities and differences in various psychological treatments. Common therapeutic features are reconceptualisation, encouragement of optimism, individualisation of treatment, active patient involvement, acquisition of skills, self-efficacy and self-attribution of change. The main differences are in the role of assessment with behavioural and cognitive-behavioural approaches placing great emphasis here. Another difference is the degree to which sufferers' families are involved and given special importance, typified by Fordyce's operant approach. Specifying goals in therapy is prominent in cognitive and cognitive-behavioural approaches, but less so in hypnosis or group therapy. Finally, attention given to the role of depression varies greatly, a key issue as many pain patients are depressed, for example the study by Kamlinger, Swanson and Maruta (1983) identified 50%.

Perhaps, with Turk, we can conclude that the various psychological therapies are best considered as tools in the therapeutic armamentarium. As in all therapies, individual differences in patients and therapists, as well as the so-called nonspecific factors, need careful attention in pain research. Metaconstructs may be superordinate to the various therapeutic strategies outlined above. Each approach appears to converge on the central issue of personal control, so before leaving the discussion of therapies for pain, this topic will now be reviewed.

Issues of Control and Attribution: Philosophical Underpinning

It is well recorded that patients with chronic pain put considerable faith in medicine to cure them, at the same time as they are faced with the reality that medicine is not going to accomplish that effect. It is proposed in this thesis that this may result in unresolvable cognitive dissonance which can contribute to depression, or at least a feeling of helplessness. It is therefore important to assess pain locus of control and depression.

The concept and measurement of locus of control (to be reviewed in the next section) has been further refined by some authors and examined within other theoretical frameworks such as learned helplessness (Seligman, 1975). Abramson, Seligman and Teasdale (1978), for example, emphasised uncontrollability as a key concept in learned helplessness and indeed Bowers (1968) showed that uncontrollability related to pain perception. The distinction Abramson, Seligman and Teasdale (1978) made between personal and universal helplessness is particularly useful in the study of pain. In universal helplessness, the belief is that no-one can help and in personal helplessness the belief is the inability to help oneself, but that others can. The Pain Locus of Control subscales of Control and Responsibility can contribute in making this distinction.

Levenson's (1974) refinement of the control concept described three orthogonal subscales of internal control, control by powerful others and control by chance. Skevington (1979) applied this scale to arthritic patients and her results suggested the presence of universal helplessness in chronic pain, closely linked to depression. She made the important point that when pain patients report to their doctor for treatment they are unlikely to present themselves as successful copers and are much more likely to present uncontrollability in order to elicit help. This may be true even for patients with a strong belief in internal or indeed chance control. The possibility of pain patients "faking bad" generally and specifically in the present study is a real one and will be addressed in the early part of the discussion section.

It may be the belief of having some control which matters, whether this is correct or not is less relevant. Averill (1973) makes this point and distinguishes three types of control. First, behavioural control where the person believes he or she is capable of a response to influence the objective characteristics of the threatening event, that is, pain. Second, cognitive control involves the ability to process the meaning of events in order to reduce stress and, third, decisional control concerns the opportunity of choice among several courses of action. The identification of these three types of control seems useful in designing the content of pain management programmes, and provides a paradigm for the strategies already discussed, as well as the level at which they might be expected to operate. For example, while the experience of behavioural control, such as relaxation, will not necessarily reduce the experience of pain, it may reduce interference of pain on tasks performed, such as in employment. The experience of behavioural control may also reduce negative aftereffects.

Thompson (1981) points to limitations of Averill's typology further refining the list to behavioural, cognitive, information and retrospective control. This author concludes that providing information while having some beneficial effect on sensation does not necessarily produce perceptions of controllability and in some circumstances can increase fear. Behavioural control while reducing anxiety and increasing tolerance for pain does not appear to reduce the painfulness of the stimulus. Cognitive control strategies are generally beneficial; simply having available a cognitive strategy reduces anticipatory anxiety, pain impact and postevent consequences.

Minimax Hypothesis

Miller (1979) proposed this hypothesis: having control in a situation indicates that one will be able to minimise maximum future danger. The concept was developed to explain the effects of behavioural control, but can be applied equally to cognitive control and to the effect of information (Thompson, 1981). The hypothesis also predicts that in some situations, some people will prefer no control. The important implication is that reaction to pain depends not only on a sense of personal control, but also on the perceived interests of those in charge of events. If the doctor is seen to minimise pain, for example, stress will be reduced.

Attribution and Control

It could be concluded that the unifying theme throughout the above is attribution. Beecher's (1946) observation, quoted earlier in this review, that injured soldiers were oblivious to their wounds, the effects of which signalled removal from the battlefield, is a potent example. The attribution assigned determines reaction and coping. The various strategies of psychological pain management can be seen as changing the attribution of the pain event from one that is unendurable to one that is not. If this argument is followed through, then an important part of therapy can be seen as helping patients assign appropriate explanations for their pain events.

This is an attribution different from the habitual for many in the current study who believed that medicine still could cure them. Taking personal control thus implies changing cognitions: the various psychological therapies may be considered methods to this end. Turk and Holzman (1986) believe that the most important research question in pain is not to ask which method worked best, but rather to enquire which patients, with which set of characteristics (demographic, psychological, somatic) are most likely to benefit from which set of treatment modalities? While the sample size of the present preliminary study was too small to adequately address this issue, the results may have some bearing, at least, on the general issue of pain and its cognitive aspects in particular.

CHAPTER TWO: PSYCHOLOGICAL ASSESSMENT OF PAIN

Among the reasons for evaluating or assessing pain are description, understanding antecedents and consequences of pain as well as treatment planning and evaluation. Treatment evaluation is the core purpose of assessment in the present thesis.

Pain is the single most frequently presented complaint, whether the patient suffering it attends a general practitioner or hospital doctor. Despite all available treatments, many patients' pain levels remain the same (Karoly & Jensen, 1987). For this reason, these authors emphasise the importance of accurate assessment. People with low personal and social resources are prominent amongst chronic pain sufferers. With this particular group the chances of success using psychological approaches is not high, therefore therapists need to 'stack the deck' in the direction of success. Karoly and Jensen (1987) state this issue even more strongly: treatment failures are therapist failures to adequately assess the sufferer's ideas and emotions, not only over time but also across different settings as well as in different dimensions. Clearly this points to the need for comprehensive, detailed multidisciplinary and multidimensional assessment within the available time and energy constraints of therapy and, or research.

An adequate pain assessment must measure cognitive, behavioural, affective and sensory components and requires in addition adequate knowledge of the patient's background; information about resources and beliefs derived from careful interview are needed, supplemented by a sequential measure such as a pain diary. Karoly and Jensen (1987) describe this as a broadening of understanding of the pain from physical, behavioural and affective to the cognitive representational (inwards) and the social vocational (outwards).

They caution against an over simplistic view in interpreting assessment results. Within the context of what they describe as the 'transitional perspective' pain patients may be in movement from one to another coping style. An example is the patient moving from dependence on the health care system to a self-help mode with greater autonomy (the aim of the therapy component of this research). If therapy is effective, patients will place themselves in new situations and pain assessments may well be asynchronous; experienced pain may fluctuate and this may depend on the patient's coping stage. Another dimension militating against simplistic interpretation of test results is what these authors call the 'naturalistic perspective'. This refers to the setting where pain occurs and is highly relevant, for example, it may well occur in the patient's natural environment and then only under specific conditions, but not in the clinical room unless the particular responses or memories are triggered. Thus, pain record discrepancies may only be a reflection of conditions under which testing takes place.

These contexts must be carefully considered in the interpretation of assessment results; they also point to the advantages of using as wide a range of assessments as practical. The assessment of clinical pain is germane to this thesis and will therefore be reviewed in some detail. Such assessment can be categorised as follows:-

a. Assessing Multilevel Issues
b. Assessing Pain Behaviour
c. Assessing Subjective Components
d. Assessing Pain-Related Cognitions
e. Assessing Psychological Status.
f. Assessing Pain Memories.

Assessing Multilevel Issues

Pain Interview

The pain interview is useful in supplementing multilevel information. Additionally, it serves a function as a reliability check on some items of quantitative assessments. It is particularly important for rapport building and is a two-way process with information provided to the patient. The interview forms the beginning of therapy and a therapeutic alliance develops where patients' concerns can be expressed and answered. A semistructured format enables a consistency where all patients are asked the same questions but in a form which may be more interactive and meaningful to the patient and the therapeutic alliance than formal psychometric assessment.

The broad principles guiding the construction of a useful interview format (including the present one) have been outlined by Karoly and Jensen (1987) as follows.

Firstly, it is useful to focus on the patient's pain experience as a starting point and to invite consideration of life before and after onset of pain. Secondly, it is useful to encourage the patient to anticipate life in the future, highly relevant in the therapeutic process of goal setting. Thirdly, treatments already experienced are relevant to consider, both medical and psychological to assess the level of the patient's hopes still invested in these procedures. Fourthly, the importance of pain in family and relationship contexts needs to be assessed; the family's response to the patient's pain behaviour has already been described as highly relevant (Fordyce, 1976). Finally, knowledge of factors making the pain worse or better, such as stress or self-help is also highly relevant for planning therapy. Beliefs about pain and the effect of pain on self-perception are also important to enquire about with reference to Karoly and Jensen's (1987) transitional perspective (the stage of coping).

Interview: Present Study

The purpose here was not only to obtain information, but provide it, and thereby motivate. The questions asked (Appendix C) were relevant for therapy and research derived from a number of sources including Cinciripini and Floreen (1983). Another purpose of the interview was to build rapport. Additionally, it provided further opportunity to check the exclusion criteria, current mental health status and obtain information not otherwise provided in formal assessments. It was intended to be administered not as a researcher administered questionnaire, but to assist the structure of an open ended discussion and enable systematic information gathering in such areas as family, social activities and opinions about treatment.

Brevity was an important consideration and the semistructured interview used in this study was also influenced by Cinciripini and Floreen (1983) who devised the '20 minute interview' shown overleaf. Patients have three minutes to respond and prompted if they pause for more than 20 seconds.

Cinciripini and Floreen's Interview:-

1. *Tell me about your pain. Describe it in detail - what makes it better or worse? What brings it on? When it started - things like that.*

2. *Describe the things you like to do, like leisure activity, hobbies, social gatherings and sports, and how often you do them.*

3. *Tell me about your family (wife or husband). How do they respond to your pain, what do they do, and how do they know you are hurting? How has the pain affected your relationship?*

4. *Tell me about your personality. What are your strengths, what things do you like about yourself, and what are your resources?*

Scoring the Interview

Responses were, for most questions, scored by summation and are presented in the Sample Characteristics section. However, many other responses were unscorable in this fashion and some were unreliable, particularly patients' memory of unsuccessful treatments and names of drugs. Other information proved useful in planning content of group therapy.

Assessing Pain Behaviour

Pain behaviour includes responses such as sobbing and wincing, pain relief actions like rubbing and negative behaviours like inactivity and staying in bed. Pain behaviour can be assessed by means of direct and self-observation and mechanical recording devices.

Pain behaviour is more likely to be directly assessed in a ward setting but can also be recorded in the home or work situation. Medication requests provide an example of easily recorded behaviour; so does 'up time' or 'down time' in relation to bed rest. Complaining behaviour can be recorded in relation to environmental factors linked to pain. Time sampling is another method of recording. The patient may be involved in the collection of data by means of monitoring personal pain between therapy sessions, for example, Budzynsky, Stoyva, Adler and Mullaney (1973). Here, pain diary cards are given to the patient. These have columns to record time of day and a scale of pain intensity; patients rate pain intensity during each waking hour. The pain diary is useful because it is the only way to sample the entire behaviour repertoire and is easily administered since the patient does the work. The more often the diary is completed, the more useful will be the results in providing an adequate sample. Compliance is the biggest problem and it is likely that the more complex the diary, the less chance that it will be filled accurately; retrospective diary keeping should be discouraged as pain memory is notoriously inaccurate (Morley & Pearce, 1993). However, one valuable aspect of this type of self-observation is that it gives responsibility for progress evaluation directly to the patient. Diurnal variation can be readily detected in this way and is useful, for example, to assess early morning stiffness in rheumatic disorders. Assessment of time pattern of pain forms part of the Glasgow Illness Model (Waddle, Bircher, Finlayson & Main, 1984). Scoring is a problem and diaries often use visual analogue scales; problems associated with these are described in the next section. Repeated measures can be analysed using time series design, but this should not detract from the straightforward clinical use of pain diaries. In the present study, diaries were used to assess subjective aspects of pain.

The Oswestry Disability Questionnaire

A number of assessments have been devised to record pain behaviour. Amongst these is the Oswestry Disability Questionnaire for Low Back Pain (Fairbank, Couper, Davies & O'Brien, 1980). This was developed in a physiotherapy setting and compares the patient's performance with that of a fit person in a number of activities such as lifting, walking and sexual relationships. It is self-administered and the study above reports validity and test retest reliability of 0.99; other data presented in the study confirms the value of the test as a measure of behavioural change.

Scoring the Oswestry

For each section the total possible score is 5; if the first statement is marked the section score equals 0, if the last statement is marked it equals 5. If all ten sections are completed the score is calculated as follows:

$$\text{Example: } \frac{16 \text{ (total scored)}}{50 \text{ (total possible score)}} \times 100 = 32\%$$

Assessing Subjective Components

It is particularly important to consider multidimensional aspects here; pain intensity and quality may vary - a jabbing intense pain is different qualitatively from a dull aching pain. Qualitative and quantitative aspects of pain need consideration as do affective and evaluative dimensions relating to distress caused by pain; the meaning attributed to pain is of particular importance.

In measuring subjective experience, rating scales are most commonly used. These can be numerical or verbal. A visual analogue scale is usually a ten centimetre line and patients are asked to rate their pain intensity from one to ten. The line may be verbally anchored at both ends or numbers can be inserted underneath the line. Presentation in the form of a thermometer can be useful for people with difficulty with the concept of scales, particularly older people and young children.

Verbal rating scales are also used to assess the affective components of pain. These consist of lists of adjectives describing increasing degrees of discomfort and suffering. This type of rating forms part of the widely used McGill Pain Questionnaire (Melzack, 1975).

Studies have compared visual analogue scales with verbal rating scales (for example, Ohnhaus & Adler, 1975). There may be an unjustified assumption by respondents that spacing of category items are homogenous on verbal rating scales (Heft & Parker, 1984), suggesting that the visual analogue scale is preferable to the verbal rating scale in some circumstances. The visual analogue scale correlates with other measures of pain intensity and subjective components and is sensitive to treatment effects (Karoly & Jensen, 1987).

McGill Pain Questionnaire

It has been shown to be useful to use separate measures of the sensory and affective components of pain (Price, Harkins & Baker 1987). This distinction has been made largely from the results of research employing the McGill Pain Questionnaire (M.P.Q.) and its ability to make such a distinction is one of its main strengths. The popularity of the instrument rests mainly on the fact that it provides quantitative information on sensory, affective and evaluative (the overall severity of the pain experienced) components.

High correlations have been found between the M.P.Q. Evaluative Scale and the Skin Conductance Test (Dowling, 1982). Psychiatric difficulties as assessed by the Brief Symptom Inventory (Derogatis, Lipman & Covi, 1973) were predicted by the Affective subscale of the M.P.Q.; good evidence exists for the construct validity of this scale (Kremer & Atkinson, 1981). Acute injury is characterised by choice of sensory (as opposed to affective or evaluative) adjectives and similar descriptors are chosen by patients suffering similar injuries (Melzack, 1975).

In summary, the M.P.Q. is a useful measure of the qualitative aspects of pain and has been very widely used in many studies, but care needs to be exercised when it is used as a quantitative measure. Its ability to distinguish between sensory and affective dimensions is its most useful feature, and pain rating indexes may be separately calculated for these.

Another means of assessing the subjective component of pain is the pain drawing; the patient is asked to locate pain on an outline drawing of the back and front of the body. Complex scoring systems have been devised which have not proved of particular value, nor has its use as a measure of psychopathology. One study has shown that the presence of multiple pain sites, assessable by the pain drawing, should not necessarily be seen as an indicator of disturbance (Ginsburg, Merskey & Lau, 1988). As a measure of pain location, the pain drawing is useful in assessing whether pain moves around the body or decreases or increases in area. This is particularly useful to assess the effect of treatment. The Pain Drawing forms Part 1 of the M.P.Q., used in this study.

Scoring the M.P.Q.

Weighted rank scores are calculated for each category in Part 2 - Sensory, Affective, Evaluative and Miscellaneous and then totalled. The Pain Drawing lacks any established scoring system and a scoring method was devised by the author dividing both front and back views into 90 equal rectangular sections (13mm x 6 mm) using a transparent template (Appendix D). Each rectangle marked was added. Due to the curves of the drawing, some rectangles were necessarily partially 'unfilled' but scored where marked.

Daily Diaries: Present Study

At the end of the first assessment, patients were provided with two weeks of diary pages and asked to complete them daily, starting on the following Monday. It was explained the purpose was to help clarify factors relating to pain and quality of life to inform both patient and therapist. Patients were asked to rate, daily, pain, tension and depression on a five-point scale range from none to severe, and medication taken on a three-point scale range from less than to more than usual.

Two of the most frequently reported problems in diary keeping are failure to complete and retrospective completion (Karoly & Jensen, 1987); Jamison, Sbrocco and Parris (1989) have emphasised the notorious inaccuracy of pain memory. By keeping the format simple it was hoped to encourage completion and by indicating a return date it was hoped to reduce retrospective completion. Patients were strongly discouraged from retrospective completion. They were further informed that after two weeks they would be sent a stamped addressed envelope to return diary sheets. At this time they would receive copies of the book 'In Pain' and the self-help tape 'Coping with Pain' and the plan for further diaries was explained. The book and tape provided cuing and reinforcement for return of the diaries. It was emphasised that diaries at this stage should be completed and returned before using the book and tape. Ratings on the four dimensions were summated and means computed on returned diaries.

Assessing Psychological Status

There is an assumption, implicit in the use of such tests that people have an enduring style of reacting to or perceiving pain and that predictable emotional styles are associated with chronic pain. The intent of such assessments would be to gain knowledge of psychological characteristics which could both help to diagnose and predict the outcome of therapy. Assessment of psychological status would be of value in the research context. Depression has been seen as the most important aspect of psychological status in pain assessment.

The Beck Depression Inventory

The Beck Depression Inventory (B.D.I.) is widely used to assess depression levels in psychiatric and nonpsychiatric populations. It consists of 21 items rated on a four-point scale. Although there is uncertainty about its value for screening for depression in normal people, the B.D.I. has been widely used with medical patients; it has been shown to differentiate reliably amongst psychiatric, medical and 'normal' people (Cavanaugh, Clark & Gibbons, 1983). It has also frequently been used with chronic pain patients where it demonstrates a high incidence of depression (for example, Turk & Rudy, 1990). Although the B.D.I. relies on a few physical symptoms, it has fewer such items than other frequently used scales such as the Hamilton. Results are therefore less likely to be 'contaminated' by pain.

The scale is short, easily administered and scored and has been shown to possess high construct and concurrent validity. A short form of 13 items has been devised, but has been shown to produce high misclassification due to a larger number of false positives (for example, Katon, 1987). For these reasons, the B.D.I. full form was selected for use in this study. Moreover the research literature of its use with pain patients makes it valuable for comparison purposes. Total score is easily summated.

Assessing Pain-Related Cognitions

Karoly (1985) has emphasised the importance of adding cognitive, organisation and interpersonal aspects to pain assessment to avoid a reductionist approach to understanding pain, again underlining the importance of multilevel pain assessment. Uses of cognitive assessment can help answer the question of why some chronic pain patients cope better than others with sensory and affective aspects of their pain and therefore relates to patients' problem solving ability. Cognitive assessment can also help answer questions of how memories of pain and pain-related experience affect the present and future experience of pain, as well as the efficacy of therapeutic strategies and matching of pain patients to psychological, surgical or pharmacological interventions. The present study included assessment of cognitive factors in two ways: first by examining pain locus of control and second, by assessing memory for pain-related words.

Locus of Control

The concept of locus of control was developed from social learning theory (Rotter, 1954) and has been influential in psychology theory and practice. People with internal control expect rewards to come from within themselves and those with external control expect rewards to come from outside forces beyond their control. The Health Locus of Control Questionnaire (Wallston, Wallston, Kaplan & Naides, 1976) was developed to examine specifically how much patients felt their health was or was not under their control. This questionnaire developed into the more detailed multidimensional Health Locus of Control Questionnaire (Wallston, Wallston & DeVellis, 1978); the eighteen items divide into the three scales of Internality, Powerful Others and Chance.

The issue of perceived control is an important one in pain (Chapman & Turner, 1986). Crisson and Keefe (1988) adapted the Health Locus of Control Questionnaire for pain patients simply by substituting the word pain for health. They found patients who believed therapy outcome to be the result of chance experienced more distress and suffered more depression, anxiety and obsessions. Those with internal locus of control compared to external had less physical and psychological symptomatology and had better treatment outcomes.

Pain Locus of Control Questionnaire

Main et al. (submitted) have developed a specific Pain Locus of Control Questionnaire (P.L.C.). Items related to pain were devised rather than substituted as in the previous version. This questionnaire was used in the present study. It contains 20 items on a four-point Likert scale yielding two scales - the Pain Control scale indicating beliefs about controllability of pain and the Pain Responsibility scale demonstrating how far respondents feel responsible for managing their pain. High scores indicate internal control on the Control scale and low scores indicate internal control on the Responsibility scale. The scales are sensitive to measuring change (Main & Parker, 1989) and can predict future consulting behaviour in low back pain patients (Main & Wood, 1990), on whom the scales were validated.

Main and Parker (1989) observe that this questionnaire can help not only to predict treatment outcome but also to record development of chronicity. Since experienced pain workers like Pearce and Erskine (1989) have stated categorically that there is little in the way of good psychometric predictors of successful outcome, further evaluation of this tool such as in the present research seems valuable. For such reasons, the Pain Locus of Control Questionnaire was included in the present study.

Scoring the P.L.C. (See Appendix E for completed sample)

Of this questionnaire's twenty items, questions 3, 6, 7, 13 and 15 carry no score at all.

Questions 1, 5, 9, 17 and 19 "Pain Responsibility" are scored as follows:-

Each very true score = No points.
Each true score = One point.
Each untrue score = Two points.
Each very untrue score = Three points.

The scale ranges from 0-15. The higher the score, the more the person believes that others are responsible for the pain they feel and the less they feel responsible.

Questions 2, 4, 8, 10, 11, 12, 14, 16, 18 and 20 "Pain Control" are scored as follows:-

Each very true score = Three points.
Each true score = Two points.
Each untrue score = One point.
Each very untrue score = No points.

The scale ranges from 0-30. The lower the Pain Control scores, the more the person believes that others can control the pain and the less they believe that they themselves can control it. Responsibility and Control items are separately summed.

Assessing Pain Memories

Pain memory was the second cognitive aspect assessed in this study. Knowledge of memory for pain is important for several reasons. First, there is heavy reliance by staff on patients pain memory for assessment and diagnosis. Second, in assessment methods already described memory factors are implied, for example, in the visual analogue scale. Thirdly, pain memory relates to the way people process their experiences, perceive their pain and how they react to acute pain and its establishment into chronic pain.

Memory Biases

There are a number of biases known to exist in recall of painful memories. For example, Jones (1957) notes that estimates of present pain experiences are influenced by estimates of past pain.

It has been shown that chronic pain and depression are linked: one quarter to half of chronic pain patients are depressed (Fishbain, 1986). Since depression affects memory, this represents another source of bias. Eich, Rachman and Lopatka (1990) reasoned from this that since pain increased depression, it would restrict pleasant memories at the expense of unpleasant ones. These authors demonstrated the effect on subjects experiencing menstrual pain. Thus pain distorts autobiographical memory and could contribute to the aetiology or maintenance of depression in pain patients.

Morley and Pierce (1993) have reviewed the literature on memory and pain and conclude that acute pain is more accurately remembered than chronic pain, and pain recall is biased by state and trait effects as well as psychosocial factors. However, these authors believe that the most important question is whether memory for sensory, affective or event specific aspects is accurate under given circumstances like mood, context, recency of pain or recall cues, rather than whether memory for pain is or is not accurate. They therefore make a distinction between pain event memory and pain experience memory. Memory for pain events may be as low as 3% (Eich et al., 1990). Memory for pain experience on the other hand is higher, for example, memory of where and how the pain occurred. Williams, Watts, Macleod and Mathews (1988) developed this same point: memory cues can be facilitated or inhibited to different extents by different emotions. If the original context of the memory is reinstated the material in question should be more available once again for reference. Thus, Karoly's (1987) emphasis on context is further exemplified.

One problem in assessing autobiographical memory is lack of control over the recalled events, or over the amount of processing of the events since they occurred. Williams et al. (1988) make a similar point in relation to recall of unpleasant events in general, suggesting experimental analogues such as the use of pleasant and unpleasant words to provide a way of assessing memory bias.

A similar method using pain-related and nonpain-related words has been used by researchers. For example, Edwards (1992) found that pain-related material is recalled preferentially by people with chronic pain, an effect sensitive to their mood and encoding strategies. She compared depressed and nondepressed chronic pain patients with depressed psychiatric patients and normal controls. She devised a recall test using words from the M.P.Q. (Part 2) comprising sensory, affective and neutral adjectives, with the sensory and affective adjectives matched for frequency and number of syllables with the neutral adjectives. Three filler words were used at the beginning and end of the lists to minimise primacy and recency effects. The recall test was followed by a recognition test where the recall test words were randomised equally with different adjectives matched for frequency and word type. Edwards' study showed recall biases related to pain and depression not found in control groups. The recognition test analysis suggested that 'true memory' could account for the differences observed in chronic pain and depressed patients rather than any hypothesised response bias.

In summary, there is an emerging picture that some pain patients find it difficult to remember their pain, perhaps as a result of the defence mechanism of denial, while others appear able to remember their pain with great vividness. A high proportion of pain patients are depressed and many depressed people have marked memory biases, for example, Williams et al. (1988). However, even some pain patients who are not depressed have memory biases for pain and recall the negative parts of the experience at the expense of the positive (Edwards, 1992). So, in addition to the difficulty of coping with their pain, they have the problem of maladaptive memories which could further undermine their coping strategies and sense of self-control.

Some pain patients cope well while others are totally absorbed by the pain. Knowing how different patients define themselves as 'people with pain' seems relevant to this study: memory may play an important role in self-definition. There was interest in this study to see if patients with similar pain levels might vary in the benefits obtained from a psychological pain management programme according to their memory bias for past pain experiences. This study was particularly interested in the ways patients recalled pain words relative to nonpain-related words (memory bias) before and after therapy.

Memory Assessment in the Present Study

This test was adapted from Edwards (1992) using words from the second part of the M.P.Q. Here, the Sensory and Affective adjectives were matched for frequency and number of syllables with neutral gardening words. The gardening words, like the pain-related adjectives, belong to their own common semantic categories which therefore controls for the fact that the pain words are also semantically associated with each other. Like Edwards, three filler words were used at the beginning and end, as a control for primacy and recency effects, giving a total of 18 words in three lists. Patients were primed and told they would be asked to try to recall the words. Each list was read out clearly. Two minutes were allowed for free recall.

The procedures were similar to those used by Edwards (1992) except that the words were read out by the researchers on each occasion rather than using a personal taperecorder.

Scoring the Memory Test

To score, numbers of words for each individual test were summated for pain-related, nonpain-related and intrusions (words not appearing on the list).

Assessment of Pain: Overview

The research reported in this thesis made use of multiple indices - affective, cognitive, behavioural and sensory, to provide as complete an assessment as possible. However, as Karoly (1985) points out, no single aspect of the pain experience should be considered primary. In interpreting assessment results the relationship between these aspects may be more relevant than the individual test results. Pain diaries can be particularly useful in this integrative task with the contextual information they provide. Karoly (1987) emphasises that the context in which pain occurs is the primary unit. He further advises against limiting assessment to short term past or present, emphasising that peoples' adaptive attitudes to their pain may be future oriented. This echoes the fundamental construct of George Kelly's Personal Construct Theory (Bannister & Fransella, 1971) "a person's psychological processes are psychologically channelised by the ways in which he anticipates events". Anticipation of events is channelled at least to some extent by memories of former events so memory for pain-related material will form an important part of the assessment of outcome in this preliminary study.

The present study was organised on a research basis (having aims of clear clinical benefits), with inevitable restraints. Brevity of assessment was one, considered important not only for practical reasons, but to avoid patient demoralisation (see Appendix F, patient feedback). Edwards' (1992) study was similar in some ways to the present, but had the advantage of keying into a larger ongoing pain research programme. This enabled a wider range of formal assessments to be carried out additionally measuring dimensions such as anxiety, multidimensional pain aspects including range of social activities and support. The present study, on the other hand, assessed these domains less formally by means of the semistructured interview and diary recordings enabling day-to-day reports of the pain context not included in Edwards' (1992) study. Memory assessment for pain and nonpain words formed an outcome cognitive measure in both cases.

CHAPTER THREE: PRESENT STUDY RATIONALE AND METHODOLOGY

The present study aimed to investigate the effect of brief cognitive behavioural group therapy with a severely chronic population of pain patients.

With cost and limited availability of psychologists in mind, there was a particular interest in assessing the effect of brief intervention with this group of most severely disabled chronic pain patients. As reported, self-help materials have been shown to increase pain tolerance in a laboratory situation by 56% (Genest, 1979). Such materials are frequently provided at low cost and effort from staff as a supplement to pain therapy, but how useful are these used alone in a clinical situation with severely chronic pain patients? Many successful interventions reported have been inpatient day-long intensive programmes running over several months by a large group of staff. Could eight two-hour weekly outpatient group sessions have a measurable effect?

This study addressed these questions using methods and materials shown experimentally to be effective: developing a positive attitude and self-control were central aims in changing patients' view of pain, using a range of cognitive-behavioural methods in a supportive group which promoted changing maladaptive ways of coping with pain. Success has been shown in the use of this kind of approach, but many such studies have been carried out in intensive inpatient settings in America. Like the similar study by Skinner et al. (1990) there was interest in the effects of a brief therapy group within this culture.

HYPOTHESES

Compared with baseline scores:

1. Pain Behaviour

There will be positive changes at posttherapy as measured by the Oswestry Disability Questionnaire.

2. Subjective Pain

a) McGill Pain Questionnaire Scores will decrease, that is Sensory, Affective, Total and Drawing Scores.

b) Diary self-rating measures of Pain, Tension, Depression and Medication will reduce.

3. Psychological Status

Beck Depression Scores will decrease.

4. Pain-Related Cognitions

a) Pain Locus of Control-Control Subscale scores will increase, that is, patients will feel more in control of their pain.

b) Pain Locus of Control-Responsibility Subscale scores will decrease, that is, patients will take more responsibility for their pain management.

5. Self-Help

All pretherapy scores will improve as a result of self-help.

6. Pain Memory

Memory test results will change so that patients will show less retrieval bias for pain-related material, that is, recall of nonpain-related words will increase relative to recall of pain-related words.

7. Diary: Convergent Validity

Diary results will positively correlate with standardised assessment scores measuring similar dimensions.

a) Diary depression will correlate positively with B.D.I. scores.

b) Diary pain will correlate positively with McGill

Pain Drawing.

Inconsistencies of test results will be evaluated in the light of the possibility that modalities of adaptation do not operate in synchrony (the transitional hypotheses of Karoly & Jensen, 1987).

DESIGN

The design aimed to permit the evaluation of a cognitive-behavioural group approach set up to test the above hypotheses.

The aim was to use a mixed design incorporating *between-groups* to compare treated and untreated patients and within-groups to compare individual patients on particular characteristics on *repeated measures*.

However, differential attrition rates in the two groups resulted in poor matching, making between-group comparisons impossible to interpret. Consequently, interest focused on the within-group changes, separating groups for analysis only to take account of 'error' variance due to group differences.

PROCESS

The research was carried out at the pain clinic of a general hospital. The clinic is a busy one with a waiting list at that time of three months, run part-time by two Consultant anaesthetists with sessional input from a physiotherapist and acupuncturist. Occasional referrals are made to a religious healer. Although a psychologist had been in post prior to the research, this service had not been available for some time, but was very much in demand.

All patients were selected from the pain clinic waiting list, initial selection being carried out by the consultants who were asked that their selections should exclude the following:

a. Those with a current serious psychiatric diagnosis, for example, psychosis, bipolar depression.
b. Those whose pain has clear secondary gain, for example, compensation claims pending.
c. Those with terminal illness.
d. Those with pain duration less than three months.
e. Pregnant women.
f. Those involved in other research.
g. Those under 18 and over 80 years of age.

Forty-one patients were thus selected and the casenotes examined by the author to confirm suitability and exclusion criteria. Only one was decided unsuitable on the grounds of severe psychological disturbance. The great majority of these patients were from the list of one of the two anaesthetists.

The remaining 40 patients were invited by letter to attend the initial assessment, with details of the project including bilingual consent form (Appendix B). A small proportion of these were on the pain clinic waiting list and had not yet attended their first session with medical staff at the clinic. Most, however, had been seen by the doctors at the clinic and when such appointments fell due within the waiting period for the research, the project was described and discussed with the patient by their doctor. Three weeks were allowed to elapse between explaining the research and requesting return of consent (see Ethics Committee Proposal, Appendix A) in order to provide the opportunity for full consideration and discussion. Those unwilling to participate, communicated their decision either by phone, in writing or by not responding; in the last case, patients were telephoned by a secretary, where this was possible, to check the reason. Appointments were sent and timing determined largely by availability of clinical rooms in the general hospital; for this reason, many patients were seen in evenings. The decision was made to avoid mental health venues for these appointments to prevent implicit assumptions of mental instability or of problems being "all in the mind". However, due to travel difficulties, three patients were seen at their local mental health resource centre.

A fairly high attrition rate was experienced (35%) at an early stage. This issue will be discussed in the early part of the Discussion. The often reported difficulties experienced in changing from medically dependent to self-control psychological emphasis (Philips, 1988) were observed frequently. A high number of practical and therapeutic challenges were encountered in initial attenders (see later), illustrative of the level of need of this patient group. For some it was the first opportunity to share their pain problems and experience with a professional other than their general practitioner.

Assessment 1

This session lasted typically 1 hr.30mins., but this was necessarily extended for some for the following reasons:-

a. Immediate therapeutic issues presenting themselves (for example, one patient had recently attempted suicide).

b. Low motivation and scepticism expressed by patients about the project.

c. Very detailed information about the project and therapy requested.

d. Patient fatigue.

e. Insistence on partner's presence.

On a few occasions the whole assessment session was carried out by the author, but on most an assistant psychologist administered tests arranged so that an approximately equal period of time was spent with the author who carried out the interview and administered B.D.I., and with the assistant (see Table 1). The patient's partner, if present, was included. Assessments proceeded individually. Only one patient requested assessment information to be confidential to researchers and not shared with medical staff.

TABLE 1: TEST ORDER

	Test	Administration Time (Minutes)
1.	Interview	25
2.	B.D.I.	5
	(rest)	
3.	Memory Test	15
4.	M.P.Q.	15-20
5.	Oswestry	5
6.	P.L.C.	5
	(rest)	

Matching and Group Allocation

Following assessment and scoring, pair matching was carried out. This was carried out in pairs rather than total group on account of the small sample size. The object was to match on as many relevant variables as possible so that the two groups would be comparable, that is, the groups would be equated on the variables correlated with the measured variable. Matching was thus carried out on pain chronicity, age, B.D.I. and

M.P.Q. Sensory scores. Matched pairs were then randomly assigned to either group A or B.

Assessment Methods

(Semistructured interview can be found in Appendix C and samples of completed assessments in Appendix E).

Semistructured Interview - The purpose was to obtain and provide information to supplement formal assessments (example: How has the pain affected your relationships?)

Daily Diary Sheets - Patients were asked to rate pain, tension and depression on 5-point scales and medication on a 3-point scale (less, same or more than usual).

McGill Pain Questionnaire (M.P.Q.) - This was selected, particularly for the ability to measure separately sensory and affective aspects as well as overall severity of pain.

Oswestry Disability Index (O.D.I.) - This measures activity and was chosen because decreased activity is often associated with advanced chronic pain (example: Pain prevents me from standing at all.)

Beck Depression Inventory (B.D.I.) - This 21 item scale assesses self-devaluation as well as somatic aspects of depression (example: I don't cry any more than usual.)

Pain Locus of Control Scale (P.L.C.) - This is a relatively new test and is reported as being particularly sensitive to measuring change (example: I need the help of others to control my pain.)

Memory Test - Three lists of 18 pain and nonpain-related words are presented verbally, and recalled words noted. (See Appendix H).

Self-Help Materials (provided following Baseline assessment)

In Pain - A Self Help Guide for Chronic Pain Sufferers (Wells & Nown, 1993)

This easily read popular educative paperback outlines a number of medical and psychological approaches to pain, consistent with and reinforcing the group approach. It was explained that the book would be the group's 'textbook'; some parts would be more relevant than others for that particular individual.

Coping With Pain (The Pain Relief Foundation's Pain Research Institute, 1990)

This cassette tape has relaxation instructions on one side and cognitive-behavioural strategies for coping with pain on the other.

The value of these materials was explained as well as their origins from the pain clinic at Walton Hospital, Liverpool.

Continuing Assessment and Therapy

Four assessments were carried out at key points in the therapy process (three were analysed) with two-week self-report diary sheets completed on six occasions. The timescale of these activities is shown in Appendix I and is summarised overleaf in Table 2. Patients in the two groups participated in eight 2 hour group sessions; the second group started after completion of the first.

TABLE 2: SCHEMATIC OUTLINE OF RESEARCH PROCESS

Week Number	
1	Appointments sent to patient for First Assessment.
4-6	First Assessments, including Interview and Memory Test. First Diary sheets provided.
8	Self-help materials posted with s.a.e. for return of First Diary.
12	Second Diaries posted with request to complete after using self-help.
16	Second Diaries returned.
17	Matching for Group Allocation A or B.
20	Third Diaries posted Group A (with group times).
23	Group A starts. Second Assessments. Third Diaries returned, Group A.
25	Fourth Diaries returned, Group A.
30	Group A ends with Third Assessment including Memory Test.
32	Third Diaries posted to Group B (with group times). Fifth Diaries returned, Group A.
35	Group B starts. Second Assessment. Third Diaries returned, Group B.
37	Fourth Diaries returned, Group B.
42	Group B ends with Third Assessment including Memory Test.
44	Fifth Diaries returned, Group B. Sixth Diaries returned, Group A.
46	Follow-up Assessment Group A and B (postal). Sixth Diaries returned, Group B.
48	Follow-up interviews.
onwards	Some seventh Diaries returned.

CHAPTER FOUR: RESULTS

SAMPLE CHARACTERISTICS

Forty patients were invited for initial assessment, 26 responded affirmatively and following assessment 25 were invited to attend the groups. Individual sessions (three) were requested and agreed in one case (with partner).

Nonattenders at Initial Assessment

Sixteen did not attend; travelling difficulties were common. Therapy in groups was a disincentive for some, particularly as partners were not to be involved in all sessions. Those who did not cancel appointments for such reasons (eight) were offered a second appointment: two accepted, but again, did not attend.

Details of the sixteen nonattenders were obtained from medical case records. Five were married, the rest single, divorced or widowed. Mean age was 50.50 (S.D. 17.66) years, compared to attenders for this assessment, aged 49.50 (S.D. 12.35) years. Nonattenders had experienced pain for a mean of 4.23 (S.D. 1.97) years, compared to the 10.45 (S.D. 7.15) years of attenders. Nonattenders' pain was spread throughout the body (for example, head, shoulders, abdomen) more so than attenders who almost all suffered back pain. In summary, when compared to attenders, nonattenders as a group were about the same age, had suffered pain for a shorter period and had pain less specifically located in the back, than attenders.

Scope for interpretation of these observations is limited because no other data was obtained, as a result of attrition. Some tentative comments, however, may be made. A group with pain for a mean of four years may be more likely to hold onto hope of a medical cure than a group with pain of ten years; those who failed to attend may have benefited less from a psychological approach emphasising self-control. Those who have suffered pain longer may be tempted to try anything. Attenders with back pain who welcomed the offer of psychological help may have recognised the need for this help either as cause or effect of their pain.

Attenders at Initial Assessment: Results of 26 Semistructured Interviews:

Past Treatment Received

Enquiries about treatment received resulted in incomplete and unreliable reports. Failed treatments appeared to be forgotten readily, particularly so for details, names and quantities of medication; consequently, this data has not been quantified. There was no reliable information on current drug usage because general practitioners prescribed independently of hospital doctors. Information about drugs, despite unreliability, proved useful in focusing during group sessions, as did information about relationships and reactions of significant others to the pain.

Pain History

Most of those assessed suffered low back pain (21); two suffered neck pain, two leg pain and one head pain. In most cases pain was referred to neighbouring parts of the body also. One patient (I.D. 23) was diagnosed as having back pain but only experienced pain in buttocks, legs and ankle, but not in her back as such.

Mean and mode of pain duration was 10 years; in only a few cases was the cause known, although rationalisations were frequent. Only three patients believed there to be a clear cut cause (car accident, fall, lifting) and a further two suspected longterm causes (heavy goods vehicle driving and prolonged gymnasium use). Medical 'explanations' like trapped nerve, spur, worn or degenerated disc clearly provided some comfort in the sense of attributed meaning. Most believed experienced pain had additive causes such as a genetic tendency combined with a lifting incident at work. Some pains were employment related, for example, nursing or heavy manual work. Others believed earlier accidents created vulnerability, with present pain triggered by recent ones. Only five patients were currently in paid employment (for example, lecturer, joiner, safety officer) but most had worked prior to pain onset in predominantly manual occupations.

Twenty-one were unemployed and nineteen of these were on disability or invalidity allowance.

Comorbidity

Most patients in the sample were depressed as assessed by the B.D.I. with ten mild-moderate, three moderate-severe, three extremely severe with only three in the normal score range of this inventory. As Table 3 shows, a number of medical conditions existed, some related and others unrelated to pain.

TABLE 3: COMORBIDITY: ASSESSMENT SAMPLE

CONDITION	NO OF PATIENTS
Depression	16
Heart condition	2
Diverticulitis	2
Klinefelters Syndrome	1
Asthma	1
Diabetes	1
Epilepsy	1
Parkinson's Disease	1
Alcohol Addiction	1
Arthritis	1
Osteoarthritis	1

Pain Treatment

Medical Help

Some still believed that medicine would help in the future and most believed that medical treatments had been of some help in the past. Medical treatment combinations were experienced as most helpful, rather than single interventions. Seventeen patients had experienced only 1 medical treatment, three experienced 2, four experienced 3 and one had 4 medical treatments. In order of perceived effectiveness, the main ones are shown in Figure 1.

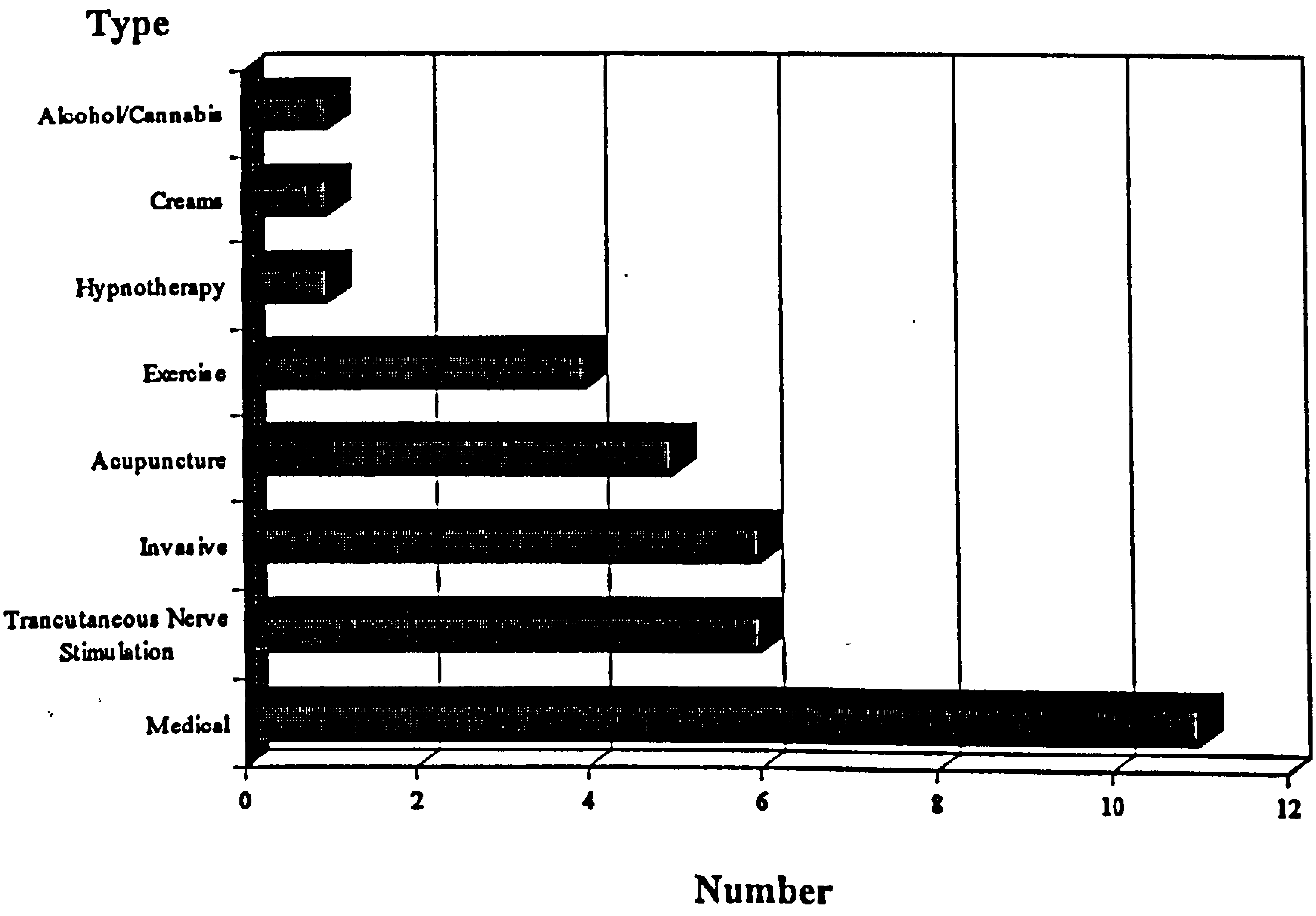

FIGURE 1: NUMBER OF PATIENTS ENDORSING VALUE OF MEDICAL HELP

About half the sample acknowledged help from medical treatments like drugs, particularly pain killers such as cocodamol; sleeping pills, aspirin, antiasthmatic and antidepressant medication were experienced as helpful. Several patients nevertheless found side effects to be as bad as the pain. Invasive techniques like injections, nerve blocks, epidurals and fusions were rated as next most helpful, but often for limited periods only and a few reported that the pain increased, for example following cortisone injections. Six patients found some relief from TENS machines and five found acupuncture helpful at the time, but reported that the benefits did not last. Analgesic creams and hydrotherapy were also mentioned as helpful. As for nonprescribed drugs, the muscle relaxant effect of alcohol and cannabis were reported as helpful by one patient, another perceived whisky to be superior to prescribed painkillers. Another had gone to the extreme length of having all metal fillings removed from her teeth to relieve head pain, with no effect.

Self-Help

Enquiries about self-help yielded rich and varied responses pertinent to the present domain of enquiry. These are summarised in Figure 2.

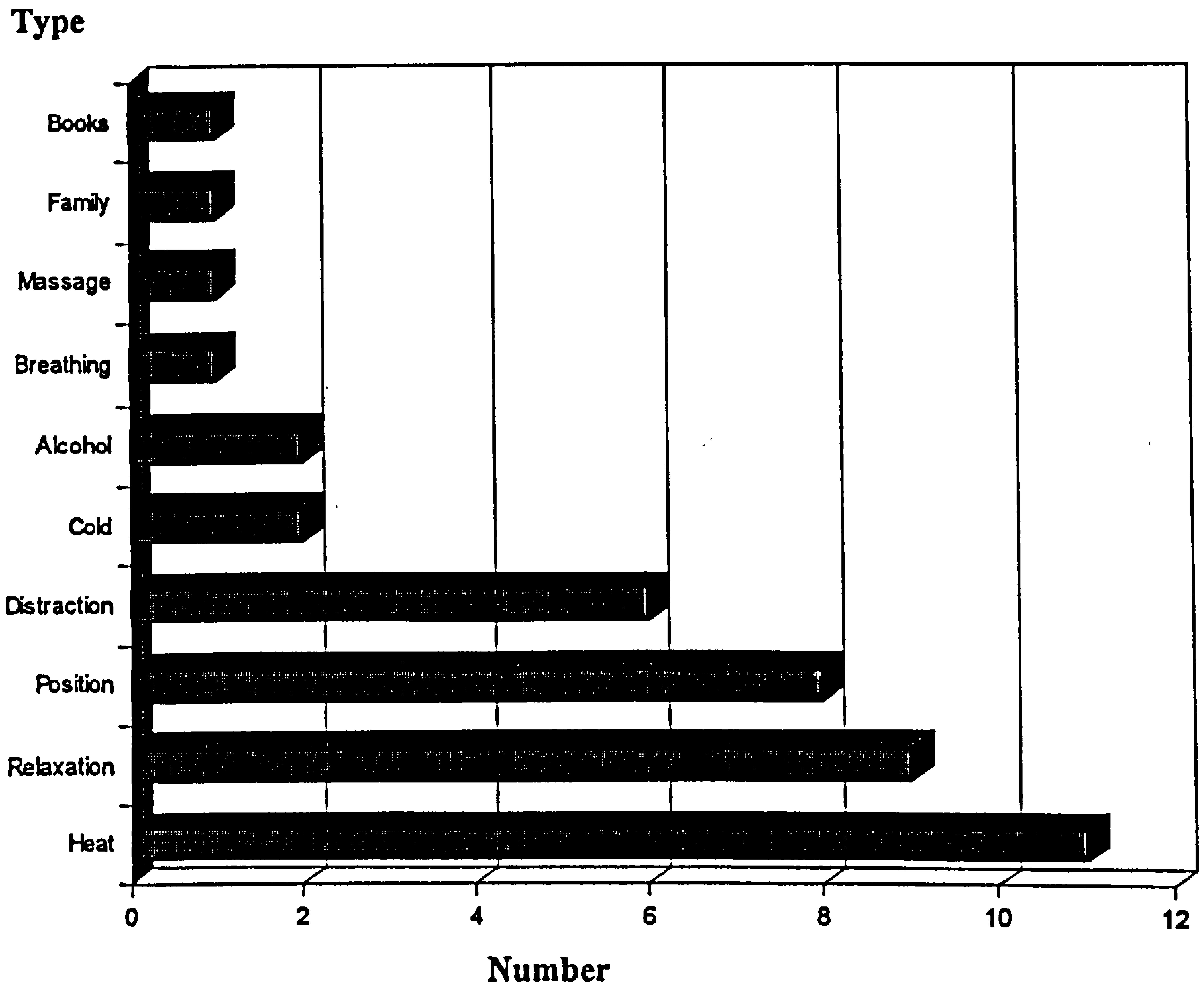

FIGURE 2: NUMBER OF PATIENTS USING DIFFERENT TYPES OF SELF-HELP

Most patients used several techniques; nine tried only 1 method, another nine tried 2 methods, three tried 3 and two tried 4 methods. Heat, the most common, was applied either as prescribed heat pads or baths, hot water bottles, warm socks, staying in bed, or use of a sunbed. Less commonly, cold was reported to be effective - icepacks or packets of frozen peas.

Relaxation was practised through sleep, deep breathing, resting on the bed, floor or couch or simply 'taking it easy'. Distraction took the form of thinking about other things, listening to music, developing an interest in, for example, computers, making lead soldiers, painting or cookery. Many recognised the value and the cost of exercise which both helped and hindered depending on the amount and circumstances; changing position regularly helped and suspension upside down on a ladder provided some indication of the length one patient was prepared to go for relief.

Although many could mention specific activities which activated pain, such as driving, housework, gardening, there was a predominant feeling that virtually any activity could be potentially painful. One example provided was simply reaching to pick up a magazine: the sense of pain being out of control was pervasive as this example illustrates. Others stated simply that pain was always present. A very few had awareness that mood state, for example, feeling angry or irritable, made the pain worse, but awareness of such links was unusual.

Pain and Relationships

The majority of the sample was married (68%), six divorced, one separated and one widowed. Of the married patients, four were in a second marriage. Nearly all those married had children or step children living with them or nearby. Two patients had children with no contact - an unusual situation causing profound grief.

The presence of a family member with chronic and persistent pain affects the whole family system and, in particular, disrupts conventional roles. In one case a father was concerned that his inability to play with his son could be misinterpreted as lack of caring. Pain causing such guilt was common; in other cases there was guilt at being unemployed, being unavailable for social events or, specifically, at preventing partners from sleeping.

Families responded to pain in a number of ways. Nearly half the sample mentioned 'sympathy' ("husband phones me every day"). Perhaps in reaction to sympathy, some were coping stoically on their own, battling on, trying to ignore it or making sure that they were alone in pain, usually retreating to bed. Some even lied about it. Children could take advantage of the situation to get their own way and pets, a great comfort to one woman in pain, reacted typically - the cat kept out of her way and the dog sympathetically rested its head on her lap.

Pain behaviours were observed by the family members of those who reacted with stoicism to their pain. Pain showed in their faces and postures; rubbing, grimacing or nursing the area were also means of communicating the pain. A few cried or became quiet and depressed in reaction to pain, and only one reported telling people around him that he was in pain.

Another commented that "humour helps".

When the question was asked "How has the pain affected your relationships?", most assumed this was about sex; the researcher's response was that he was asking about the relationship generally, including sex. Many patients would have welcomed the opportunity to talk about sex in some detail. Sexual experiences can be affected detrimentally not only as a direct result of the relationship deteriorating, but, more commonly because of increased pain associated with the activity, for example, for one male patient pain always prevented orgasm. Although nearly half the sample complained of sexual difficulties, these were not necessarily the direct result of pain or impaired relationships: one man became impotent following job loss as a result of pain and another lost interest in sex because of depression. One marriage ended because of sexual difficulties. Another patient suffered serious jealousy, fearing the spouse would look elsewhere for sex. However, for a few couples the experience of dealing with pain had brought them closer; four specifically stated this.

Hobbies and Social Activities

Despite the pain, these activities were enjoyed by a good number, usually on the safe side of pain risk, but with some notable exceptions: one was prepared to play football and suffer for several days. Fishing and knitting were frequent and others, like gardening, were undertaken with care, despite the pain. Friendships were important, although some who coped with their pain by withdrawal had lost friends; this was further useful information for later goal setting.

Personal Strengths

Positive responses were often made with reference to pain - strong, courageous, self-reliant ("don't like to burden others") or coping well with pain ("other people would go under"). Seven, however, felt that they lacked strengths and another described himself as a "loser". Another seven described themselves as helpful of others or easy to get on with (four). Three described religion as a strength, pain being seen as a test from God in one case.

Self-image

Most of the sample felt anxious and hopeless about their pain at some time - several had contemplated suicide. Generally pain had lowered self-esteem - slow, angry, intolerant, miserable, useless, downgraded were words used to describe changes for the worse. Four, however, felt the pain had not affected their self-perception and one saw herself as softer and more understanding to others with problems, and another as more patient. Generally, however, the experience could not be described as beneficial.

Twelve suffered reduced mobility and five had curtailed social relationships as a result of pain; both restrictions related to unemployment and lack of money. Personality changes included increased aggression and feelings of premature ageing.

Future Plans

The majority (17) could not make future plans at all, with only one feeling able to plan up to 5 years, and five feeling they could plan up to 1 year. Five patients could plan up to one month ahead. Day-to-day living and planning seemed to be the norm, some refusing to do anything until they knew what was wrong. In one extreme instance, the patient said there was no point in making plans because she could be dead. Many of these observations are consistent with a sample showing high levels of depression (mean B.D.I. score 16.9).

Life Without Pain

Several predicted that if the pain could be taken away, life would be "brilliant" - relationships, social life, work would all be possible again. One would emigrate to Australia, another would lose fear of going to the toilet without the worry of not being able to stand up again. However, optimism for the future was markedly absent in most cases and life without pain was not an expectation.

Research Issues

The final questions of the interview related to purely research issues - memory of pain experience and hospitalisation as a child. Memory of pain was a question intended to add information to the quantitative assessment of memory. Half the sample received the formal memory assessment before the interview and the other half after it (which fact may account for the appearance of several M.P.Q. words in this section, for example, sharp, nagging). Two patients did not have memories for past pain, but others described memory of the last episode graphically, for example, like an electric shock, agonising, excruciating or, even more poignantly, "my foot feels hammered to the floor with a red hot nail". The main value of this information is that it provided a qualitative picture of the patient's pain experience.

Sixteen of the 25 patients had been in hospital between 6-16 years. It is not known if this is unusual but intuitively this seems high and worthy of investigation beyond the scope of the present study.

Analyses

Groups A and B

The research design enabled initial baseline assessment (time 1), assessment following use of book and tape for at least three months, pretherapy (time 2) and assessment at the end of group therapy, posttherapy (time 3). Follow-up data was also collected but analysis of this was outwith the timescale of the research. The timescale is summarised in Appendix I.

The start of diary records one, three and five corresponded approximately to the first three administration times of the psychometric assessments (diary timescale is also summarised in Appendix I).

Initial analysis of the results therefore focuses on these three evaluative 'snapshots' at critical points of the research. Because of time and stress to patients, the memory test was administered only at baseline and posttherapy at the end of therapy groups.

Groups A and B ran consecutively. They were initially matched by pairs as earlier described in the expectation that Group B would act as a matched untreated waiting list control for Group A (see sample characteristics after matching, Appendix G). Attrition made this ideal impossible, however, (7 from Group A, 4 from Group B) leaving the groups, in effect, unmatched with insufficient numbers to perform cross-group individual matching.

For analysis the two groups were kept separate because of their differing characteristics, now described. These were examined by means of t-tests (Table 4). It is clear from this table that several differences between means exist for the two groups. Only Pain Locus of Control - Responsibility scale differences reached statistical significance, but Chronicity, McGill Pain Questionnaire Drawing, Oswestry and Pain Locus of Control - Control scale showed differences approaching significance, as can be seen from Table 4. While this situation has not enabled a between group comparison of the treatments, it has enabled preliminary investigation of predictors of change.

TABLE 4: MEANS (S.D.) AND t-VALUES OF MAIN VARIABLES
AT INITIAL ASSESSMENT: HIGH ATTENDERS

	GROUP				t-VALUE	p-VALUE
	A n = 6		B n = 8		(df = 12)	
	M	S.D.	M	S.D.		
P.L.C.-Resp	4.08	(1.74)	7.88	(2.90)	2.86	.01
Duration (Years)	7.15	(5.32)	12.03	(7.75)	-1.70	.12
B.D.I.	23.00	(14.37)	13.71	(7.06)	1.51	.16
M.P.Q. Drawing	20.50	(10.78)	12.38	(10.95)	1.38	.19
Oswestry	54.33	(8.14)	45.25	(15.85)	1.27	.23
P.L.C. - Control	13.83	(3.19)	11.13	(4.94)	1.17	.27

Key

P.L.C.-Control	Pain Locus of Control - Control Subscale
P.L.C.-Resp	Pain Locus of Control - Responsibility Subscale
M.P.Q.	McGill Pain Questionnaire

Group Structure and Content

Both groups followed a format as similar as possible to enable reliable comparison. This was done by careful and detailed preparation for each group, with records kept following each meeting. Different emphases were made, however, to meet the expressed needs of individual group members. As an example of this, sleep disturbance was a problem with more members of Group A than Group B. Each group met on eight occasions on the same afternoon for two hours in a small general hospital (not the site of their medical appointments). In early sessions the time of each group was evenly divided between didactic input facilitated by flip chart material backed by handouts, and group interaction including mutual support, problem sharing and solutions. Formal input decreased in later sessions to encourage self-control. Accepted standards of group running and structure were followed (for example, Yalom, 1986). Confidentiality and personal responsibility were stressed. Meeting between sessions was encouraged; addresses and telephone numbers were exchanged at the end of groups.

Structure and content are summarised in Appendix J with backup materials listed. Handouts were reprinted from a number of relevant sources, especially the Gloucestershire Royal N.H.S. Trust Pain Management Training Manual (n.d.). Others were written by the author. Content was also influenced heavily by The Psychological Management of Chronic Pain: A Treatment

Manual (Philips, 1988). Manuals used and other relevant literature on group pain management programmes demonstrate considerable consensus and consistency in basic content.

The popular book In Pain (Wells & Nown, 1993) had been provided along with the relaxation tape before therapy began, serving as the group's "textbook" as well as acting as the minimal therapy condition. Chapters relevant to the work of the following week were required homework reading (see Appendix J). Other homework assignments included relaxation, discussion of group issues and handouts with partner, reducing medication, pain diary recording, pacing and targeting, identifying thoughts accompanying feelings at pain onset and differentiating pain from other unpleasant sensations. Targeting and pacing were given considerable weight as can be seen in the summary, Appendix J. Targets were specific and based on a plan rather than on how the patient felt or external factors such as the weather. Daily, weekly and longterm plans were worked out with each individual, often in two smaller subgroups facilitated by each therapist. It was emphasised that progress was dependent on targets.

Attendance

Table 5 shows the frequency of regular group attenders for four or more sessions.

TABLE 5: HIGH ATTENDERS AT EIGHT GROUP SESSIONS

GROUP A (n = 6)

PATIENT I.D.	05	07	12	15	10	14
NO OF SESSIONS	8	8	8	8	6	5

Mean = 7.1

GROUP B (n = 8)

PATIENT I.D.	03	04	08	19	11	21	22	24
NO OF SESSIONS	8	7	7	7	6	6	6	5

Mean = 6.5

Four patients did not attend at all, five attended once and one patient on three occasions. This subgroup of low attenders was not included in the statistical analysis. The decision had been made before starting the group that four attendances at least would be required for benefit. Participants had been informed that the group style and content was tightly structured and not readily open to fluctuating attendance. Reasons for absence were diverse, including pain and physical illness and related travel difficulties. Following initial interview, although 25 patients agreed to attend the group, several required persuasion to do so, particularly reassurance that their pain was not "in the mind".

High and Low Attenders

Can the characteristics of those who attended 0-3 groups be distinguished from those who attended 4-8 sessions? Table 6 enables comparisons of high and low attenders (including nonattenders). t-tests show that none of the differences reach statistical significance; the sample treated were representative of the population referred.

TABLE 6: HIGH (>4) AND LOW (<4) GROUP ATTENDERS

	HIGH (n = 14)		LOW (n = 11)			
	M	(S.D.)	M	(S.D.)	t-value	(sig)
AGE	45.9	(9.5)	54.0	(13.9)	1.75	(ns)
DURATION	10.39	(6.6)	10.23	(10.4)	0.1	(ns)
B.D.I.	17.71	(11.2)	13.55	(7.4)	1.1	(ns)
OSWESTRY	49.14	(13.5)	43.64	(20.6)	0.8	(ns)
P.L.C. CONTROL	12.29	(4.4)	10.45	(3.3)	1.3	(ns)
P.L.C. RESPONSIBILITY	6.25	(3.1)	5.87	(2.6)	0.3	(ns)
M.P.Q. SENSORY	13.72	(7.9)	18.71	(8.6)	1.5	(ns)
M.P.Q. AFFECTIVE	8.09	(5.6)	4.49	(5.8)	0.2	(ns)
M.P.Q. TOTAL	30.77	(16.4)	37.35	(17.5)	0.98	(ns)

Patients' opinions about the group

On the last session of both groups a brief feedback questionnaire (Appendix F) was provided and completed at the end. Anonymity was optional. Fourteen questionnaires were completed, three anonymously and one with the second page missing. The questionnaire was administered only to those attending the last session.

The first question concerned information received under the topic categories of relaxation, positive thinking, Gate Control Theory, vicious cycles, targeting and pacing. Most described these as helpful or very helpful; the exceptions were Gate Control Theory in one case and vicious cycles in the other, described as unhelpful. All described the handouts as interesting, most found them informative and comprehensive. Two felt there were too many handouts and another felt the information was covered too quickly.

Of the three cognitive techniques specified - mental imagery, distraction and mental activity (for example, counting) - eight people found them useful or very useful, four found mental activity useless and one similarly experienced the use of mental images.

With regard to group process, all but one agreed there was enough discussion time. Everyone found it helpful to be part of the group and all but one felt that it was worth coming.

Eight found the partner attending the group useful and two felt that it was not (some did not respond if partner did not attend).

Benefits included realisation that others were worse off than themselves. One suggested increasing partner participation on the fourth and fifth sessions also. Uncovered areas mentioned were physiotherapy and medicine, especially for drug advice and exercise. One would have appreciated more information on Gate Control and another required more help to cope with social rejection and loss of dignity resulting from work loss.

The best part of the group could be described as nonspecific group factors - meeting people with the same problem (universality), group interaction, reducing isolation, being understood and having a shared quest were expressed by many respondents. Pacing was specifically described by one member as the best part.

The worst part of the group was talking about problems and the quality of the coffee! Understanding concepts of targeting and pacing and the negative attitudes of some group members were cited by others. Two people mentioned psychological assessments as negative with the memory testing high on the list. Gratifyingly, several felt that there was no "worst part".

The group could have been improved by having similar age groups, according to one member, and another felt that partners at every meeting would have been an improvement. Three wanted longer and more group meetings. Another wanted more relaxation instructions and another requested a choice of relaxation tapes. One requested individual sessions and another wished for earlier referral to the group. Few "other comments" were made, but one patient stated that as a result of the group she was not as frightened of pain, as she had been before: a clinically significant change in perception.

Analysis of Outcome Measures

Unless otherwise stated, a two-way mixed analysis of variance for one between subject factor (group A, B) and one repeated measures factor (assessment times baseline, pretherapy, posttherapy) was used and these particular results are summarised in Table 7. Data from groups A and B was summated for the Memory test, administered on only two occasions, baseline and posttherapy; comparison between the groups was therefore not made for this test. Data Analysis printouts including interaction plots are presented in Appendix L.

After presentation of each result, there will follow a brief comment of initial discussion. More thematic issues will subsequently be addressed in the General Discussion.

TABLE 7: ANOVA RESULTS SUMMARY

ASSESSMENT	GROUP	TIME	INTERACTION
M.P.Q.	n.s.	n.s.	n.s.
Oswestry	n.s.	n.s.	n.s.
B.D.I.	n.s.	n.s.	n.s.
P.L.C.-Control	n.s.	sig .01	sig .02
P.L.C.-Respons	sig .007	n.s.	n.s.
Memory	n.a.	sig .006	n.s.
Memory Word Type	n.a.	sig .002	sig .001*
Diary	n.s.	n.s.	n.s.

Key

n.s.	not significant	* word type x time
n.a.	not applicable	
sig	significant	

Outcome measure results will now be presented under the categories of pain behaviour, subjective aspects, psychological status and pain cognition.

Pain Behaviour

Oswestry Disability Questionnaire - Mean scores are presented in Table 8.

TABLE 8: OSWESTRY MEAN SCORES AND (S.D.)

	GROUP	
	A	B
	(n = 6)	(n = 8)
	M (S.D.)	M (S.D.)
Baseline	54.33 (8.14)	45.25 (15.85)
Pretherapy	47.67 (11.13)	44.00 (15.12)
Posttherapy	49.67 (7.42)	43.13 (25.03)

There were no significant treatment effects of group: F (1, 12) < 1, time of testing: F (2, 24) = 1.03, p = .37 or interaction between them: F (2,24) < 1. Within the period of assessment, therefore, there was no demonstrated effect of self-help book and tape or of the therapy group on the level of disability as measured by the Oswestry Disability Questionnaire.

Hypotheses predicting reduced disability scores on this measure are not confirmed, but there is a very small trend towards improvement. Inspection of the data reveals there to be more individual score variation than other assessments, possibly reflecting overpresentation of disability by some patients. Individuals showing most improvement appeared to be those with already low baseline scores.

Oswestry Results: Comments

These results are consistent with observed behaviour, for example, use of walking sticks and neck support collars prominent at first assessment and early group sessions. In the Discussion section it is posited that behavioural modes of adaptation may be the last to change within the context of the transitional model.

Subjective Aspects

McGill Pain Questionnaire (M.P.Q.)

Measurement of subjective experience of pain within the experimental intervention was particularly salient. Therefore the most valid subscales of the M.P.Q. Part 2 - Sensory and Affective Scores were analysed separately. These scores are summated with two additional scores to form the Total score. The Total scores are not textually presented and research has shown the additional scores to have low validity and the Total score masks out the effect of its more valid components. These Total scores are presented in Appendix N; anova results are without significant effects, Appendix L.

TABLE 9: MCGILL SENSORY MEANS AND (S.D.)

	GROUP	
	A (n = 6) M (S.D.)	B (n = 8) M (S.D.)
Baseline	13.20 (8.65)	14.11 (7.95)
Pretherapy	13.78 (9.98)	12.56 (6.82)
Posttherapy	15.92 (12.70)	14.99 (6.70)

It is clear from Table 9 that, counter to expectations, there is a slight trend towards worsening of sensory scores over the test times, particularly for Group A. Analysis as before was carried out with no main effects for group: F (1, 12) < 1, for time: F (2, 24) < 1 or for interaction F (2,24) < 1.

Means of Affective Subscale Scores are presented in Table 10.

TABLE 10: McGILL AFFECTIVE MEANS AND (S.D.)

	GROUP	
	A (n = 6) M (S.D.)	B (n = 8) M (S.D.)
Baseline	9.20 (6.23)	7.26 (5.44)
Pretherapy	5.20 (3.23)	8.57 (6.54)
Posttherapy	7.78 (6.77)	6.29 (4.1)

Again, there were no significant effects of Group: F (1, 12) < 1, time: F (2, 24) < 1 or for interaction: F (2, 24) = 1.55, p = .23.

Although there were no significant group effects, it appears from inspection that Groups A and B showed a different pattern of change, an observation to be repeated in other test results.

Pain Drawing

In Part 1 of this Questionnaire, respondents were asked to mark their pain on an outline drawing of the front and back of the body. Front and back scores are combined for this analysis; means are presented in Table 11.

TABLE 11: M.P.Q. PAIN DRAWING MEANS AND (S.D.)

	GROUP	
	A (n = 6) M (S.D.)	B (n = 8) M (S.D.)
Baseline	20.50 (10.78)	12.38 (10.95)
Pretherapy	18.17 (17.45)	16.38 (11.52)
Posttherapy	21.50 (15.48)	15.38 (9.02)

There were no significant effects of Group: F (1, 12) = 1, p = .34, of time: F (2, 24) = < 1, or of interaction: F (2, 24) < 1.

Expressed pain as represented in the Pain Drawing has increased by a small statistically insignificant extent following the treatment interventions.

M.P.Q. Results: Comments

The three parts of this questionnaire analysed - Sensory, Affective subscales and Pain Drawing show no significant changes, with interactions also well below significance; hypotheses relating to improved scores are unsupported. Trends of Sensory and Pain Drawing scores are in the opposite direction of hypotheses towards increased pain report while Affective scores trend is to decreased pain report.

One intention of this cognitive-behavioural group was to help people better tolerate their pain, not necessarily reduce experienced pain; pain locus of control is therefore a more appropriate measure of the intention than subjective aspects measured by M.P.Q. Changes demonstrated by this study as a whole are those resulting from transition from being pain patients to the beginnings of change. In this case we might expect cognitive changes to be more prominent: not reduced pain sensations or disability. The M.P.Q. results are similar to Oswestry results described. M.P.Q. Affective scores on the other hand have a pattern similar to B.D.I. scores providing some suggestive evidence of validity (as mood measure) and reliability (tests measuring similar dimensions).

Diaries

Two week diary episodes self-recording of pain, tension, depression (five-point scale) and medication taken (three-point scale) were analysed. Six recording episodes were available for analysis at time of writing. Diary data was analysed in two separate ways in order to obtain maximum information relevant to the aims of this study.

For the first analysis, diary recordings were selected which chronologically matched other assessment times, that is recordings 1, 3 and 5 corresponding to baseline, pretherapy and posttherapy assessments. Only 11 of the 14 therapy patients met this requirement of completed diaries (four from Group A and seven from Group B). Anova was followed by examination of the relationship of this data with M.P.Q.-Total and B.D.I.

For the second analysis, the purpose was to specifically examine the effect of self-help (pretherapy, Time 2), therefore baseline and pretherapy records were compared for all eighteen completed diaries using paired t-tests.

Diary Analysis 1

Table 12 presents diary results as described.

TABLE 12: MEANS (S.D.) OF DIARY SELF-REPORT

n = 11

	TIME	**MEAN (S.D.)**
PAIN	Baseline	3.61 (.63)
	Pretherapy	3.64 (.76)
	Posttherapy	3.53 (.67)
TENSION	Baseline	2.67 (.91)
	Pretherapy	2.75 (.98)
	Posttherapy	2.73 (1.03)
DEPRESSION	Baseline	2.25 (1.00)
	Pretherapy	2.65 (1.28)
	Posttherapy	2.46 (1.06)
MEDICATION	Baseline	2.2 (.59)
	Pretherapy	2.23 (.42)
	Posttherapy	2.02 (.50)

For each of the self-report measures of pain, tension, depression and medication repeated measures analysis of variance was carried out; none reached significance level, as follows: Pain: F (2, 20) < 1, Tension: F (2, 20) < 1, Depression: F (2, 20) = 1.82, p = .19, Medication: F (2, 20) = 1.56, p = .24.

There were no significant changes on the four ratings over the time periods analysed.

As a validity check on diary rated pain and depression scores, the relationship of these scores with M.P.Q.-Total scores (Table 13) and B.D.I. scores (Table 14) were examined using Pearson's r.

TABLE 13: CORRELATION M.P.Q.-TOTAL WITH DIARY PAIN

	PAIN 1	PAIN 3	PAIN 5	MPQ 1	MPQ 2	MPQ 3
PAIN 1	-					
PAIN 3	.73*	-				
PAIN 5	.69*	.85*	-			
MPQ 1	-.20	-.17	.22	-		
MPQ 2	.13	.32	.51	.74*	-	
MPQ 3	.43	.67*	.68*	.36	.70*	-

* sig. .05 r>.602 (df=9)

Note: Pain 1, 3 and 5 refer to baseline, pretherapy and posttherapy diary assessment occasions, virtually the same assessment occasions as M.P.Q. 1, 2, 3.

TABLE 14: CORRELATION B.D.I. WITH DIARY DEPRESSION

	BDI 1	BDI 2	BDI 3	DEP 1	DEP 3	DEP 5
BDI 1	-					
BDI 2	.82*	-				
BDI 3	.87*	.76*	-			
DEP 1	.48	.41	.75*	-		
DEP 3	.56	.47	.77*	.70*	-	
DEP 5	.49	.37	.73*	.76*	.98*	-

* sig. .05 r>.602 (df=9)

Note: See Table 13.

As can be seen from Tables 13 and 14, relationship of psychometric and diary assessment of pain moved from initially low to significantly high on the third testing, particularly for depression. If it can be assumed that diary, M.P.Q. and B.D.I. are measuring a similar dimension, that is depressive or self-devaluative experiences associated with pain in a different way, this finding casts some doubt on reliability of pain report on these measures, but <u>only</u> in the early assessment stages. These patterns of correlations have significance for the interpretation of the results of this study which are considered in the Discussion.

Diary Analysis 2

Since a diary measure was taken for both periods two weeks before and two weeks after providing self-help materials, it was possible to look for any immediate effects of these materials.

Means of all available diary results at baseline versus pretherapy (Recordings 1 and 2) were examined using paired t-tests. These results are shown in Table 15.

TABLE 15: ALL DIARY RECORDINGS TIMES 1 AND 2:
MEANS (S.D.) AND t-VALUES

(n = 18)	TIME	MEAN (S.D.)	MEAN DIFF	t-VALUE (d.f.=17)	pVALUE
	1	3.53 (0.68)			
PAIN	2	3.49 (0.79)	0.04	0.29	0.78
	1	2.49 (0.95)			
TENSION	2	2.49 (1.03)	0	0	.99
	1	2.14 (0.96)			
DEPRESSION	2	2.19 (0.27)	-0.04	-0.42	0.68
	1	2.16 (0.29)			
MEDICATION	2	2.12 (0.34)	0.04	0.53	0.60

It can be seen from this table that none of the differences reach significance; self-help materials have not had any effect on self-rated pain, tension, depression levels or medication intake.

It was the central purpose of self-help that patients take personal control over their pain - a purpose which the Pain Locus of Control Questionnaire was selected to assess. Diary records provide a more frequent and immediate assessment of self-help than psychometric assessments which were administered some time later. The relationship between baseline P.L.C. and change in diary scores between baseline and pretherapy was thus of particular interest for high group attenders and was examined using Pearson's r, shown in Table 16.

TABLE 16: CORRELATION P.L.C. BASELINE AND DIARY MEAN CHANGE SCORES

	PLC-C	PLC-R	PAIN	TENSION	DEP	MED
PLC-C	-	-0.59	-0.40	-0.02	-0.22	-0.15
PLC-R		-	0.60	0.06	0.36	0.24
PAIN			-	0.48	0.68*	0.38
TENSION				-	0.19	-0.07
DEPRESSION					-	0.16
MEDICATION						-

*sig. .05 r>.602 (df = 9)

Key

PLC-C - Pain Locus of Control - Control subscale

PLC-R - Pain Locus of Control - Responsibility subscale

It can be seen that diary Pain and diary Depression change scores are significantly related such that increases in one are associated with increases in the other. P.L.C.-Control relationships with diary change are negative and nonsignificant. P.L.C.-Responsibility relationships with diary change scores are also low, but, while nonsignificant, the relationship with Pain stands out as higher (r=.60). This is further illustrated by the scattergram, Figure 3.

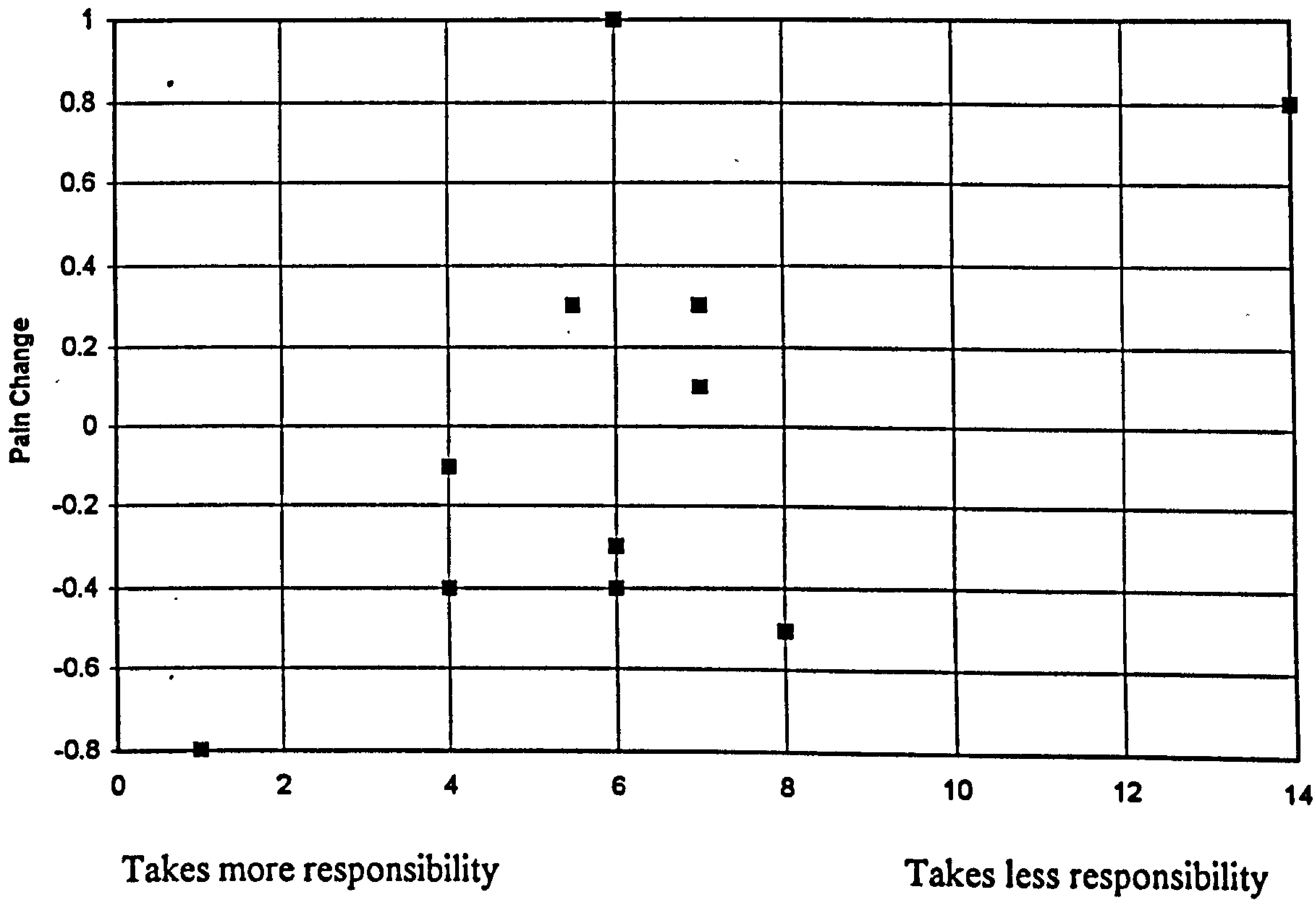

FIGURE 3: P.L.C.-RESPONSIBILITY (TIME 1)
V DIARY PAIN CHANGE
(HIGH GROUP ATTENDERS, RECORDS 1 & 2) n=11

Diary Results: Comments

Analysis 1

Self-recorded ratings of pain, tension, depression and medication show no significant changes in either direction over time. The hypotheses are not supported. Standardised assessments of pain (M.P.Q.) and depression (B.D.I.) also show nonsignificant changes, like diary self-recording of pain and depression.

Potential for completion inaccuracy may be greater with self-report measures. Retrospective completion was discouraged but close inspection of forms suggests this may have occurred in some cases; people exaggerate remembered pain (Jamison, Sbrocco and Parris, 1989) which finding could account for higher ratings on pain compared with the other diary dimensions.

There is a trend towards increasing relationships between diary and psychometric scores, which relationships finally reach statistical significance on the last analysed scores: diary Depression 5 with B.D.I. 3 and diary Pain 5 with M.P.Q. 3 (posttherapy) are significant ($p=.05$) as can be seen from the preceding Tables. Inferences from these increasing associations will be made in the Discussion section within the context of symptom presentation and the transitional model.

Analysis 2

P.L.C.-Control relationships with all diary change scores are low and negative. This is unexpected considering the main effect of P.L.C.-Control to be subsequently reported. The finding, however, may relate to reluctance to report change, an issue also to be discussed, placing further doubt on the accuracy of diary self-report at early stages of recording.

Despite nonsignificance, the relatively high relationship between P.L.C.-Responsibility and Diary Pain change is also unexpected as the inference might be that those who take less responsibility for their pain obtain most benefit from self-help. However, this would be meaningful if self-help was perceived by some, say more passive patients, to be similar to administration of medication or injections; in this case, the observation is useful and worthy of more detailed research. The scattergram (Fig. 3) illustrates the contribution of individual scores to this result; the patient taking most personal responsibility for pain also experienced the most increase in self-rated pain change and the patient taking least personal responsibility acknowledged greatest reduction in self-rated pain. This observation emphasises the importance of individual differences and the need to take account of initial assessment results in terms of the transitional perspective, a theme to be developed in the Discussion.

The significant change relationship between Diary Pain and Depression is of interest and provides further evidence for the links between these, already discussed in this study, and in the literature reviewed.

Psychological Status

Beck Depression Inventory

TABLE 17: B.D.I. MEANS AND (S.D.)

	GROUP	
	A (n = 6) M (S.D.)	B (n = 8) M (S.D.)
Baseline	23.00 (14.37)	13.75 (6.54)
Pretherapy	19.00 (9.72)	17.88 (9.09)
Posttherapy	18.33 (12.42)	11.88 (9.14)

Two-way mixed analysis of variance as before was computed on these results (Table 17) without significant effects for group: F (1, 12) < 1, for time: F (2, 24) = 1.03, p = .37 or for interaction: F (2, 24) < 1.

B.D.I. Results: Comments

There is no significant decrease in B.D.I. scores, therefore the hypothesis is not supported, however, a trend downwards is noted for both groups.

Although cognitive therapy addressing depression directly was not a prime focus of groupwork, cognitive work with pain is similar and in some instances, identical with that for depression. To adequately meet the needs of depressed people in pain, however, individual therapy is necessary to address thoughts and feelings not only about pain, but about life, social, family and other personal experiences. These are highly individual issues not readily focused upon in groups such as reported here and may account for the absence of significant change. This is particularly so as this patient sample was deeply entrenched in depression and thereby less likely to change than a sample of mildly depressed people.

Considered within the more general context of the transitional perspective, these results present further tentative evidence of chronic pain patients entering the early stages of change. Just as pain intensity and disability have not changed, depression remains anchored; indeed it may be that depression acts as a brake on other changes occurring.

Pain-Related Cognitions

Pain Locus of Control

Results of this measure of attribution were central to the research; interventions were chosen to increase sense of personal control over pain.

The questionnaire has two scales, Pain Control and Pain Responsibility, with respective score ranges of 0 - 30 and 0 - 15. Higher scores on Pain Control and lower scores on Pain Responsibility represent improvement in terms of personal pain regulation and the aims of the group.

Pain Control

Table 18 demonstrates changes over time (note that higher scores represent 'better' outcome in terms of the aims of the study).

TABLE 18: P.L.C.-CONTROL MEANS AND (S.D.)

	GROUP	
	A	B
	(n = 6)	(n = 8)
	M (S.D.)	M (S.D.)
Baseline	13.83 (3.19)	11.13 (4.94)
Pretherapy	9.00 (5.93)	11.88 (3.00)
Posttherapy	12.67 (2.88)	14.50 (2.67)

The two-way mixed analysis of variance carried out as before showed there to be no effect of group A, B: F (1, 12) < 1, but a main effect of time: F(2, 24) = 5.5, p = .01 and a significant interaction of group with time: F (2, 24) = 4.77, p = .02. Overall there is a strong improvement over time, contributed mainly by Group B. The significant interaction (see Appendix L) makes clear, that over the three assessment times for the Control scale, the two groups are responding quite differently at assessment points. Figure 4 makes the point clearer, comparing the two groups.

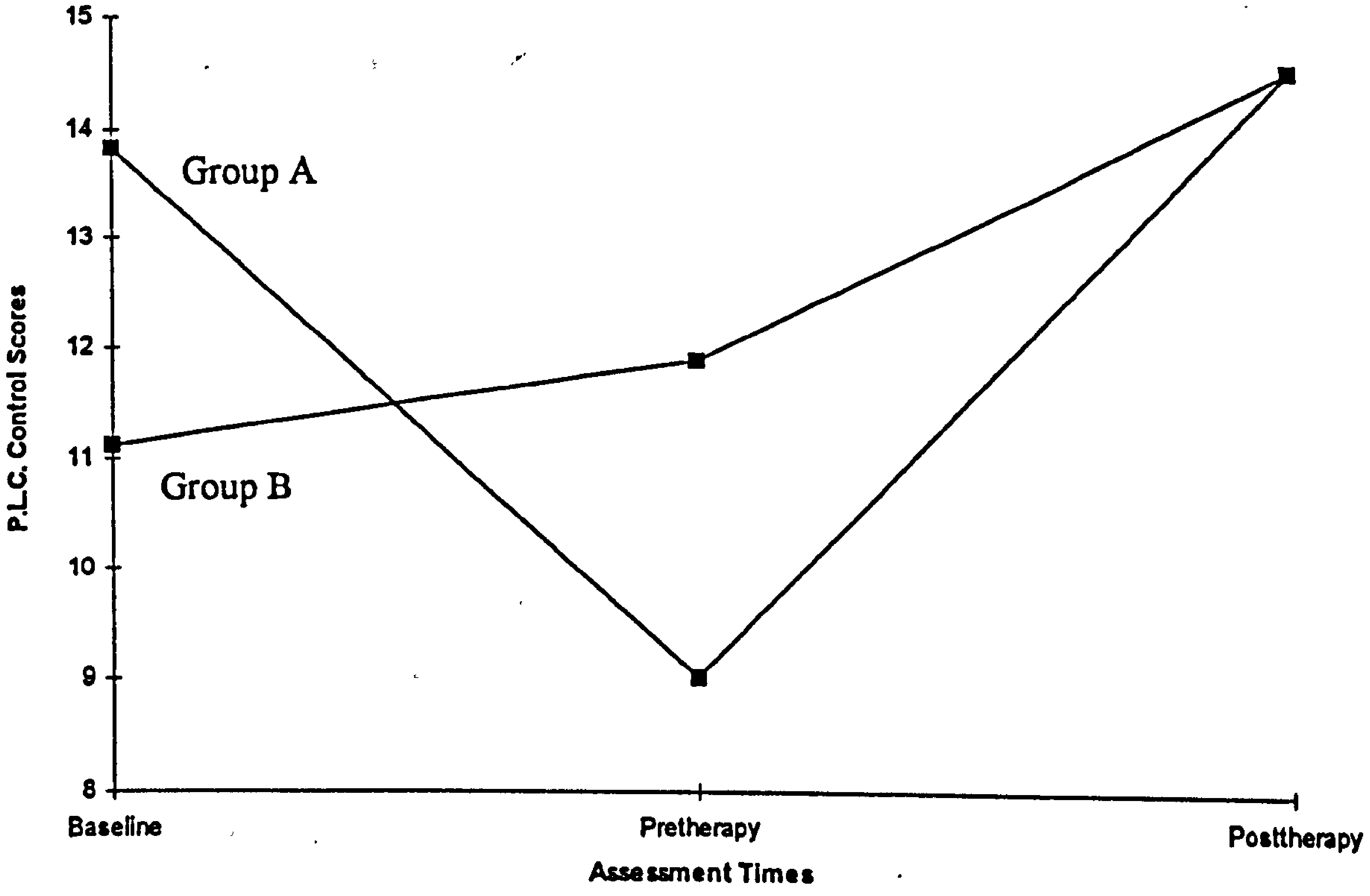

FIGURE 4: PAIN LOCUS OF CONTROL-CONTROL SUBSCALE, MEAN SCORES, GROUP A AND B

In order to investigate the interaction effect further, Groups A and B were analysed separately using repeated measures analysis. Fisher post-hoc tests were used to compare test times first within each group, then for the two groups combined as follows.

Group A

There is a significant effect of time: F (2, 10) = 6.4, p =.02. Using Fisher test, the following comparisons were made: times 1 and 2, 2 and 3, 1 and 3. The differences are significant (p=.05) for times 1 and 2, 2 and 3, but not 1 and 3 as hypothesised.

Group B

Using the same statistical procedure as above it was shown that there is also a statistically significant effect of time: F (2, 14) = 3.81, p = .05, but (unlike Group A) this is in the hypothesised direction of increased self-control. In this case, follow-up analysis, again using Fisher test, shows a significant difference between time 1 and 3 (p = .05), but not between 1 and 2 or 2 and 3. Here, the results are in the direction predicted.

Group A and B

Combining data for both groups, Fisher test shows significant differences between time 1 and 2 ($p < .05$) and between time 2 and 3 ($p = .003$), but no effect between time 1 and 3 ($p = .26$). This suggested a beneficial effect of therapy as opposed to self-help materials.

P.L.C.-Control Results: Comments

Effects of Self-help and Group Therapy

There is little evidence from these results that self-help on its own has helped increased self-control. Group A (higher B.D.I. scores) shows a trend towards reduced self-control unlike Group B (lower B.D.I. scores) whose self-control is raised. One possible conclusion from this observation is that if people who are already depressed are given self-help materials alone with little support in using them, it may make them feel even more out of control and depressed, synonymous in Seligman's terms. In which case, slight increases in available control may induce "reactance". This may be particularly true if the materials are at odds with initial expectations.

Thompson's (1981) review of the literature on the effects of providing information has already been presented. Book and tape used in the present study were intended to provide information to increase self-control of pain. Thompson warned that information can increase fear and indeed the Minimax hypotheses (Miller, 1979), also already reviewed, predicts that some people in certain situations will prefer no control.

In this study, when results from both groups are combined, the effect of self-help is to reduce self-control. While there is no significant difference between baseline assessment and posttherapy, there is a statistically significant increase in self-control between pretherapy and posttherapy. The group programme has therefore increased sense of personal control for most. While self-help may not have been successful by itself, it may have laid the foundations for later cognitive change following group therapy; this is speculative and future research could examine effects of groupwork without self-help. Longer term follow-up would be useful in this context because changes in schematic processing are generally considered to occur very slowly (Edwards, 1992). It is not unusual for patients to become worse before becoming better and considering the shift in schematic processing required in the present case, there are reasons to expect this to be particularly likely here.

All patients at follow-up declared that self-help material was useful. While social desirability could have influenced some, the unanimity appears discrepant with above. However, the material could have been perceived valuable, but not for self-control which may not have been seen as valuable at that particular time; more detailed follow-up interviewing would be useful.

A number of events, observed and anecdotal, provide evidence that some aspects of control extended beyond the group. For example, one patient began litigation against medical staff and several members actively sought other treatments for themselves, for example, psychiatry, acupuncture, and another began driving again after many years.

Pain Responsibility

Table 19 demonstrates changes over time (note that lower scores represent 'better' outcome in terms of study aims). These results are illustrated graphically in Figure 5.

TABLE 19: P.L.C.-RESPONSIBILITY MEANS AND (S.D.)

	GROUP	
	A (n = 6) M (S.D.)	B (n = 8) M (S.D.)
Baseline	4.08 (1.74)	7.88 (2.90)
Pretherapy	5.17 (2.23)	7.63 (1.60)
Posttherapy	5.67 (1.86)	8.88 (2.70)

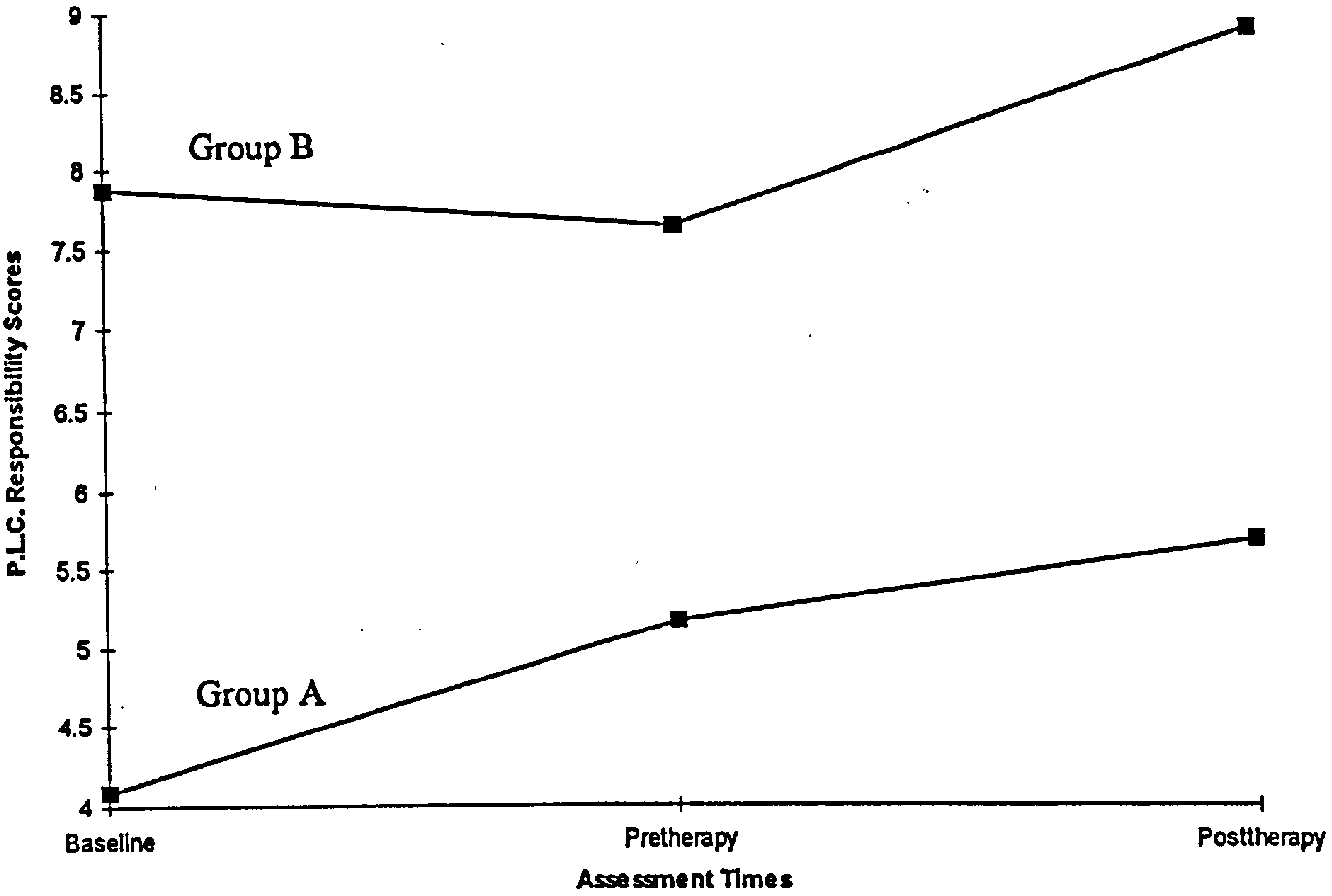

FIGURE 5: PAIN LOCUS OF CONTROL-RESPONSIBILITY SUBSCALE MEAN SCORES GROUP A AND B

The same statistical procedures as before were used. This showed a strong main effect of group: F(1, 12) = 10.4, p = .007, the result of Group A having significantly lower scores overall than Group B. There was no main effect of time: F(2, 12) = 2.14, p = .14 nor significant interaction effect: F(2, 24) < 1.

P.L.C. - Responsibility Results: Comments

There are no significant differences between baseline, pretherapy and posttherapy test times scores. Both groups show only a trend to increasing belief that others, not themselves, are responsible for their pain, therefore the hypothesis is not supported by these results.

This may at first sight appear inconsistent with findings on the Control subscale. However, considered in terms of the psychological economy of a group of patients in transition, it may be seen as overstretching the economy for patients to increase belief in personal ability to control pain *and* relinquish belief in others' responsibility for it at the same time.

The assumption made in this study that raised control and increased responsibility is a desirable outcome is questionable and will now be examined. It may be that the pain management programme has in some way released, at least some participants, from the sense of responsibility for their pain. Considered in the broader context of their lives, this could be seen as positive for these people. Chronic pain patients often feel guilt and low self-esteem; many in this study acknowledged guilt (see Initial Assessment). Feeling less responsible for pain could result in less guilt and paradoxically, an increased sense of control.

P.L.C. Results: General Comments

These show that patients' belief in their ability to control pain has increased, but at the same time, belief that others and not themselves are responsible for their pain, remains unchanged.

However, quite dramatic fluctuations are apparent on the Control subscale, both within and between individuals in both groups. It appears that thoughts and feelings about self-controllability of pain are entertained, fled from, then re-embraced. On the other hand, changes in thoughts and feelings towards self-responsibility, expressed on the Responsibility subscale are hardly contemplated. Few changes either within or between individuals are apparent here, compared with the flux apparent in Control scores. The therapy package has left this particular schema untouched, contrary to hypothesis.

Results of the Pain Locus of Control Questionnaire, both subscales of Control and Responsibility, can be seen as providing strong evidence for the transitional state, a theme to be developed later in this thesis. While some aspects of the psychological economy are in transition, others require anchoring in the familiar. P.L.C.-Responsibility results may explain the lack of change on M.P.Q. and Oswestry Scores, exerting a 'braking' effect on such change. Further evidence for this effect lies in the significant negative correlation between P.L.C.-Responsibility at pretherapy and Oswestry at baseline and pretherapy.

Chronic pain patients in this study, like others, are confronted with events of almost overwhelming difficulty. They have developed a usual mode of response of reliance on health care, and at commencement of this study had been given strong encouragement to increase self-help and activity leading to a challenge to develop personal control and autonomy. The therapy led them quickly into unfamiliar cognitive territory requiring, in most cases, a different set of cognitions or schema. Karoly and Jensen (1987) remind us that "such circumstances do not tend to call forth a unity of organismic expression" and we must expect asynchrony in coping with the chaos. This asynchrony may be reflected in the differing results of this study.

Pain Memory

Pain memory factors were assessed by means of the recall task, carried out at baseline assessment (test 1) and posttherapy (test 2). One result (patient I.D. 07) was omitted from analysis due to an error in test administration considered likely to distort results (in this case, M.P.Q. was administered before, not after, memory assessment).

Table 20 presents mean number of words recalled by word type, (groups A and B combined).

TABLE 20: RECALLED WORDS: MEANS AND (S.D.)

	Before Therapy	After Therapy
	n = 13	n = 13
	M (S.D.)	M (S.D.)
Pain-Related	3.69 (1.97)	3.77 (1.83)
Nonpain-Related	2.54 (1.61)	8.39 (3.5)
Intrusions	3.31 (2.10)	4.31 (3.21)

These results are shown graphically in Figure 6 where it is clear that significantly more nonpain-related words are recalled than pain-related, and the latter recalled only slightly better than intrusions.

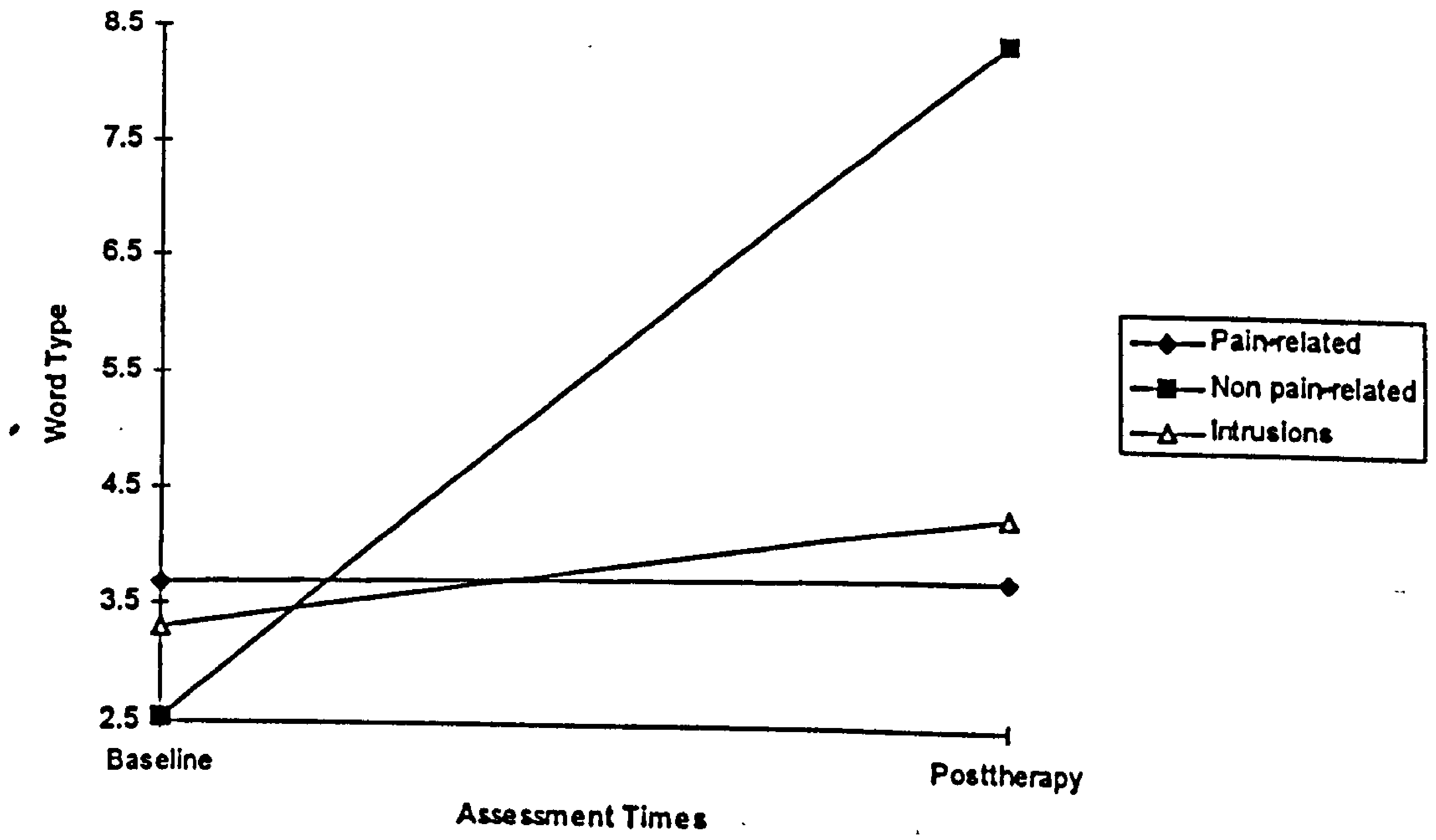

FIGURE 6: RECALL MEAN SCORES BASELINE V POSTTHERAPY

Next, a three-way mixed Anova (group x time x word type) was carried out. This analysis shows a significant main effect for type of word: F (2, 22) = 3.58, p = .0452, with no interaction of group and word type: F (2, 22) = > 1. Group A and B were also compared, showing no difference: F (1,11) < 1. Test time shows a highly significant effect: F (1, 11) = 17.5, p = .0015, with no interaction effect of group and time: F (1, 11) < 1. Word type and time interact highly significantly: F (2, 22) = 54, p = .0005.

The strong interaction effect suggested the value of a further analysis to compare the effect of time for each word type. This showed no effect of time for pain words (p = .75) or for intrusions (p = .41), but in line with the findings presented above, a strong effect of time for nonpain words (p = .0001) was demonstrated.

In summary, nonpain-related words are recalled significantly better at second testing following therapy.

Memory Bias

By subtracting the number of neutral words recalled from the number of pain words recalled, an index of memory bias was devised. Table 21 shows baseline and posttherapy bias scores for the total sample.

TABLE 21: MEMORY BIAS

(n = 14)

	Mean	(S.D.)
Baseline	1.43	(2.68)
Posttherapy	-4.07	(4.38)

A paired t-test found the change following treatment to be significant (t (13) = 4.8; p = .003). This indicates that patients were much less biased towards pain after treatment than before. However, such a bias score does not show whether the effect is the result of recalling less pain words or more neutral words. Appendix N shows individual recall scores where it is clear that the bias change is attributable to the result of increased recall of neutral words following therapy.

Relationship of Memory Results with Other Assessments

In the light of above findings, it was pertinent to ask the following questions: does this finding have any relationship with other assessment results of this study and if so has this relationship changed as a result of the therapeutic package provided?

Pearson's product moment correlation was applied to examine relationships at baseline (assessment 1) and posttherapy (assessment 2) for memory, and assessment 3 for other assessments. It is clear from examination of Tables 22 and 23 that recall of nonpain words has a low relationship with all assessments. However, the relationship of pain-related words with M.P.Q. Drawing changes from -.06 (n.s., see Table 22) pretherapy to .64 (sig. .05, see Table 23) posttherapy. This may be interpreted as evidence for emerging integration between subjective and cognitive aspects, a result which may be associated with successful therapy. This issue will be considered in the Discussion section.

TABLE 22: MEMORY CORRELATIONS AT BASELINE

	OSW	BDI	PCON	PRES	MPQS	MPQA	PRW	NPRW
OSW	-							
BDI	.27	-						
PCON	-.46	.35	-					
PRES	-.27	-.36	-.39	-				
MPQS	-.22	-.22	.16	-.34	-			
MPQA	-.17	-.11	.12	-.54	.90*	-		
PRW	.37	.05	-.11	.21	-.39	-.49	-	
NPRW	.10	-.14	-.38	.03	-.38	-.18	-.02	-
INT	-.53	-.54	.20	.02	.16	.16	-.36	.02
MPQD	.13	.23	-.04	-.19	.42	.43	-.06	-.25

* significant df = 11 (p = .05)

Key to abbreviations:

OSW	Oswestry
BDI	Beck Depression Inventory
PCON	Pain Locus of Control - Control Subscale
PRES	Pain Locus of Control - Responsibility Subscale
MPQS	M.P.Q. Sensory
MPQA	M.P.Q. Affective
PRW	Memory test - Pain-Related Words
NPRW	Memory test - Nonpain-Related Words
INT	Memory test - Intrusions
MPQD	M.P.Q. Drawing

TABLE 23: CORRELATIONS AT POSTTHERAPY

	OSW3	BDI3	PCON3	PRES3	MPQS3	MPQA3	PRW2	NPRW2
OSW3	-							
BDI3	.39	-						
PCON3	-.51	-.49	-					
PRES3	-.55*	-.50	.30	-				
MPQS3	-.21	.48	-.07	.04	-			
MPQA3	-.29	.49	-.17	-.10	.90*	-		
PRW2	-.03	.01	-.12	-.04	.52	.38	-	
NPRW2	.09	-.36	-.19	.19	-.21	-.12	.16	-
INT2	-.01	-.48	.17	.28	-.49	-.60*	-.28	.26
MPQD3	.42	.49	-.24	-.43	.55*	.47	.64*	.01

* significant df = 11 (p = .05)

Key to abbreviations: as Table 22
2 = Pretherapy
3 = Posttherapy

Memory Assessment Results: Comments

The results suggest that aspects of schematic processing have changed, attributable to the therapeutic interventions of the study. There was a significantly increased recall of number of neutral nonpain words relative to pain words; the hypothesis is confirmed. In a preliminary way, these results may contribute to a theoretical arena which has until recently received little systematic study.

The recall task assesses lexical memory (not memory for a pain event in the broader sense), although it is a reasonable assumption that a pain word will trigger an associative memory of a recent pain event even within the context the assessment was delivered. The circumstances of the memory testing are therefore important - was the patient in pain at the time or recently in pain before testing? Twelve of the 14 patients in the group were in pain on the occasions of both memory tests (as assessed by M.P.Q., Part 4). Their pain levels varied from "distressing" to "excruciating". This makes findings of increased memory for nonpain words even more relevant. It could be expected that the tendency would be in the opposite direction as people in pain are more likely to make use of pain words than nonpain words in their everyday conversation. Moreover, several researchers (for example, Williams et al., 1988) have provided evidence that negative material is more likely to be encoded in memory than positive material by depressed people, a sizeable number in this study. So the finding is of strong interest.

That pain patients remember more neutral or nonpain words than pain words following therapy is of more than statistical significance. It cannot be explained by reference to elevation of mood between the two testings: the result was specific to neutral words, and B.D.I. scores were not significantly different.

The most likely explanation for this result is that participants have become less preoccupied with their pain and selectively more attentive to nonpain issues, nonpain words, in this case. Therapy focused attention away from pain issues and repetition of pain symptoms was discouraged. This same attentional change was observed in a different context as the group progressed; patients began to report media information on popular areas like acupuncture, meditation and alternative pain therapies. This represented a wider change to positive cognitions about pain including greater self-control. The recall test may therefore be reasonably interpreted as a change towards wider schematic processing.

There may be similarities in the mechanism of depression and chronic pain. Williams (1992) presents evidence that depressed people have a tendency to recall more general issues of their past leading to downward mood spirals. Cognitive therapy reverses this by providing very specific information, "alternative criteria for reality". Like cognitive therapy for depression, cognitive therapy for pain facilitates new interpretations of past event memories. Examples of this include identification of negative thought patterns and frequent use of diary recordings, helping participants to link feelings and behaviour. In therapy the expectation is for patients to learn that mood is not the only accurate determinant of reality. A wider range of alternative ways of dealing with the world is presented.

Pain-related words compared to neutral words are preferentially recalled at baseline, although not significantly so, but this preference is reversed posttherapy. This is consistent with other findings (for example, Edwards, 1992) who noted that the effect is sensitive to mood differences and encoding strategies used.

The study by Edwards, Pearce, Collett and Pugh (1992) was designed to separate the effects of depression and pain on recall. Using a similar methodology to the present study these authors compared depressed patients in pain and not in pain. They found the nondepressed patients had a bias to recall sensory adjectives and depressed patients showed a trend to preferentially recall both sensory and affective material. These results taken together add confirmatory evidence for affective aspects of pain and depression as linked but specific information processing systems or 'nodes' (Bower, 1981).

The findings here considered together with the other statistically significant result of this study, increased locus of control, provide evidence that cognitive changes have occurred which can be interpreted to be the result of an intervention mainly of a cognitive change nature. Some levels of personal construing of pain experience may be more open to change than others.

Significantly increased recall of neutral words and increased personal control are the main findings of this study. Edwards' (1992) study methodologically has much in common with the present one. Other assessments she used showed significant improvements with therapy, but neither locus of control (internal, chance and powerful others) or memory for neutral words showed significant change as is the case with the present study. Further research may clarify whether different patient selection, therapy or assessment procedures account for the different results in this case. The links between memory recall, personal control and depression are also worthy of future investigation and may account for these findings. It would seem reasonable to suggest that as chronic pain patients gain control, they consequently become less helpless and depressed, remembering more positive material from their past and forgetting negative pain events.

Outcome Measures as Change Predictors

Low correlation values of recall scores with other assessments reported in the foregoing section indicated limitations of this approach with the data collected: recall did not usefully predict outcome when such relationships were examined by straightforward correlations. However, the statistically significant relationship between M.P.Q. Drawing and Memory Bias was of interest in this context. This observation evoked new questions concerning the predictive value of other outcome measures. To examine this, a score was devised to assess change, simply by subtracting baseline from posttherapy (the main interest).

Three questions were asked to further examine change. These addressed prediction of posttherapy scores from baseline scores, prediction of change scores posttherapy from baseline scores and finally the issue of which change scores covary. These are now addressed in turn. Pearson's r was used to compute correlations of scores of high group attenders (n=14).

Can Baseline Scores Predict Posttherapy Results?

Baseline scores were examined for relationship with posttherapy scores; these correlations are presented in Table 24.

TABLE 24: BASELINE SCORES AS PREDICTORS OF POSTTHERAPY SCORES

ASSESSMENT	PEARSON'S r	SIG. LEVEL
Oswestry	.783***	p<.001
B.D.I.	.776**	p<.01
P.L.C. - Responsibility	.555*	p<.05
P.L.C. - Control	.516	n.s.
Memory Bias	.344	n.s.
M.P.Q. - Affective	.334	n.s.
M.P.Q. - Total	.270	n.s.
M.P.Q. - Sensory	.244	n.s.
M.P.Q. - Drawing	.241	n.s.

It is clear from Table 24 that Oswestry, B.D.I. and P.L.C. - Responsibility, in that order of significance, have value in predicting posttherapy results from baseline scores.

Can Baseline Scores Predict Change Following Therapy?

A procedure similar to above was used, with results presented in Table 25.

TABLE 25: BASELINE V. CHANGE SCORES

ASSESSMENT	PEARSON'S r	SIG. LEVEL
P.L.C. - Control	.701***	p<.01
M.P.Q. - Affective	.622*	p<.02
P.L.C. - Responsibility	.542*	p<.05
M.P.Q. - Total	.534*	p<.05
M.P.Q. - Sensory	.532*	p<.05
B.D.I.	.390	n.s.
Memory Bias	-.275	n.s.
M.P.Q. - Drawing	.176	n.s.
Oswestry	-.128	n.s.

It is clear that just over half the assessments used may significantly predict change over the period of this study. In order of statistical significance, these are P.L.C.-Control, M.P.Q. Affective, P.L.C.-Responsibility, M.P.Q.-Total and Sensory scores. Inspection reveals that in general, the higher initial scores, the greater the fall and vice versa, probably the result of regression to the mean.

Which Variables Change Together?

Table 26 presents correlations which address the third question.

TABLE 26: CORRELATIONS BETWEEN ASSESSMENT CHANGE SCORES
(n = 14)

	OSW	BDI	PLC-C	PLC-R	MPQ-D	MPQ-S	MPQ-A	MPQ-T	MEM B
OSW	-	-64*	.10	-.09	.07	-.04	-.19	-.08	-.18
BDI		-	-.20	-.03	.23	-.03	-.12	-.03	-.15
PLC-C			-	-.48	.08	-.36	-.23	-.39	.07
PLC-R				-	-.29	-.09	-.31	-.15	-.31
MPQ-D					-	.60*	.65*	.62*	.54*
MPQ-S						-	.90***	.99***	.10
MPQ-A							-	.92	.35
MPQ-T								-	.15
MEM B									-

df = 12   * = p<.05   ** = p<.02   *** = p<.001

Key -

OSW - Oswestry Disability Questionnaire
BDI - Beck Depression Inventory
PLC-C - Pain Locus of Control - Control Subscale
PLC-R - Pain Locus of Control - Responsibility Subscale
MPQ-D - McGill Pain Questionnaire - Drawing
MPQ-S - McGill Pain Questionnaire - Sensory
MPQ-A - McGill Pain Questionnaire - Affective
MPQ-T - McGill Pain Questionnaire - Total
Mem B - Memory Bias

Oswestry and B.D.I. change together, but changes in these scores do not relate to changes in other measures. M.P.Q. Sensory and Affective change scores do covary, thereby providing some evidence of their ability to measure related dimensions (which does not preclude their separate identities). It can be seen from Table 26 that M.P.Q. - Drawing change score covaries with change in Memory Bias.

Change Predictors: Comments

The issue of selection of pain patients for different kinds, levels and combinations of therapy including medical and psychological is a complex one, highly relevant for purposes of clinical effectiveness, research and resource allocation. There is little research knowledge contributing to this important area and although the present study has a number of limitations (addressed in the final section), the predictors identified here may provide a useful starting point in the quest for better selection. These pointers will now be commented on in the light of results of outcome measures as change predictors reported above.

Oswestry, B.D.I. and P.L.C.-Responsibility have significantly high correlations, baseline and posttherapy (Table 24). These tests may have predictive value in adding weight to decisions to use cognitive-behavioural group therapy with particular patients. Tests correlating significantly with baseline and change score, particularly P.L.C.-Control and M.P.Q.-Affective

(Table 25) may be considered change predictors. Indeed, tests used were selected for their sensitivity to measure change and these results confirm their value in this respect. While further research would be required to clarify the value of this, the current findings suggest that these assessments may be useful as change predictors of group cognitive-behaviour therapy, especially having regard to extremes of initial scores.

The observation made here that certain tests covary (Table 26), such as the Oswestry and B.D.I. suggests that certain schema are linked in the transitional process. Defining these in more detail would be valuable in future research. Certainly, the demonstrated change linkage of behavioural (Oswestry) and affective (B.D.I.) is of interest in the context of the transitional model. If this model is to generate useful explanations and predictions, the stages at which different 'connections' in different domains occur should, in theory, be definable. Such knowledge would add significantly to issues of behavioural-cognitive links.

CHAPTER FIVE: GENERAL DISCUSSION

The main aim of the research reported here was to examine the extent to which a cognitive-behavioural pain management group could reduce experienced pain in an unselected sample of extremely disabled pain patients. The results show there to be no significant change on the main outcome variables.

A second aim of the research was to examine the cognitive mediators of any change that occurred. The results show that despite lack of effects on measured pain, the group treatment appeared to bring about change in some aspects of these cognitive variables (P.L.C.-Control and Memory Bias).

These results will now be discussed in the following way. First, limitations of the present study will be addressed, including the representativeness of the present sample in comparison with other studies, followed by discussion of issues in pain assessment. Second, the discrepancy in outcome between pain measures and cognitive measures will be discussed particularly in relation to Karoly and Jensen's transitional model. Third, clinical implications will be addressed and finally, implications for further research are presented.

Limitations of Current Study

General Issues

Assessment of pain provides the researcher or clinician with many challenges. Pain is a subjective experience and distortions can accumulate as the patient reports, the observer records and scores, and these observations are then accumulated and statistically analysed. Continuing follow-up assessments may become less meaningful as uncontrollable life events, including treatments, interact with "controlled" independent variables. As an example of this, in the course of assessments during this study, one participant had two car accidents, at least five received medical and four psychiatric treatments. Assessment scores can be influenced by the place and conditions under which they are carried out. The assessment of dependent variables can influence so-called independent variables in the following way. Assessment will likely focus the patient's attention on pain and disability which is counter to therapeutic strategies; diary recordings are a good example and it is significant that the patient who showed most positive change in this study refused to complete diaries for this reason.

The timescale of the project did not enable data analysis beyond immediate posttherapy. Other studies such as Philips (1987) have demonstrated that benefits are more apparent after one year. Her study, similar in some ways to the present one, produced more significant results, but benefited from superior patient selection (see below), as well as larger numbers. B.D.I., M.P.Q.-Sensory and Affective scores obtained in Philips' study are compared with scores of Groups A and B on the present study in Figure 7.

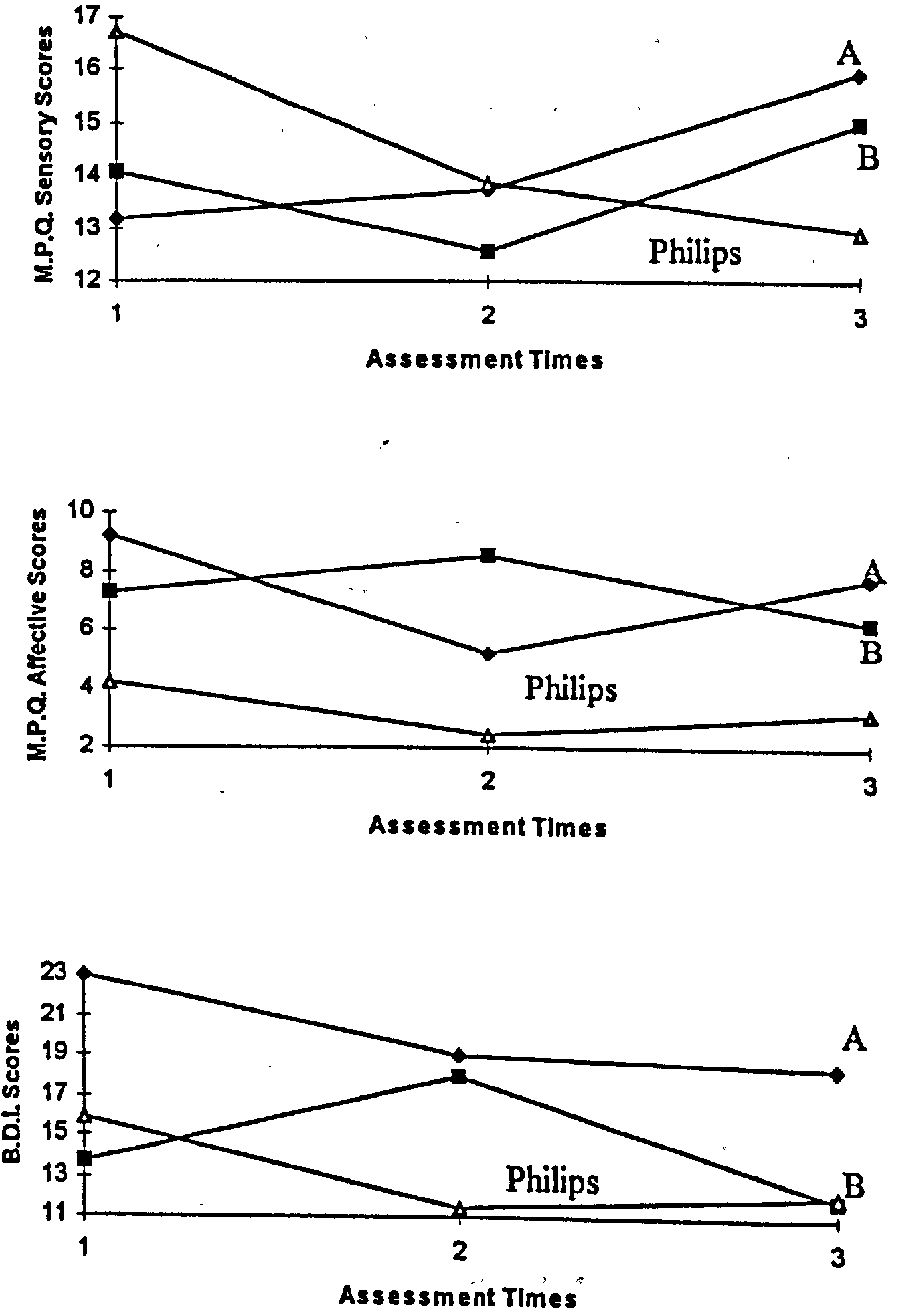

FIGURE 7: PHILIPS (1987) AND PRESENT STUDY COMPARED

Ongoing follow-up of the present study will also determine if the changes demonstrated in cognition are lasting. Considering the timescale and nature of the presenting problems, short term reduction in symptoms using a purely psychological input was less likely without medical input (for example, to provide permission to reduce medication) or physiotherapy (for example, to encourage safe exercise). The small numbers in this study disabled statistical ideals like adequate group matching; a control group could have meaningfully provided information on spontaneous remission, treatment effects or value of self-help alone. Small numbers reduced the power of statistical analysis possibly preventing slight effects reaching significance. The limitations of using correlational measures alone, particularly as predictors, are recognised.

Although interpretation of results is hampered by small numbers, certain aspects of data patterns suggest that even with increased sample size the results would still have presented complexities of interpretation. Further data analysis, however, may have yielded more useful results. For example, separate analysis of Group A and B could have been carried out on diary data given larger numbers. This would have enabled further examination of predictors of change. More careful selection of patients for group work could have made clear those most likely to change; the present study made no attempt to select patients for their ability to accept that psychological factors play a role in their pain. As such their 'room for movement' to alter beliefs psychologically was reduced. Willingness of patients to orient to a psychological approach is fundamental to success and a longer period of preparation may have been beneficial. The absence of 'psychological mindedness' encouraged by hopes of a medical cure may have curtailed potential for change.

Some pain management programmes (for example, Walton, Liverpool) have rolling groups enabling development of a better group support culture. Clearly this was not possible in the present time limited research study. More sessions involving partners would have been useful: some patients refused to attend the group without them and several requested more partner involvement in the end of group questionnaire.

Other limiting factors of this study which could influence outcome and interpretation of results are representativeness of the sample and of the study, pain characteristics of this sample, attrition and, relatedly, motivation of patients and their self-presentation. The potential effects of these will now be discussed.

Representativeness

Sample

The literature suggests that patients attending specialist pain clinics, as in this study, are particularly disturbed

(Turk & Rudy, 1990); those who complain most and are most frustrating to work with are most likely to be referred. A study by Crook, Tunks, Rideout and Brown (1986) showed complaints of constant pain to be the differentiating factor of pain clinic patients from a community sample. Many patients in the sample of the present study were highly disturbed. Here, concerns to work with a large enough sample within the constraints of the research time scale was an overriding factor and only three patients were excluded from the 43 referred. This was less exclusive than the 15 - 54% exclusion reported in Turk and Rudy's (1990) major review paper. The present sample was more disturbed and thereby less representative than other published work. It was shown that there were no significant differences between high and low group attenders on the main dimensions at baseline assessment; the sample treated was thus representative of the population referred.

Depression

Turk and Rudy (1990) report depression prevalence rates of 40 - 60% in specialist pain clinics, whereas Jensen, Turner, Romano and Karoly (1991) report only one third to be depressed. This study treated an even more depressed sample. Of 14 patients who regularly attended the group, only one fell in the normal range of the B.D.I. score and two were "extremely severe"; at least three had considered suicide. This study was overrepresented by depressed people.

Disability

All but three fell within the severe disability classification of the Oswestry Questionnaire, representing greater disability than other studies (for example, Pearce & Erskine, 1989).

Moreover, there were reasons to believe that many of the participants were moving deeper into chronicity over the waiting period.

Pain Characteristics

Almost all patients suffered chronic back pain, the pain group known to have the poorest response to treatment (Turk & Rudy, 1990). Specialist clinics and published studies usually have a greater range of pain problems. This observation does, however, clarify the type of problems with which referring anaesthetists require help in the present setting.

In terms of other pain characteristics, that is, number and types of other treatments and chronicity, the sample appeared representative. (The mean duration of pain, however, was six years longer for attenders than nonattenders at initial assessment.)

In summary, the sample even for a specialist clinic is one of extreme disability and psychopathology. There is a bias in favour of back pain, but the sample is representative of other characteristics.

The Study

Most published outcome studies are multidisciplinary endorsing the importance of multidisciplinary work for successful outcome. Other studies, however, do not make clear what, if any, medical or other physical treatments occur. No psychological studies reviewed specified the quantity of medical input.

Unsuccessful efforts were made to involve other disciplines in the present study, but were unavailable due to contract arrangements. Only two patients had medical appointments during the course of the groups and most had none six months prior to the group. The intervention was therefore psychological and not multidisciplinary, atypical of most published outcome studies as far as can be judged.

Attrition

Reported attrition rates are high in pain studies (for example, Turk & Rudy, 1990) and this study seems comparable.

Treatment drop-outs with their particular characteristics, can bias results in the analysed final sample very much like a series of selective filters. Here, attrition, following baseline assessment, filtered out those committed to medical help (4) or uninterested in a psychological approach (2). As a group, these dropouts had shorter pain chronicity compared to attenders, probably investing greater hope in medicine, thereby disempowering a psychological approach. On the other hand, by virtue of shorter pain duration, with less entrenched pain patterns, it could be argued that they would have responded well. On balance it can be suggested this attrition was unselective.

All included participants completed the assessments, but diaries and follow-up assessment results were incomplete. Eleven patients who completed diary recordings 1, 3 and 5 necessary for statistical analysis may be considered more highly motivated than those who did not.

The effect of attrition on matching has been already discussed. The resulting differences in the two groups are likely linked to outcome of this study: other studies have shown that people with shorter pain duration respond better to psychological treatment (for example, Keefe, Block, Williams, Brown & Surwit, 1981). Precise analysis of the effects of attrition is beyond the scope of this study.

Motivation

Those who failed to attend or complete assessments in this study are likely to be less motivated. Group B, the more 'successful' of the two groups, had higher attendance rates.

Raising motivation was an important role of the research, particularly since cognitive-behaviour therapy was something very different from expectations of most attenders. Countermotivational beliefs were widespread, for example, hurt equals harm, exercise damages and medicine should be taken only when in pain.

It is suggested here that methods derived from motivational interviewing applied to addictive behaviours (for example, Miller, 1983) may have a useful place in preparing patients for psychological pain management programmes, especially when the experienced approach has been predominantly medical. Gottlieb et al. (1977) point to the centrality of high motivation in preventing attrition in pain programmes.

It is relevant to observe that some of the more successful patients in this study were already using self-control strategies such as meditation (for example, Patients I.D. 12, 19). This motivation may have been central to their success.

Overpresentation of Symptoms ('Faking Bad')

Skevington (1983) quoted earlier in this work, noted that pain patients are unlikely to present themselves as successful copers in order to attract more help. This observation led to a closer look at the data for evidence of biased self-presentation.

First, assessment results from the same patients on different testings have a consistency which would be difficult to fake. Second, most self-report diary pain scores correlate significantly with M.P.Q. Total scores. Finally, Diary recordings on the four dimensions of pain, tension, depression and medication show high consistency. Pain notably has higher means than the other three, which may be evidence of need to convince others of pain. These consistencies are apparent despite low 'ceilings' of diary scales.

So, generally, there is little evidence of 'faking bad' distorting results of the present study, but specifically some evidence for it with regard to reporting <u>pain</u>; this same tendency may have affected M.P.Q. and Oswestry scores for the worse. Faking bad may thus be an inappropriate term. Many chronic pain patients are accustomed to being disbelieved, and in order to elicit help they quite reasonably overpresent their experienced sensations, particularly if they believe they are referred because their pain is "in the mind". Overpresentation may thus be a less judgemental and a more accurate and useful term both in clinical and research work.

Assessment of Pain

Assessments here were selected because of their sensitivity, with a range chosen to cover different modes of responding. Additionally, considerable qualitative data was collected at baseline interviews although time constraints did not enable adequate integration of this with quantitative data. Assessment has provided information already described as snapshot with all the limitations implicit in the term. Interview and other real life information could supplement this to provide a moving picture of broader effects of change.

The value of pain diaries has been emphasised in this thesis, although reliability has been questioned to some extent. Retrospective completion with unreliability of memory for pain is one problem. Requesting completion at a specified time such as mealtime may address this. Nights were difficult times for many in this study and information about night pain would have added useful information. The present finding of increased association of psychometrics on successive testing indicates some kind of change in patients, making them more consistent responders. Consistency like this, as well as other scores noted over time, could of course simply be the result of attempts to be 'good patients'; memory for what was reported on the previous occasion can also contaminate. These difficult but important assessment factors could be teased out using, for example, follow-up enquiries about strategies patients used in recording.

Transitional Model

In this study, cognitive variables showed significant change, but measures of experienced pain and disability did not. High levels of variation were apparent across and between individuals on some assessments. These findings will now be examined in the context of this model.

"The edges became blurred and her depression became her back pain and her back pain became the cause of her depression" (from Skelton, Murphy, Murphy & O'Dowd, 1995, p.45).

A general practitioner described a patient in the above terms, aptly illustrating the principle of the transitional model. The person so described can be seen to be in transitional flux moving back and forth from sensory to affective mode. A differential diagnosis of the patient's problems as physical or psychological seems less valuable than considering the doctor's sensitive observation from a transitional perspective. According to the transitional model it seems more useful to conceptualise pain patients at any particular time to be at a high, low or intermediate point in terms of the overall psychological process of adjusting to pain. There is no reason to believe that dimensions of such adaptation modes, for example, behavioural, affective or cognitive will operate synchronously: everyday experience as well as everyday psychotherapy experience validates this concept.

Decisions about therapeutic strategy and assessment become clearer when pain is seen in this way: people in pain need multidisciplinary work at different levels appropriate to their needs. In the present and similar studies, patients are encouraged to move from a reliance on the health system, as their usual response mode, to self-help and greater autonomy. This represents a substantial schematic change and may take some time to occur. The present study can be seen as measuring outcome at a time when the total psychological system is in early stages of change, when flux is predictable. Holding onto existing modes alternates with experimentation with new ones. The change level may be perceived as threatening and the simile of a mountaineer retaining a firm foothold at the same time as testing a new one is apt. Patients in this study have held onto one schematic stance at the same time as reaching out tentatively for psychological footholds in new ways of adapting and coping.

Other studies have demonstrated effects consistent with the model. Philips (1987) showed that behavioural and subjective indices related poorly. Such results illustrate the complexity of pain and its assessment. Williams (1992) points out that it is not what the 'resting state' is, but how the results change in relation to each other which matters; a concept implicit within the transitional model. There may, of course, be a lag before the patient feels confident enough to <u>report</u> improvement, linked potentially to the issue of over-presentation of pain symptoms previously discussed. Certainly in this study, outcome measures have not necessarily reflected changes observed (albeit less reliably) in other ways such as postgroup questionnaires and interviews. The results of this study may be freely interpreted within the author's development of the transitional model illustrated diagrammatically in Figure 8.

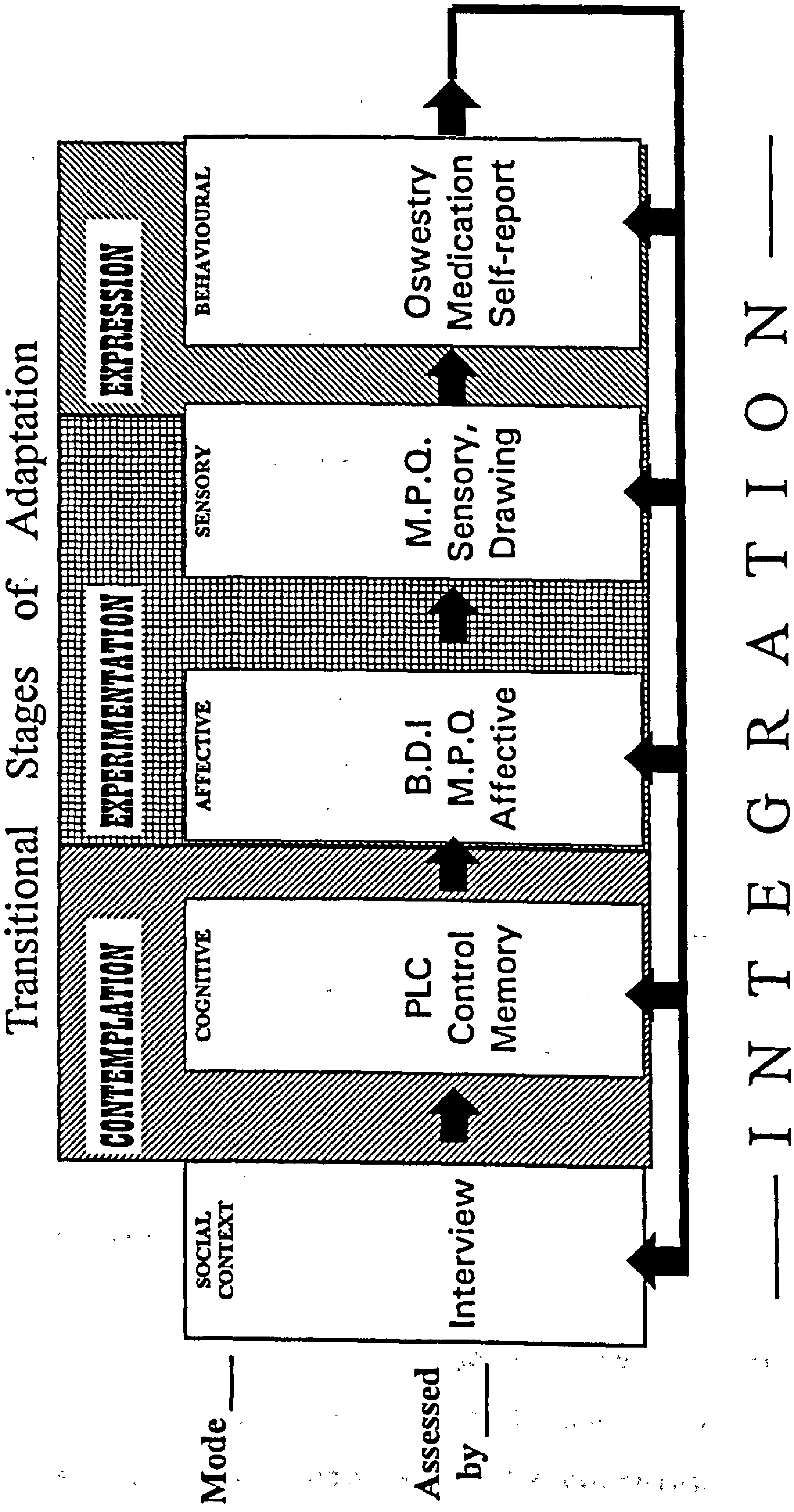

FIGURE 8: HYPOTHETICAL TRANSITIONAL MODES

FIGURE 8: HYPOTHETICAL TRANSITIONAL MODES

There is an underlying implication of the model that transition and integration happen slowly: too rapid change ('panic') could result in return to an earlier mode of adaptation. Overpresentation of symptoms may occur if transition happens across the modes without full adaptation at each stage, a phenomenon identified in the early diary records of this study. Behavioural change without the appropriate cognitive change could be unhelpful. Indeed Karoly and Jensen (1987) observe that transitions can be potentially damaging or irrelevant as well as growth enhancing.

All change happens within the social context including early pain experience, family response, culturally defined ways of behaving and so on. The change model in Figure 8 predicts that cognitive change will underscore all others and will be the first to occur. Links between modes occur in order as therapy progresses. For example, memory for pain-related words correlates negatively with M.P.Q. Drawing at baseline (-.06, n.s.) changing to positive significance at posttherapy (+.64, sig .05). Also, M.P.Q. Sensory and Affective scores at baseline tend to predict change posttherapy; although nonsignificant, this is tentative evidence of transition in M.P.Q. scores.

The changes may occur in a highly individualistic way as a consequence of response style and aspects of social learning. For example, P.L.C.-Responsibility correlates significantly with change following self-help. This is counterintuitive unless it is the case that individuals with a passive response style actually perceive self-help materials in a similar way to medication.

Life experiences during therapy may cause ’back-tracking’, a possibility represented by the lower arrows of Figure 8. Severe pain bouts as well as anticipatory anxiety about them based on exaggerated memory, provide examples. Other life events can have a similar effect: one patient (I.D. 13) suffered two car accidents following the group with resulting increases in diary pain ratings. Return to active living brings hazards which can result in transition to earlier modes of function. Increase in independence may threaten other rewards such as a disability pension or sympathy from friends. Such events can result in transitions, giving rise to apparently anomalous assessment results.

The transitional perspective encourages awareness that people in pain may feel and behave totally ’normal’ at some times, depending on their stage of coping, but may also move back and forth across modes, like the patient described by the general practitioner. It follows that changes demonstrated on assessments such as used in this study do not necessarily represent deep structural changes of, say, cognition but only transitional ones. Longer term follow-up would shed light on this. As Karoly and Jensen (1987) point out in support of the transitional perspective, there is a tendency to look at treatment failures either in terms of distant past or immediate present instead of considering the unfolding of cognitions, behaviour and feelings over time and across different settings.

Clinical Implications

Groups for People in Pain

From the experience of the present study it is the author's opinion that groups are cost-effective and supportive learning environments, but unsuitable for severely disturbed people (for example, Patient I.D. 1) and those who have become isolated as a result of their pain (for example, Patient I.D. 22). Their presence can be stressful for other members. Also from the experience of this study groups more homogeneous in terms of patient characteristics, particularly pain levels, would have been more effective. One-to-one work would be beneficial for some people before or after groupwork; educational input (for example on the Gate Control Theory) is appropriate for group setting.

Also, from the experience of this study, eight weeks duration may be minimal. The information provided was complex and a greater number of group meetings would have been beneficial. The timing of the introduction of cognitive concepts is quite crucial, especially for patients hoping for a medical cure. Philips (1987) advocates introducing these after five or six sessions, but the current study introduced the concepts earlier in consideration of a shorter timescale.

Self-Help for People in Pain

Despite positive statements about these materials from participants, the statistical results are not confirmatory and again, the issue of readiness for such material needs consideration at the individual level. The differences between the two groups is relevant here, particularly as some individual's assessments have shown a trend for the worse after self-help. Miller's (1979) Minimax hypotheses, that some people in certain situations prefer no control, should be actively considered in this respect. The value of self-help may depend on an individual's transitional point, a view supported by the interaction effects found in this study. The level of support required as individuals move from other to self-control may be particularly important and the point where multidisciplinary work is most likely to be necessary.

Cognitive-Behavioural Therapy for People in Pain

There is evidence that perception of pain has changed for patients in this study. Unlike pain tolerance which laboratory studies have shown to be easily changed, pain perception is not easily changed indicating the effect of therapy in this study. There are also pointers towards the optimal level of control which people in chronic pain need; follow-up interviews already indicate that patients have developed a recognition of their own capacity to manage the pain. Some time may elapse before affect, cognitions and behaviour come together in the change transition process, but there is clearly evidence for this here despite the short timescale of the study.

Further Research

Models

Discussion of results has taken place within the context of the transitional model. Further research work on this model such as meta-analysis would be valuable. Existing work could be examined for more substantial evidence, particularly the stages at which transition takes place in relation to patient characteristics.

Other theories could be applied to pain such as Kelly's Personal Construct Theory (Bannister & Fransella, 1971); this theory gives considerable importance to anticipation, so salient in pain. Improved understanding of the ways in which people define themselves as 'people in pain' is a highly relevant research issue. In this definition of self, memory must play an important part, as has been shown by experiments on memory and the self-schema (Williams, Watts, Macleod & Mathews, 1988). One development of this theme is to vary the object being described (for example, self or well-known other person) to examine pain concepts which are specifically part of the self-concept. This knowledge adds to understanding of memory mechanisms and the part they play more generally in suffering. It has long been recognised by cognitive therapists that the words people use can define their experience to some extent. Semantic importance is also recognised by pain researchers (for example, in the McGill Pain Questionnaire). The finding of increased recall of nonpain-related words investigated in this study could usefully be replicated over longer periods with larger samples. Conclusions of the present study are necessarily limited on account of the coexistence of severe pain and depression. Comparisons of depressed people with and without pain, such as the study by Pearce et al. (1990) could usefully be replicated and developed.

Developing the Present Study

The present study has been described as preliminary. This section will now present possibilities for future work utilising results and observations obtained here linked to another change model in order to design a more definitive study.

Prochaska and DiClemente (1983) statistically identified four stages in therapy in their integrative transtheoretical model, originally developed in the context of smoking cessation. These stages are precontemplation, contemplation, action and maintenance. Intuitively rather than statistically, results from the present study have suggested stages of contemplation, experimentation and expression leading to integration. These are clearly similar.

The stages identified by Prochaska and DiClemente are seen as interacting with ten basic processes of change identified in major psychotherapy systems (Prochaska, 1979). From this a questionnaire was developed which reliably defined these change processes.

A modification of this questionnaire for pain could be used to stratify patients in a larger study, developing the present preliminary study. Hypotheses would be developed to aid decision- making about which therapy methods work best for a particular stratification. As an example, based on Prochaska and DiClemente's (1983) finding, raising awareness may not be appropriate during the Precontemplative stage during which people become aware that solutions exist. Consciousness raising works well for those moving into Contemplation, then declines through Action and Maintenance stages of change. Behavioural interventions work poorly in Contemplation, but peak in Action and are useful to prevent relapse prevention.

In this proposed study, therapeutic strategies would be guided by the stages identified by the questionnaire. Hypotheses would be set up to examine more carefully the value of assessments which successfully predicted change in the present study; these could be examined within stratified samples using matched control groups. In particular it would be useful to identify the value of early cognitive change scores of P.L.C.-Control and Memory Bias in predicting later successful adaptation to pain.

It is recognised that the sample of the present study was atypical with a sizeable number of participants 'stuck on the rockface'. If these patients were to make any changes at all, these would be measurable in the early stages both of the model above and that illustrated in Figure 8. Specifically, changes of Locus of Control and Memory Bias have demonstrated this.

To pursue the climbing metaphor, a relevant question for the new study is to ask which climbers will remain stuck on the rockface, fall to the ground or eventually reach the peaks of behavioural change (full integration)? The suggested study should be longterm considering the timescale of changes reported here. Important problematic therapeutic issues for pain identified only briefly in the present study should become clearer in the suggested future work, including timing of interventions.

Control

The issue of control in pain management is central, but fine tuning the optimal individual level of control is a sensitive task; individual differences need more consideration in pain research. Strategies used in groups need to be matched to individual coping styles and pain levels and currently there is no means of doing this. Questions of the relative importance of control as opposed to other therapy emphases such as stress reduction need to be addressed by research. Typical of most programmes, a range of self-control strategies was used in this study, for example, imagery, positive self-statements, diversion, but there is no theoretical approach to tie these together. It is not clear what is appropriate and under what conditions. The level of pain experienced may be the critical factor for the therapeutic direction, for example, attention diversion may be best with mild pain.

Self-control materials appeared to have mixed value in this study, at least from the measured evidence. Indeed some patients reduced control at certain times. This observation adds further evidence to Thompson's (1981) suggestion (in another context) that information can increase fear, and to Miller's (1979) Minimax hypothesis already discussed. The time at which such self-help is usefully given as well as patient characteristics needs further research and interview follow-up of this study could provide valuable information. However, overriding issues such as belief about and explanations of pain may well be more relevant than any specific approach used and could also be addressed directly by future research using, for example, interview methods.

Assessment

Results of the present study have not necessarily reflected observed improvements. There appears to be a latency period before the patient is confident enough to report improvement which may be linked to the issue of overpresentation. This could usefully be researched to provide better understanding of assessment methodology to monitor change.

Qualitative methodology could be applied to material obtained. Methods have been developed in this context to research common sense illness models by Leventhall and Nerenz (1985) which could be used to assess, for example, patients beliefs in their pain as acute, chronic or cyclic. These beliefs relate to outcome and motivation. Repertory grids could have a useful role in improving our understanding of ways people make sense of their pain experience.

The present study has shown the value of the Pain Locus of Control Questionnaire and its division into Control and Responsibility subscales; more work is required with this instrument as there is little published. The relationship demonstrated in this study between P.L.C.-Responsibility and diary pain change is of interest and research to refine this and other change predictors would aid the process of patient selection for different treatments. The value of the McGill Pain Questionnaire, Affective and Sensory subscales, has been demonstrated in this study, but the other subscales lack validity and reliability data, despite very frequent use of this instrument.

Integration

Laboratory models have been described earlier in this thesis, but so far appear to have only a limited usefulness in the study of chronic pain. They tend to focus on pain endurance. However, self-control and pain memory, two cognitive areas demonstrating change in this study, seem to have received scant attention from laboratory studies and could usefully be studied in this context.

There is a need for future research and thinking about pain to move towards a unity to include anxiety, depression, learned helplessness and control. Clearly knowledge about therapy for depression has had a heavy influence on current pain management programmes and other knowledge could similarly be brought to bear. Motivational analysis, developed in the drug addiction context, has earlier been suggested as potentially useful in patient selection and preparation for pain management programmes.

Work on eating disorders may be relevant to pain. Bruch (1974) maintains that some overweight people have lost the ability to discriminate their hunger feelings from other emotions due to indiscriminate childhood food reward patterns. Similarly, there is some evidence from the current study that pain patients have lost touch with the pain they actually experience, perhaps as a result of responses from significant others like spouses or doctors, or indeed constant overpresentation of their symptoms. It was reported earlier (sample characteristics) that most patients in the initial sample of this study failed to make connections between mood state and experienced pain level. With therapy, however, the relationship between subjective and cognitive aspects significantly increases and becomes integrated (for example, change scores of M.P.Q. Drawing and memory bias).

Awareness of links between pain and traumatic life events were absent for some in this study. Philips (1987) also reported that patients before therapy tend not to report connections between life disruptions caused by pain and pain itself. After therapy, however, the link is clear to the patient who develops a greater awareness that, for example, depression is due to causes other than pain. In-depth therapy would normally be required to make these links. Serious life problems such as divorce and family troubles were experienced by many participants in the current study. Successful differentiation of pain from other emotional reactions to events like these may be a consequence of successful treatment, with increased sense of control providing the key enabling chronic pain sufferers to differentiate pain from other emotional reactions. Patients who cannot make this differentiation are probably the more seriously disturbed chronic pain patients, often excluded from pain management programmes (but not this one). This group has consequently been underresearched, a trend which could be usefully reversed, to the benefit of better understanding of chronic pain as a whole.

Highly depressed pain patients are likewise often excluded from research studies. The addition of pain on people with depression and other preexisting psychopathology needs further research, developing the work of Blumer and Heilbon (1981) who identified a depression prone group of patients where pain arouses dependency needs. The effect of pain on other vulnerable groups would merit further study despite the challenges such retrospective work would provide. Such work would help integrate pain research with other mental health knowledge.

Early pain experiences are likely to be relevant to later pain, a little researched area. Links between childhood hospitalisation and adult pain status were identified by Pilowsky and Bassett (1982) who showed that early hospitalisation was related to pain and depression genesis. No doubt reinforcement played a part here also. Such developmental issues require refinement and research.

CONCLUSIONS

This study evaluated the effects of self-help and group pain management therapy with patients who had previously received mainly medical treatment. The aims of the pain management group were to help sufferers deal better with pain themselves, develop self-control and positive thinking.

Cognitive changes have been demonstrated, presumed to be the result of psychological interventions provided, mainly of a cognitive-behavioural nature. Changes in psychometrically assessed pain intensity and disability or of medication use did not occur within the period of assessment. Self-help materials were provided before the beginning of therapy, but there is no statistical evidence that this was beneficial, although patients' verbal reports indicate the perceived usefulness of these interventions.

The Pain Locus of Control Questionnaire and Memory Recall results provide evidence that some levels of personal construing of pain experience have changed; changes have occurred in attentional shifts as a result of the programme. Longer term follow-up, not possible within the time constraints of this study, will shed light on the permanence or otherwise of such effects. Change predictors have been identified.

Karoly and Jensen (1987) suggest that despite some published research to the contrary, pain management programmes are "marginally effective". They maintain that gains occur at the expense of selecting successes; treatment failures drop out and they are often people who possess only limited personal and social resources. The differing outcome in the two groups in this study possessing quite different characteristics have demonstrated the point.

It is recognised (for example, Turk & Rudy, 1990) that people referred to specialist pain clinics are a higher failure risk for any treatment approach. The patients seen in this study were a particularly severely disabled sample. Yet some individuals have benefited and some group results have shown improvement; verbal opinions both following the group and at later follow-up have been more highly positive than test results. This suggests that statistically insignificant results may nevertheless be clinically important.

It is the experience of this study that changes in cognitions about pain are difficult to achieve rapidly and need gradual introduction. Individual differences are considerable and need to be recognised when presenting new concepts to patients.

Changes have been observed in some areas but not in others and this asynchronicity has been examined in terms of Karoly and Jensen's (1987) transitional perspective which states simply that all modalities of adaptation (cognitive, behavioural, affective and so on) are unlikely to operate together. The concept, however, has not been developed or subject to any formal scientific validation. The transitional perspective has been developed in this thesis by interpreting changed and unchanged results on relevant dependent variables. Readiness for change is emphasised and chronic pain patients may hold onto familiar ways of coping before contemplating movement to new stages. Cognitive changes have been demonstrated here and may be necessary before other lasting changes can occur.

Similarities in the cognitive-behavioural treatment of pain with the treatment of depression are noted as well as conceptual problems in separating the two areas. The importance of therapy with highly depressed and otherwise disturbed people before starting to help them with pain is highlighted. Also reemphasised is the importance of multidisciplinary work with pain sufferers. This was absent from the present study, and has been consistently described as necessary in the pain literature. It is suggested that such involvement in this study would have increased the likelihood of reduction in patients' experienced pain and disability levels as well as medication use.

The cost of nonoptimal pain treatment in terms of human suffering, the labour market and of financial resources have been well documented. The nation cannot afford it.

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