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DOCTORAL THESIS

**ADJUSTMENT TO CHRONIC PAIN:
THE RELATIVE IMPORTANCE OF, AND
RELATIONSHIP BETWEEN, EARLY CHILDHOOD
EXPERIENCE, EARLY MALADAPTIVE SCHEMAS
AND COPING STYLE**

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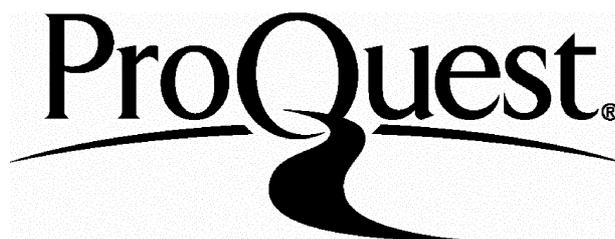
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ABSTRACT

The current study aimed to investigate the link between predisposing psychological factors and adjustment to chronic pain. Based upon Young's (1990, 1994) cognitive conceptualisation of early maladaptive schemas and previous empirical research, the primary aim of the study was to examine the potential impact of early maladaptive schemas (core beliefs) and perceived quality of parenting during childhood on adjustment to chronic pain. It was anticipated that poorer perceived quality of parenting and higher ratings of early maladaptive schemas would lead to poorer adjustment to chronic pain. It was hypothesised that early maladaptive schemas would act as a mediator between perceived quality of parenting and adjustment to chronic pain. Additionally, it was hypothesised that coping style would predict adjustment to chronic pain independent of early maladaptive schemas.

The study utilised a retrospective cross-sectional design. 40 people with a chronic pain diagnosis were recruited along with 32 people with type-I diabetes (the comparison group). All participants completed a range of standardised self-report questionnaires relating to present physical and psychological impairment, perceived quality of parenting during childhood, early maladaptive schemas, and coping style. The data was analysed using t-tests and multiple regression analysis.

Findings indicated that both samples showed moderate physical and psychological levels of impairment. Both samples were found to have experienced relatively positive parenting and had relatively low early maladaptive schema scores. The 'self-sacrifice' and 'unrelenting standards' schemas were found to be the most pertinent for both groups. Perceived quality of parenting was found to predict several higher-order

schema domains in both clinical samples. Findings showed that early maladaptive schemas predicted adjustment in the chronic pain sample but not in the comparison group. Perceived quality of parenting was not found to predict adjustment in either sample, and therefore a mediational model between perceived quality of parenting, early maladaptive schemas and adjustment was not established. A further finding was that coping style did not predict adjustment independent of early maladaptive schemas in the chronic pain group, but did so in the comparison group. These results highlight the potential role of early maladaptive schemas in adjustment to chronic pain, and a number of clinical and theoretical implications are discussed.

1 INTRODUCTION

Overview

In recent years, many research studies have highlighted the role of psychological factors in the presentation of chronic illness, and it is now generally recognised that psychological factors play an important role in chronic ill-health and particularly in the adjustment process. This has implications for the involvement of psychological interventions in the management of chronic illness. Chronic pain in particular has been subject to much investigation concerning psychological factors (Gamsa, 1994a), primarily as it has been found that many individuals suffering from chronic pain have unexplained pain where an organic cause has not been identified.

Psychodynamically-orientated researchers (e.g. Engel, 1959) were the first to study the psychological aspects of pain. Pain was considered to have a psychological function, particularly as a defense against psychic conflict. This theory has attracted much criticism over the years. Nevertheless, it has stimulated a great amount of discussion around the importance of psychological factors and the role of early developmental and familial experience on the development of and adjustment to chronic pain in adulthood. In recent years, it has been suggested that cognitive theory may be useful in investigating and gaining a better understanding of adjustment to chronic pain and chronic illness in general. Much research has focused on the role of pain-specific cognitions in a person's adjustment (e.g. Turk et al., 1983). Over the past decade it has been suggested that more general cognitions about the self, others and the world may also influence a person's adjustment to illness and current

functioning (Williams, 1997). Parallels can be drawn between this cognitive framework and early psychodynamic writings as both emphasise the potential importance that the individual's early developmental period and family experience has upon the current pain experience and adaptation to pain as an adult.

This thesis reports on a preliminary study that aims to explore the relationship between early childhood and family experiences, early maladaptive schemas and adjustment to chronic pain. Young's (1990) cognitive model of early maladaptive schemas is drawn upon, which emphasises early familial experience and parenting in the development of problematic core beliefs.

The Introduction chapter will first summarise the definitions and theoretical models of chronic pain. It will then go on to outline psychological models emphasising early developmental experience and core beliefs, firstly from a psychodynamic perspective, and then addressing the recently emerging psychological literature and particular relevance of cognitive theory and research to adjustment to chronic pain. This will be followed by a discussion of the coping processes involved in adjustment to chronic illness within a cognitive framework, and the concept of adjustment will be operationalised. Finally, the outline of the study and its hypotheses will be detailed.

1.1 Chronic Pain

Every person experiences pain at some point in his/her life and everybody is therefore aware of the physical and emotional distress that pain, even if only of short duration, can cause. As pain can be seen as a considerable challenge for the individual experiencing the pain, the alleviation of pain therefore presents itself as a great challenge to both the sufferer and health services. The definition of pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (International Association for the Study of Pain, 1979) highlights the physical as well as the psychological components with which the experience of pain is associated. Although most individuals will only experience pain that is short-lived and which is termed ‘acute’ pain, some individuals will experience pain that is of much longer duration and which becomes a more permanent fixture in their lives with great personal and professional consequences. Pain that is longer-lived is often termed ‘chronic’ pain and is frequently associated with substantial losses and changes in various areas, such as physical function, work and financial security, personal and familial relationships, social activities, and general quality of life.

Chronic pain is generally defined as any pain that lasts for longer than three months (International Association for the Study of Pain, Subcommittee on Taxonomy, 1986). Prevalence of chronic pain in epidemiological studies conducted in the general population ranges from 2% to 40% (Verhaak et al., 1998). Epidemiological research has shown that approximately 13% of adults suffer with chronic pain in the United Kingdom (Croft et al., 1993), and that several million workdays per year are lost as a

result of this (Pearce and Mays, 1994). Unlike acute pain in which there is likely to be a clear cause, healing process and subsequent end to the pain, chronic pain can present a much more complex picture. For many individuals with chronic pain, the physiological source of their pain is not discovered, and therefore many treatment approaches following uncertain diagnoses and referrals to various specialists ensue (Banks and Kerns, 1996). This also creates serious demands upon health services for the diagnosis and successful treatment of chronic pain. Often, as it is difficult or impossible to give causal explanations for many chronic pain presentations and no certain diagnoses can reliably be made, the sufferer's pain is thought to be of psychological origin and determined to be 'all in the mind' (Merskey, 1988).

Chronic pain has been subject to much investigation concerning psychological and psychosocial factors in recent years. Numerous studies have confirmed the clinical impression that chronic pain patients suffer from psychological distress and frequently associated social isolation (for a review see Joukamaa, 1987). It is now generally recognised that psychological factors play an important role in the experience of, adjustment to and management of pain (Gamsa, 1994a). Research has shown that there appears to be great individual variability in the way in which individuals suffering from chronic pain cope with and adjust to their life with pain, even when controlling for the amount of pain and disability present. Even in groups with apparently similar clinical and diagnostic presentation, individuals with chronic pain vary considerably in their levels of psychological and physical dysfunction (Bonica, 1990). Some people appear to cope with and adapt well to their pain, lead fulfilling lives and achieve a high level of general well-being. Other people appear to have much greater difficulty in adjusting to their condition, and many suffer psychological

effects (e.g. Lennon et al., 1990; Harkapaa et al., 1996). Given the prevalence, challenge and psychosocial impact of chronic pain, the search for factors that could contribute to the attempt to support better physical and psychological functioning and helping individuals adjust better emotionally is likely to continue. The present study's aim is to extend previous research that has investigated the role of psychological factors in adjustment to chronic pain.

1.2 Historical Models of Pain

Early linear models simply explained pain via the physiology involved, such as pathways within the central nervous system (CNS) and the extent of tissue damage (sensory models). Sensory models provided the basis for pain research and management, with little attention given to psychological considerations.

Psychological factors started to be given theoretical consideration in the early 20th century, particularly when puzzling cases of pain were observed where no identifiable organic cause was identified, thus suggesting psychopathology rather than organic disease as causal. This shift reflected dualistic thinking, and pain was seen either as organic or as 'all in the mind', thus splitting mind from body (Gamsa, 1994a).

By the mid 20th century it became increasingly apparent that sensory explanations failed to account for certain puzzling pain phenomena and several different theories were proposed to explain this. From the 1940s to the mid 1960s explanations based on psychoanalytic theory dominated reports of pain with no identifiable organic cause. Engel (1959) proposed a developmental theory of 'psychogenic' pain that was a response to the question, "How can there be pain if pain organs are not being

stimulated?” (Gamsa, 1994a). Engel (1959) proposed that in some patients persistent unexplained pain could have a psychological function and promote psychic equilibrium by fulfilling emotional needs. Fuller explanation of this model will be discussed later on in the Introduction chapter when examining the importance of early experience and the formation of beliefs.

Melzack and Wall’s multidimensional gate-control theory of pain (1965) explained pain via physiological and psychological mechanisms and was the first theory to comprehensively integrate psychological and physiological factors. It is a sensory-affective interactive model that incorporates cognition. Psychological mechanisms include factors such as attention, mood, expectations and personality, which influence the experience of pain. The working three-process model that developed from this research described relatively independent physiological, subjective-affective-cognitive and behavioural components of pain. This theory brought the psychological study of pain into mainstream research.

Behavioural and cognitive explanations of chronic pain began to appear in the 1970s. Fordyce (1978) defined pain by the presence of pain ‘behaviours’, i.e. actions that are observable, such as the use of strategies, verbal and non-verbal communication, and avoidance. He based his explanation on the principles of operant conditioning, and suggested that acute pain persists and becomes chronic due to the effects of reinforcement (e.g. avoidance of unpleasant tasks, the provision of attention). Behavioural theory forms the basis of operant pain management programmes that aim to eliminate pain behaviours, and thus remove the pain problem. Although a number of clinical studies show evidence of effectiveness in decreasing pain behaviour, this

linear causal model has been criticised for disregarding the sufferer's emotional world and context in which the pain is embedded (Gamsa, 1994a).

Cognitive theories were largely based on Melzack and Wall's gate-control theory of pain (1965) and Beck's theory of emotion (1967) and place emphasis on the sufferer's subjective pain experience and the individual meaning of pain. Cognitive theory examines intervening variables such as attributions, expectations, beliefs, self-efficacy, personal control, attention, problem-solving and coping. A number of studies have examined the effects of these cognitive processes on the experience of pain. Cognitive interventions include collaborative alteration of the appraisal or meaning of the pain and teaching cognitive strategies to reduce the intensity of the pain and its impact on the sufferer's functioning (Gamsa, 1994a).

In recent years, cognitive models of illness behaviour, which can be applied to chronic pain as well as other forms of illness, have put forward that dysfunctional illness behaviour might be associated with general inaccurate and unhelpful beliefs, and that it is when an individual's beliefs are dysfunctional that cognitive interventions might be appropriate (Williams, 1997). Much of the cognitive work has been health- or pain-specific and has focused on health- or pain-specific beliefs. Turk et al. (1983) proposed in their cognitive model of chronic pain that health beliefs and misinterpretations are central, and that the behaviour and emotions associated with chronic pain are influenced by the appraisal and meaning of the pain rather than the pain experience itself. Another theory, Leventhal et al.'s (1980) self-regulation theory (SRT), refers to all behaviour relating to health rather than solely dysfunctional illness behaviour. Leventhal et al. (1980) proposed that individuals react to illness on the

basis of their beliefs about the threat to their health associated with that illness. The authors described the influence of existing knowledge and beliefs about illness on the appraisal of health-related information. This model shares with the cognitive model a focus on behaviour and beliefs relating solely to illness (Williams, 1997). Williams (1997) proposed that wider issues needed to be taken into account in chronically ill individuals. The author suggested that other non-illness related beliefs may also play an important role in dysfunctional illness behaviour, and that core beliefs, or schemas, about the self, others and the world may influence illness behaviour. Very little research has been conducted around the importance of core beliefs in the area of ill-health.

The present study aims to investigate the core beliefs that chronic pain sufferers hold. This is an area that has been greatly neglected in research so far. The formation of these beliefs through early childhood experience and parenting has also been greatly neglected, and the present study aims to incorporate this into the area of chronic pain. Core beliefs and associated early experience in the chronic pain literature has most notably been emphasised by Engel (1959). As noted above, this was psychodynamically orientated. The present study attempts to incorporate these ideas into the cognitive framework.

1.3 Psychological Models Emphasising Beliefs and Early Experience

1.3.1 Psychodynamic Models

Engel's Theory of 'Psychogenic' Pain

As mentioned earlier in the Introduction chapter, Engel (1959) was one of the first theorists to emphasise the psychological function of the pain experience with his

theory of 'psychogenic' pain. According to Engel (1959), the individual builds a 'library' of pain experiences, from the time of birth, originating from pain provoked by peripheral stimulation. Throughout the individual's development, therefore, pain acquires meaning derived from the context in which it initially occurs. These meanings themselves may later become triggers for pain, whether the peripheral stimulation is present or absent. For example, pain could become associated with guilt, aggression and power, and specific relationships. Engel (1959) proposes that from these early associations some individuals come to use pain unconsciously to resolve developmental conflicts and to restore psychic balance, thus suggesting that individuals come to find the physical pain more bearable than the emotional pain that it represents.

Engel (1959) suggested that some individuals are more likely to use pain as a 'psychic regulator', and these individuals are described as 'pain-prone'. It was thought that various developmental psychosocial factors contributed to a child later becoming 'pain-prone' (Engel, 1959). These might include:

- physically/verbally abusive parents (either towards each other or the child)
- one brutal and one submissive parent
- a parent who punished frequently but then remorsefully overcompensated with a rare display of affection
- a cold and distant parent who responded more to the child being ill
- a parent or close caregiver who suffered ill-health, with the child feeling guilty and/or responsible for this
- a child who deflected the aggression of a parent away from others onto him/herself, usually as a manifestation of guilt.

Various research studies support a relationship between early childhood adversity, particularly child abuse and neglect, and pain in adulthood (see Roy, 1982; 1985 for reviews). Merskey and Boyd (1978), in a controlled study of 141 patients with unexplained chronic pain, found that these patients presented some evidence of unhappy childhood, marital difficulties and pre-morbid personality problems. The authors also found tentative evidence to support the use of pain as punishment whose origin could be traced back to punitive mothers and rejecting fathers. Violon (1980), in a group of atypical facial neuralgia and cluster head pain patients, found consistent history of childhood abuse, neglect, and depression. Swanson et al. (1978), in a study with a group of 13 female patients with chronic pain, found evidence of traumatic events that had occurred in childhood and adolescence.

Roy (1982; 1985), however, emphasises that the pain literature he reviewed was riddled with methodological and conceptual problems, thus not being able to conclusively state a linear causal relationship between negative childhood experiences and the development of pain in adulthood. Roy (1985) suggests that, given the methodological and conceptual difficulties and an oversimplified causal link between childhood abuse and chronic pain which is based on psychodynamic theory, doubts must be raised about the aetiology of the pain-prone disorder described by Engel (1959). Roy (1985) points out that in Engel's (1959) paper on pain proneness, even the concept of 'abuse' is very vague. There is no doubt that Engel's theory (1959) was one of the first to call attention to the important influence of psychological factors at a time when the medical model was the standard treatment for all pains and to highlight the likely importance of adverse early experience. Nevertheless, there appears to be a

lack of understanding of the overall environmental, psychological, and social context that could cause a child to be afflicted with chronic pain in adulthood (Roy, 1985).

Tauschke et al. (1990) conducted a study exploring whether chronic pain may arise from psychological mechanisms of defense. The authors compared 58 chronic pain patients with 56 psychiatric patients. They found that the chronic pain sample had less evidence of poor care in childhood (as measured by the Parental Bonding Instrument) and tended to use more mature psychological defense mechanisms (assessed with the Defense Mechanisms Inventory), compared with the psychiatric sample. They also found that the chronic pain sample had fewer current psychiatric diagnoses but more evidence of anxiety and depression. The authors concluded that, in general, the patients with chronic pain had more normal childhoods and more mature defenses than the psychiatric patients, and that the high levels of depression and anxiety in the chronic pain sample was attributable to reactive factors rather than pre-morbid factors.

Gamsa (1994a; 1994b) argues that the accumulated evidence from research studies fails to provide support for the central tenet of psychoanalytic explanations, namely that emotional conflict gives rise to bodily pain, as suggested by Engel (1959). Although such a formulation may explain some cases of pain, the view that psychological causes generally explain otherwise undiagnosed pain is not supported by research (Gamsa, 1994a; 1994b). In the last two decades the search for a common pain patient profile, as was proposed by psychoanalytic theory, has therefore been largely abandoned. Instead, present studies aim to identify sub-groups with different psychological profiles. This is likely to have greater clinical utility, as well as to

describe more accurately the variety of patients who suffer from chronic pain (Gamsa, 1994b).

Attachment Theory

Recently, attachment theory has been applied to chronic pain (Mikail et al., 1994). Mikail et al. (1994) propose that chronic pain results from a dynamic interaction between biological alteration (such as tissue damage), intrapsychic factors and external/systemic variables. Intrapsychic factors include Bowlby's (1975) concept of the internal working model based on early attachment experiences. Bowlby (1975) asserts that internal working models guide the manner in which an individual will appraise events and forecast the future. Internal working models consist of several components, namely the individual's perception of how acceptable the self is to attachment figures, expectations regarding availability and responsiveness of the attachment figures, and the individual's susceptibility to respond with fear in the face of threat. Bowlby (1975) proposes that internal working models define the individual's interpersonal style of relating, coping, and view of the world. Mikail et al. (1994) propose that external/systemic variables may include familial responses and beliefs regarding illness. Both intrapsychic and external factors are seen to be interactive and relatively stable, thus predating the development of the chronic pain syndrome.

Attachment theory has guided much of the literature on early childhood and family experience, in particular perceived quality of parenting. The theory's proposed link between poor parenting and a vulnerability to psychopathology in adulthood will be further outlined later on in the Introduction chapter.

1.3.2 Cognitive Models

Other theories apart from the psychodynamically-orientated theories also take early childhood experiences into account. Cognitive theory is based on core beliefs that are developed in childhood. Although mainly related to depression and anxiety disorders, cognitive theory has the potential to be extended to the conceptualisation of chronic pain. To date, cognitive theory has been applied to pain in assessment and treatment domains, but has been limited to present beliefs and affect surrounding an individual's pain experience rather than the development of cognitions before the onset of an individual's pain.

Beck's Cognitive Model of Depression

Beck's cognitive model (1967; 1976) was developed to inform the development and treatment of depression. It suggests that early experience leads individuals to form beliefs, or schemas, and assumptions about themselves, others and the world, which are subsequently used to organise perception and to govern and evaluate behaviour. Beck (1967) described schemas as, "a [cognitive] structure for screening, coding and evaluating the stimuli that impinge on the organism...On the basis of the matrix of schemas, the individual is able to orient himself in relation to time and space and to categorize and interpret experiences in a meaningful way" (p.283). Although the ability to predict and to make sense of one's experience is helpful and indeed necessary to normal functioning, some assumptions, however, are rigid, extreme, resistant to change and hence dysfunctional or counterproductive. Dysfunctional and maladaptive thoughts are thus considered responsible for emotional disturbance.

Beck's cognitive model is illustrated schematically in Figure 1 below.

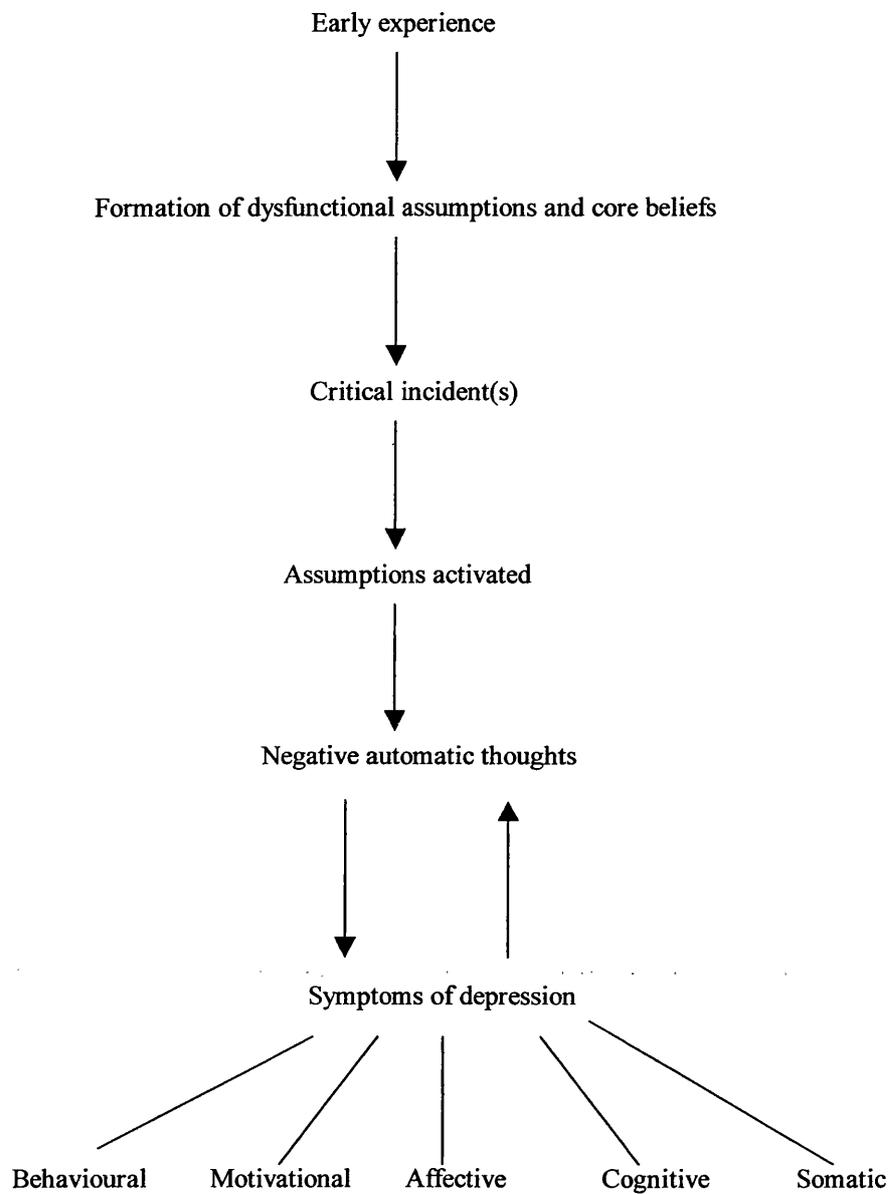


Figure 1: Beck's (1979) cognitive model of depression

Cognitive therapy, based upon cognitive theory, aims to challenge the individual's dysfunctional thinking which is thought to underlie his/her emotional disturbance.

In recent years, the capacity of this model to account for the development of major personality disturbances has been questioned. It has been suggested that this model may be too superficial to address some longer-standing emotional problems and associated beliefs that are deeply entrenched, particularly in patients with long-standing characterological difficulties (Young, 1990; 1994).

Young's Model of Early Maladaptive Schemas

The work of Young (1990; 1994) sought to address specific difficulties of individuals with long-standing personality disorders, as many of the limitations of Beck's original model (1967; 1976) with this sub-group of patients became apparent. Young's model can be viewed as an extension of Beck's cognitive model (1967; 1976), but places greater emphasis on early childhood experience and the concept of schemas. Young (1990; 1994) proposes that psychopathology arises from the formation and maintenance of early maladaptive schemas (EMS) which he defines as extremely stable and enduring broad, pervasive themes an individual has about him/herself and his/her relationship with others, and that these early maladaptive schemas develop during childhood and are elaborated upon throughout an individual's lifetime. Young (1990; 1994) proposes these schemas to be dysfunctional to a significant degree and that they serve as templates for the processing of later experience.

Young (1990; 1994) emphasises that early maladaptive schemas have several defining characteristics. They are unconditional beliefs about the self in relation to the environment and are very rigid. They are also self-perpetuating and therefore much more resistant to change. By definition, they are dysfunctional in a significant and recurrent manner, and it is proposed that either directly or indirectly they can lead to

psychological distress. As early maladaptive schemas are developed early on in an individual's life, they often form the essence of that person's self-concept and conception of the environment. As these early maladaptive schemas are comfortable and familiar, when they are challenged, the individual will distort information to maintain the validity of the schema. The threat of any schematic change is thus too disruptive to the core cognitive organisation. Young (1990; 1994) proposes that early maladaptive schemas are generally activated by events in the environment that are relevant to the particular schema. Dependent on the circumstances and the particular schema that is activated, the individual will then experience emotions such as anxiety, sadness, shame, guilt or anger. It is emphasised within this model that early maladaptive schemas appear to be the result of dysfunctional experiences with parents, siblings and peers during the first few years of an individual's life, and that essentially, early maladaptive schemas are usually valid representations of the noxious experiences during childhood. Young (1990; 1994) poses that, rather than being the result of isolated traumatic events, most schemas are probably caused by ongoing patterns of everyday harmful experiences with family members and peers, which strengthen the schema cumulatively.

Young (1990) originally proposed 16 early maladaptive schemas that he grouped into five broad higher-order schema domains. Recently, Young (1994) extended this to 18 early maladaptive schemas. Each of the five higher-order schema domains represents an important component of a child's core needs. The schemas interfere with the child's attempts to get their core needs met within each domain. The following section will provide a description of each schema domain with the associated early

maladaptive schemas. Appendix 1 has a list of full definitions of all the eighteen core early maladaptive schemas listed below.

Disconnection and Rejection

The expectation that one's need for security, safety, stability, nurturance, empathy, sharing of feelings, acceptance, and respect will not be met in a constant or predictable manner. Schemas in this domain typically result from early experiences of a detached, cold, rejecting, withholding, lonely, explosive, unpredictable, or abusive family environment (McGinn and Young, 1996).

1. Abandonment/Instability
2. Mistrust/Abuse
3. Emotional Deprivation
4. Defectiveness/Shame
5. Social Isolation/Alienation

Impaired Autonomy and Performance

Expectations about oneself and the environment that interfere with one's perceived ability to separate, survive, function independently, or perform successfully. The typical family origin is enmeshed, undermining of the child's confidence, or overprotective, or there is a failure to reinforce the child for performing competently outside the family (McGinn and Young, 1996).

6. Dependence/Incompetence
7. Vulnerability to harm or illness
8. Enmeshment/Undeveloped self
9. Failure

Impaired Limits

Schemas within this domain pertain to deficiency in internal limits, responsibility to others, or long-term goal orientation. These schemas lead to difficulties respecting the rights of others, co-operating with others, making commitments, or setting and meeting realistic personal goals. The typical family origin is characterized by permissiveness, overindulgence, lack of direction, or a sense of superiority, rather than appropriate confrontation, discipline, and limits in relation to taking responsibility, co-operating in a reciprocal manner, and setting goals. In some cases, the child may not have been pushed to tolerate normal levels of discomfort or may not have been given adequate supervision, direction, or guidance (McGinn and Young, 1996).

10. Entitlement/Grandiosity

11. Insufficient self-control/Self-discipline

Other-directedness

The excessive focus on the desires, feelings, and responses of others, at the expense of one's own needs, in order to gain love and approval, maintain one's sense of connection, avoid retaliation, or alleviate the pain of others. It usually involves suppression and lack of awareness regarding one's own anger and natural inclinations. The typical family origin is based on conditional acceptance, where children must suppress important aspects of themselves in order to gain love, attention, and approval. In many such families, the parents' emotional needs and desires, or social acceptance and status, are valued more than the unique needs and feelings of each child (McGinn and Young, 1996).

12. Subjugation
13. Self-sacrifice
14. Approval-seeking

Overvigilance and Inhibition

The excessive emphasis on suppressing or controlling one's spontaneous feelings, impulses, and choices in order to avoid making mistakes *or* on meeting rigid, internalized rules and expectations about performance and ethical behaviour, often at the expense of happiness, self-expression, relaxation, close relationships, or health. The typical family origin is grim, demanding, and sometimes punitive. Performance, duty, perfectionism, and following rules and avoiding mistakes predominate over pleasure, joy and relaxation. There is usually an undercurrent of pessimism and worry that things could fall apart if one fails to be vigilant and careful at all times (McGinn and Young, 1996).

15. Negativity/Pessimism
16. Emotional Inhibition
17. Unrelenting standards/Hypercriticalness
18. Punitiveness

As stated earlier, when the threat of schematic change is too disruptive to the core cognitive organisation of the self, the individual engages in a variety of cognitive and behavioural strategies or schema processes to maintain the validity of the schema. Young (1990; 1994) identified three such schema processes, which are described below.

Schema Maintenance

This refers to cognitive distortions and maladaptive behaviour patterns that directly reinforce or perpetuate an early maladaptive schema. At the cognitive level, this is usually achieved by exaggerating information confirming the early maladaptive schema, or by minimising information contradicting the schema. At the behavioural level, schema maintenance is accomplished through engaging in behaviours that are consistent with the early maladaptive schema (Young, 1994).

Schema Avoidance

This refers to the cognitive, behavioural, or emotional strategies which the individual attempts to avoid triggering an early maladaptive schema and the related affect (McGinn and Young). Cognitive avoidance refers to the attempt to block thoughts or images that could trigger a schema. Affective avoidance refers to attempts to prevent feelings that could be triggered by an early maladaptive schema. Behavioural avoidance refers to the tendency of many individuals to avoid circumstances or situations that may trigger painful schemas. All of these three avoidance processes allow the individual to flee from the distress associated with the particular schemas (Young, 1994).

Schema Compensation

This refers to processes that overcompensate for early maladaptive schemas. Many individuals will adopt cognitive and/or behavioural stances that appear incongruent to what would be predicted from knowledge of their early maladaptive schemas. Schema compensation processes may be viewed as partially successful attempt to challenge

schemas. This process often backfires, however, leaving the person unprepared for the powerful emotional impact if the early maladaptive schema actually erupts (Young, 1994).

In recent years, Young (1994) has developed the Young Schema Questionnaire (YSQ), a 205-item self-report measure for use in clinical practice designed to identify early maladaptive schemas. The YSQ has been shown to have acceptable psychometric properties and clinical utility (e.g. Schmidt et al, 1995), and more recently a shorter version of the Schema Questionnaire has been developed (YSQ-S; Young, 1998). The Schema Questionnaire is the tool used in this study to assess individuals' early maladaptive schemas. For a detailed description of the questionnaire and its psychometric properties please see the Method chapter.

Young's (1990; 1994) proposed schema-focused therapy was specifically developed for personality disordered individuals, i.e. individuals with long-standing characterological difficulties. Compared with traditional cognitive therapy, this schema-focused therapy places much greater emphasis on early childhood experiences and the therapeutic relationship. It is primarily concerned with alleviating symptoms of distress through the modification of underlying maladaptive cognitive structures or schemas.

Early Maladaptive Schemas and Chronic Illness

Although Young's (1990; 1994) above framework has mainly been used to assess the early childhood experiences and early maladaptive schemas associated with characterological difficulties, it can be argued that these early maladaptive schemas

are also relevant to other areas of dysfunction, such as the adjustment to chronic illness, and specifically to chronic pain. Two parallels can be drawn between Young's (1990; 1994) model of early maladaptive schemas and existing theories of chronic illness and chronic pain. Firstly, early maladaptive schemas can be seen to reflect the developmental psychosocial factors, particularly maladaptive early family relationships, that Engel (1959) argued were of importance to the individual's experience of chronic pain. It must be noted, however, that Engel (1959) posited that there was a linear causal relationship between the dysfunctional early childhood experience and the development of pain in adulthood, which the cognitive framework does not share. Secondly, early maladaptive schemas can also be seen as an extension of Williams' model of dysfunctional illness behaviour (1997). The model posits that self-schemas (beliefs about the self, others and the world) interact with illness representations (beliefs about the meaning of illness), which may affect the interpretation made of illness events, and thus are linked with an individual's ability to adapt to their illness. This therefore emphasises the important role of cognitions about the self and others in relation to the adaptation to chronic illness and the need to examine in detail its link to the individual's early experience. This study will therefore adopt the above framework of early childhood experience and resulting early maladaptive schemas in relation to the adjustment of chronic pain.

Investigating whether individuals who are not adjusting to their chronic pain may have particular early maladaptive schemas and whether these individuals experienced a more negative childhood has implications for clinical practice and the possible application of schema-focused therapy to chronic pain sufferers. Current chronic pain psychological treatment programmes are not specifically designed to address self-

schemas (e.g. Weiser and Cedraschi (1992) for review). If schemas and early experience are found to be of importance in the presentation of this chronically ill group, underlying early maladaptive schemas might contribute to an understanding of the difficulties faced by some patients. These early maladaptive schemas may consequently need to be addressed and explored in treatment in order to help individuals cope more successfully with their chronic condition. It has been argued that patients not gaining from cognitive behavioural pain treatment show higher pre-treatment levels of psychological distress and are more depressed than patients who profit from pain treatment (Harkapaa et al., 1996). As reports of relapse following multidisciplinary pain treatment approaches are disappointingly high (Turk and Rudy, 1991), it is important to investigate whether this could be due to early maladaptive schemas that have not been addressed in treatment.

Plant (1999) conducted an initial study in which she applied the early maladaptive schema framework, proposed by Young (1990; 1994), to acute and chronic pain sufferers. Her study aimed to explore the relationship between early maladaptive schemas, specific pain beliefs and the experience of chronic pain. Among the chronic pain sample, 'self-sacrifice' and 'unrelenting standards' showed the highest schema scores. Particular early maladaptive schemas were found to be pertinent for the chronic pain group compared with the acute pain group. These early maladaptive schemas were found to be 'social undesirability', 'failure', 'dependence/incompetence', 'vulnerability to harm or illness', 'emotional deprivation', and 'subjugation'. The study found that individuals largely endorsed that their pain was constant, permanent and mysterious, and that these pain beliefs correlated well with various higher-order early maladaptive schema domains. Results

also showed that early maladaptive schemas showed more associations with current functioning than did the specific pain beliefs, emphasising the importance of early maladaptive schemas in adjustment to chronic pain. Plant's (1999) findings showed that all five higher-order schema domains were significantly correlated with depression. These results emphasise the significance in taking early maladaptive schemas into account when treating patients with chronic pain who are having difficulties adjusting to their chronic condition.

Caution must nevertheless be taken in the interpretation of Plant's (1999) findings due to several methodological problems, such as small sample size (N=28 for acute pain group, N=34 for chronic pain group). Additionally, it must be noted that Plant's (1999) study was a preliminary study investigating early maladaptive schemas within two pain populations. Early maladaptive schemas were the primary focus and the link with early childhood experience was not explored in this study. It could be suggested that some of the early maladaptive schemas found to be particularly pertinent for the chronic pain group (such as 'vulnerability to harm or illness') could be beliefs which developed as a result of having chronic pain, rather than being early maladaptive schemas which developed as a result of dysfunctional early experience. Therefore, investigating the link with early experience is particularly important. Also, the use of the acute pain group as the comparison group limits the generalisability of findings across other chronic illness groups.

The present study will attempt to replicate some of Plant's (1999) findings relating to early maladaptive schemas and adaptation to chronic pain. The present study will, however, go further and investigate more closely the links between early childhood

experience and the presence of early maladaptive schemas, as proposed by Young's (1990; 1994) model.

1.4 Early Childhood Experience and Parenting

When investigating the early childhood experience of an individual, the above psychoanalytic and cognitive models emphasise the importance of the family experience and parenting, and the care and protection an individual received from his/her parents whilst growing up. Over the past few decades, research has generally shown that parenting style appears to have a strong impact upon children's and adolescents' development (Collins and Kuczaj, 1991). Numerous researchers have proposed models of how parents interact with their offspring. Adams (1980) noted that all of the models represent variations in how parents prompt, or fail to prompt, their children to communicate effectively, to take control of their lives, and, in doing so, enhance their self-concepts. Bowlby's (1975) theory on attachment clearly outlines the importance of parenting via attachment processes, and it links poor parenting with a vulnerability to mental health problems in adulthood. The cognitive models of Beck (1967; 1976) and Young (1990; 1994) both suggest that it is the poor family experience and poor parenting, as well as other negative traumatic experiences, which cause the individual to form a series of unhealthy core beliefs or schemas. Given Young's (1990; 1994) model outlined above, it can be hypothesised that the negative family experience and parenting style strongly contribute to the development of these early maladaptive schemas, which in turn may lead to psychopathology, such as depression, when these early maladaptive schemas are activated by an event.

Perceived Quality of Parenting

One way of defining the parental contribution to the early developmental experience of an individual, and the bond they will have formed with their parents is to measure the individual's retrospective impression of parental behaviours and attitudes. The Parental Bonding Instrument (PBI; Parker, Tupling and Brown, 1979), based upon attachment theory, has been developed to do this in a short self-report questionnaire. The measure delineates two factors that have been derived by factor analysis and argued to be central to the role of parenting, namely 'care' (versus indifference or rejection) and 'overprotection/control' (versus encouragement of independence). The Parental Bonding Instrument is the tool used in this study to measure perceived parental style for both parental figures. For a detailed description of the questionnaire and its psychometric properties please see the Method chapter. Four styles of parenting can be derived from the combination of scores on the Parental Bonding Instrument on the dimensions of 'care' and 'overprotection/control' (Parker, 1979; Parker and Hadzi-Pavlovic, 1992):

- Optimal Parenting – high care, low overprotection/control
- Affectionate Constraint – high care, high overprotection/control
- Affectionless Control – low care, high overprotection/control
- Neglectful Parenting – low care, low overprotection/control.

While optimal parenting is regarded as the ideal, the other three are termed as being 'anomalous parenting styles' which are more or less detrimental to offspring. Bowlby (1977) defined anomalous parenting in corresponding terms: failure to provide care (i.e. by being unresponsive, disparaging, rejecting) or excessive over-protection and

control. Although this method of categorization has been brought into question due to the primary and secondary nature of the dimensions of care and overprotection/control respectively, it nevertheless provides a simple and straightforward way of categorizing and comparing the combined effect of the individuals' parenting styles.

Early Maladaptive Schemas as Mediating Factors

Recently, it has been suggested by researchers that the presence of early maladaptive schemas may mediate the relationship between early family experience and/or parenting style and adult psychopathology. The mediator-effect of early maladaptive schemas has recently been investigated in two studies. Shah and Waller (2000) conducted a study considering the potential role of early maladaptive schemas in the relationship between recalled perceived quality of parenting in childhood and major depression in adulthood. They compared a group of 60 depressed out-patients with a group of 60 healthy individuals, and used both the Parental Bonding Instrument (to assess perceived quality of parenting) and the 205-item Young Schema Questionnaire (to measure the presence of early maladaptive schemas). Findings confirmed that the depressed patients were differentiated from the healthy individuals by poorer perceived parenting (uncaring and overprotective). Results also demonstrated that the depressive individuals were differentiated by the presence of three early maladaptive schemas: 'defectiveness/shame', 'self-sacrifice', and 'insufficient self-control'. Findings also suggested that early maladaptive schemas might mediate the relationship between poor parenting and depression. Schemas of 'dependence/incompetence', 'emotional inhibition', 'failure to achieve', 'unrelenting standards', and 'vulnerability to harm' mediated the relationship between maternal care and paternal overprotection and levels of depression.

Leung et al. (2000) conducted a study investigating the relationship between recalled perceived quality of parenting in childhood (as assessed by the Parental Bonding Instrument) and early maladaptive schemas (as measured by the 205-item Young Schema Questionnaire) in the psychopathology of eating disorders. The study consisted of a group of 30 women diagnosed with anorexia nervosa, a group of 27 women diagnosed with bulimia nervosa, and a comparison group of 23 healthy individuals. Findings showed that, overall, both anorexic and bulimic women recalled higher levels of unhealthy parental bonding behaviours (uncaring and overprotective). Their findings also demonstrated a strong link between some unhealthy parental bonding behaviours and early maladaptive schemas, particularly in the anorexia nervosa group. Both low maternal and paternal care were found to be highly predictive of the presence of certain early maladaptive schemas ('defectiveness/shame', 'emotional deprivation', 'emotional inhibition', 'unrelenting standards', 'abandonment', 'enmeshment', 'insufficient self-control', and 'mistrust/abuse'), but only weak links were found in the bulimic and comparison group. Results found the predictive power of parental overprotection on early maladaptive schemas to be weak in all three groups, and found it to mostly have a role through a combined effect with low parental care. Based on their findings, the authors argue that low parental care influences the development of specific early maladaptive schemas in eating disordered women, particularly women diagnosed with anorexia nervosa. Both Shah and Waller's (2000) study and Leung et al.'s (2000) study support the hypothesis that early maladaptive schemas may mediate the relationship between poor parenting style and psychopathology.

Although these two studies show promising results with regard to supporting a model where there is a relationship between early family experience (in particular perceived quality of parenting), the development of early maladaptive schemas and psychopathology (depression and eating disorders respectively), the findings should still be interpreted and used with caution due to methodological limitations. A relatively small sample size and failing to consider factors such as severity/chronicity of symptoms and socio-demographic features, which could have influenced scores, are important considerations.

Plant's (1999) study investigating early maladaptive schemas in chronic and acute pain sufferers highlights the importance of early maladaptive schemas in a chronic pain population. Results suggested that psychological treatment helping sufferers of chronic pain adjust to their condition might need to address these schemas in order for treatment to be effective in the long-term. These findings with a chronic pain population, as well as Shah and Waller's (2000) and Leung et al.'s (2000) studies, point to the potential value of additional research within this area. The present study will therefore examine the possible mediator-effect of early maladaptive schemas between parenting style and adjustment within a chronic pain population.

As described above, much of the research based upon cognitive theory within the area of chronic pain to date has focused on the way in which pain-related and health-related beliefs influence adjustment. Another area within the chronic pain literature which has been well-researched is how an individual's coping style will affect his/her adjustment to chronic pain, independently of pain-related or health-related beliefs. This will be discussed below.

1.5 Coping with Illness

The way in which people cope with their illness and what kind of coping strategies they employ has been well-researched over the past two decades. Many researchers have attempted to define coping and to provide a framework for understanding how people cope with their illness. Research has shown that patients use a variety of coping strategies to adapt to both the practical implications of living with a chronic illness (e.g. Moos, 1975) as well as the resultant effect upon a person's identity (e.g. Charmaz, 1983).

Broadly defined, the coping response refers to cognitive and behavioural responses to disruptive and otherwise stressful events, which stretch or exceed the individual's capacity to adjust, and which endanger his/her well-being (Lazarus and Folkman, 1984). Lazarus and Folkman's (1984) theoretical framework of psychological stress and coping identifies two processes as critical mediators of stressful person-environment relations and their immediate and long-term outcomes, cognitive appraisal and coping.

Cognitive appraisal is a process through which the person evaluates whether a particular encounter with the environment is relevant to his or her well-being, and if so, in what ways. A person appraises a situation in two ways. In *primary appraisal*, the individual evaluates the perception of a potential threat and what may be lost. In *secondary appraisal*, the person evaluates the perceived ability to cope with that threat as well as the consideration of a response to overcome, prevent harm or improve the prospects for benefit.

Coping is the response a person makes after appraising the stressful situation, and it is defined as, “the person’s constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person’s resources” (Lazarus and Folkman, 1984, p.141). Lazarus and Folkman (1984) propose three key features of this definition. Firstly, they view it as process-oriented, meaning that it focuses on that which the person actually thinks and does in a specific stressful encounter, and how this changes as the encounter unfolds. Secondly, they view coping as contextual, that is, influenced by the person’s appraisal of the actual demands in the encounter and resources for managing them. Thirdly, they argue that coping strategies are neither inherently adaptive nor maladaptive, and thus the coping process may promote or hinder adjustment, be it to a chronic illness or a different stressful situation.

Coping is hypothesized to have two major functions: dealing with the problem that is causing the distress (problem-focused coping), and regulating emotions (emotion-focused coping) (Folkman et al, 1986). Folkman and Lazarus (1980; 1985) suggest that coping usually includes both functions. Greater control is associated with higher levels of problem-focused coping, such as information search, problem solving, and direct action to solve a problem. Less control is associated with higher levels of emotion-focused coping, such as escape and avoidance, the seeking of social support, distancing or cognitive reframing. Coping does not cease, however, in events with unsatisfactory outcomes. An unsatisfactory outcome (e.g. an unsatisfactory resolution or no resolution), as in the case of a recurrence of a serious or chronic illness, is likely to lead to a further stress appraisal of harm, loss or threat, and its accompanying

distress emotion. This distress, as well as the unresolved problem causing the distress, are likely to motivate further coping processes. Folkman (1997) proposes that it is at this point that a third type of coping, meaning-based coping, is likely to come into play. This type of coping helps the individual relinquish untenable goals and formulate new ones, make sense of what is happening, and appraise benefit where possible. This can be seen as particularly interesting in relation to chronic pain in view of the difficulty faced by individuals of finding a meaning for their unexplained pain. Folkman (1997) suggests that this type of coping also generates positive affect, providing a psychological 'time-out' from the distress and motivating further coping. Importantly, this positive affect is proposed to be able to co-occur with negative affect, perhaps not at the very same moment but nevertheless close in time.

Rodriguez-Parra et al. (2000) recently reviewed the empirical evidence examining the relationship between coping and adjustment to chronic pain. They revealed two consistent findings. Firstly, patients high on active coping, attentional strategies, problem-focused, or behavioural coping appear to have lower levels of pain, to function better, and to show lower levels of psychological distress than those individuals not using the aforementioned strategies. Secondly, whilst certain pain coping strategies appear to be adaptive in chronic pain (e.g. coping self-statements, control over pain), other coping strategies appear to be maladaptive (e.g. catastrophizing, diverting attention, wish-fulfilling fantasy). The authors posit that these research findings lend support to stress and coping models (such as Lazarus and Folkman (1984)) to explain individual differences in the adjustment to chronic pain. It should be noted, that Stanton et al. (1994) propose that many present inventories investigating emotion-focused coping strategies appear to confound coping efforts

with emotional outcome, specifically with distress. The author's findings suggest that some emotion-focused items on coping inventories are confounded with measures of distress and psychopathology. The inclusion of these contaminated items, therefore, produces a partially spurious relationship, suggesting that emotional approach coping is associated with maladjustment.

Numerous studies of patients with a wide variety of chronic pain problems have shown that patients' beliefs about their pain (e.g. the belief that one can control one's pain, the belief that one is disabled by pain), and the strategies they use to cope with their pain, are associated with various measures of pain intensity, as well as psychosocial and physical functioning (Jensen and Karoly, 1991; Jensen and Karoly, 1992; Turner et al, 2000). Turner et al. (2000) investigated whether pain-related beliefs, coping strategies, and catastrophizing (which the authors proposed to be a negative cognition rather than a coping style) were independently associated with patient adjustment. They found that pain-related belief scores predicted both physical disability and depression independent of coping strategies and catastrophizing. Their results also indicated that coping scores predicted physical disability independent of pain-related beliefs and catastrophizing, whereas catastrophizing predicted depression independent of pain-related beliefs and coping strategies. From their findings, the authors proposed that pain-related beliefs, coping strategies, as well as catastrophizing needed to be modified when treating poorly adjusted patients with chronic pain. Following on from this study, and linking coping and adjustment to core beliefs rather than pain-related beliefs, it would be interesting to investigate whether coping would predict adjustment to chronic pain independent of core beliefs, rather than health-

related beliefs. Given Turner et al.'s (2000) findings, one could anticipate this to be the case. This study aims to address this issue.

As illustrated above, the studies that have investigated the contribution of psychological factors on adjustment to chronic pain (or other chronic illnesses) have operationalised adjustment in very similar ways (e.g. Plant, 1999; Turner et al., 2000). Various factors appear to be involved in the adjustment process to chronic illness. Mood, general well-being, and physical disability are factors which the term 'adjustment' is seen to encompass (e.g. Turner et al., 2000). The following section will briefly discuss the psychological literature on adjustment to chronic illness and the way in which adjustment will be operationalised for the purpose of this study.

1.6 Adjustment to Chronic Illness

Mood Disturbance

Psychological distress resulting from the pain experience in the form of depression and anxiety is one area of adjustment. Research has shown that there is a high incidence of depression found among individuals suffering from chronic pain (Banks and Kerns, 1996). In a review paper on depression in chronic pain patients, Banks and Kerns (1996) reported that an estimated 30 to 54% of clinic-based chronic pain patients suffered from depression at any given point. The relationship between depression and chronic pain, however, remains somewhat unclear, although longitudinal studies of depression in pain patients have suggested that, most commonly, depression succeeds rather than precedes the onset of pain (e.g. Atkinson et al., 1991). The consideration of depression as an adjustment disorder in chronic

illness, and of the use and effect of coping strategies, moves away from aetiological theories towards the issue of exacerbating and maintaining factors.

Psychological Well-being

An area of adjustment which has been largely neglected within the chronic illness literature is that of psychological well-being. Traditionally, the focus has very much been on psychological distress (i.e. the presence of psychiatric symptoms) or the absence of distress, rather than on positive psychological well-being. The idea that people can experience psychological well-being, i.e. positive affect and a positive cognitive psychological state, despite their chronic illness may at first seem counter-intuitive. Research, however, has shown that people can experience well-being under the most difficult circumstances (e.g. Chesney et al., 1996). Folkman and Greer (2000) posit that the ability to sustain psychological well-being during serious or chronic illness will depend on personality or dispositional variables related to optimism and personal control that influence challenge appraisals, situational beliefs about efficacy and control. This then motivates adaptive coping and goal-directed coping that creates positive meaning.

Relatively few research studies have included the area of psychological well-being to date, and the studies that have investigated this area have primarily focused on evaluating the effects of new medical treatments in diabetic populations (e.g. Bradley and Lewis, 1990).

Level of Functioning

Similar to the concept of well-being, general level of functioning in relation to health status can be viewed as an indicator of the adjustment process to chronic illness. Ware (1990) suggests that there is great diversity in the health experience among the general population, and that individuals' quality of life differs with respect to positive and negative health states. Hunt and McCleod (1987) emphasise the varying natures of what they loosely term health, fitness and well-being, which is an approach which keeps with the World Health Organisation's (WHO, 1987) understanding of health as a state of complete social, physical and psychological well-being. When studying an individual's adjustment to illness, therefore, it is necessary to look at the effect that the illness has on these three areas of the person's life.

Given the above-mentioned, the present study will operationalise adjustment in terms of mood, well-being and level of functioning. Linking the area of adjustment to the cognitive model described above (Young, 1994), it can be posited that individuals who manage to retain positive psychological, social, and physical well-being in the face of a stressful event such as chronic ill-health will have relatively few maladaptive schemas, making them less vulnerable to poor adjustment and more likely to be able to cope better with their illness.

1.7 People with Type-1 Diabetes as the Comparison Group

As discussed above, in recent years there has been a large amount of chronic pain research investigating adjustment and psychological factors that may impact upon an individual's adaptation to chronic pain. As it is unknown whether proposed patterns represent predisposing factors to poor adjustment to chronic pain rather than reflecting

a response to chronic illness in general, a type-I diabetes mellitus comparison group was employed in this study. It can be queried whether predisposing psychological factors are the same across all chronic illness groups, and whether illness behaviour, coping and their relation to cognitive processes such as early maladaptive schemas are comparable between chronic illness conditions.

Type-I diabetes is a chronic illness with a clear organic cause, which is easy to diagnose with medical tests. It is a demanding condition that requires a high level of vigilance over diet and exercise and strict adherence to a regime of insulin injections if optimal glycaemic control is to be achieved. Such control is sought in order to reduce diabetic complications (e.g. macrovascular disease, sight-threatening proliferative retinopathy).

Comparing chronic pain and type-I diabetes may be of particular interest, as type-I diabetes is perceived to have a clear organic cause, whereas in chronic pain a clear organic origin is often not identified and the condition is frequently viewed as 'psychogenic'. The findings of Main, Richards and Fortune (2000) support the use of a clearly identified organic disease comparison group. They found that, in a study investigating the severity of disease and psychological impact in low back pain sufferers and psoriasis sufferers (which is viewed as an organic and active disease), the level of disability among psoriasis sufferers was only weakly related to clinical assessments of disease severity. Level of disability was, however, strongly influenced by psychological factors, particularly cognitive and behavioural factors. These results appeared to parallel findings from studies of low back pain disability. Their results

support the validity of a biopsychosocial rather than a biomedical conceptualization of chronic illness.

Chronic illness groups apart from chronic pain have been relatively neglected in past research, and very little is known about predisposing psychological factors which may impact upon an individual's adjustment to other chronic conditions. Type-I diabetes is one such condition that has been largely neglected in this research domain.

For the purpose of the present study it was considered important to include a comparison group in which levels of psychiatric illness are similar to other chronic illness groups, and do not represent a further risk for psychiatric morbidity. The life-time prevalence of psychiatric illness among individuals with diabetes is comparable with that of other chronic illness groups (de Groot et al., 1999).

1.8 The Present Study

In summary, the present study aims to further contribute to research investigating the link between predisposing psychological factors and adjustment to chronic illness (in particular chronic pain). Young's (1990; 1994) cognitive model of early maladaptive schemas is used for the purpose of the study, which emphasises early familial experience and parenting. The study aims to investigate the relationship between early childhood/familial experience, early maladaptive schemas, coping style and adjustment (namely level of functioning, mood, and well-being) to chronic illness (namely chronic pain or type-I diabetes). The suggested model is illustrated overleaf.

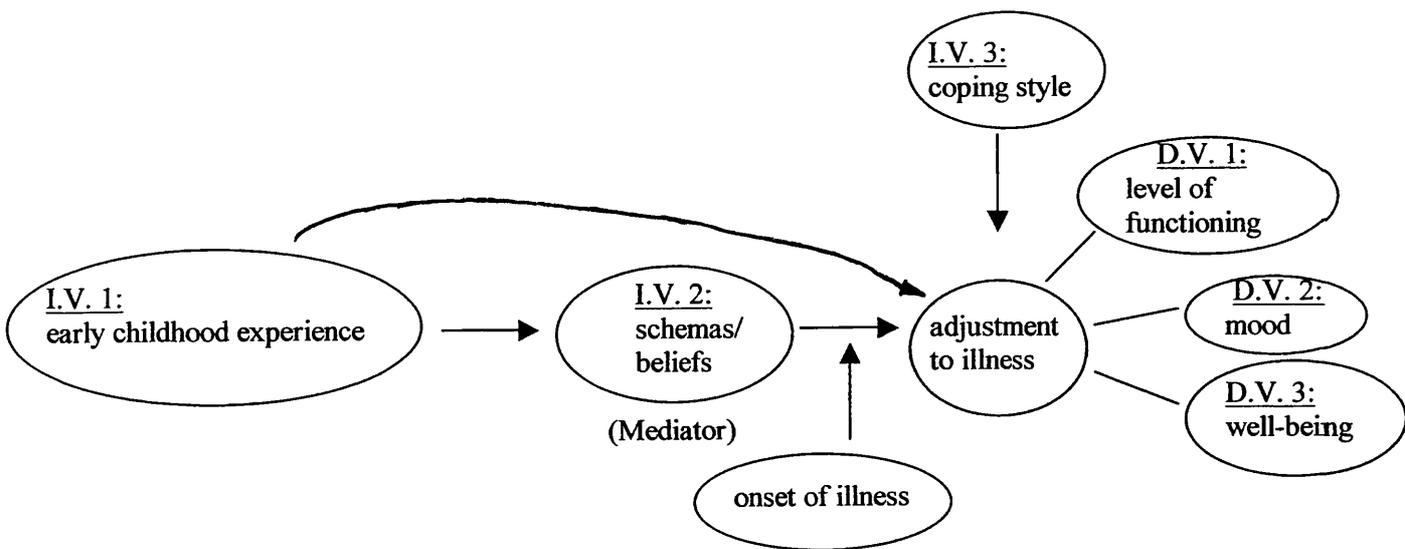


Fig. 2: Conceptual model of the relationship between quality of parenting, early maladaptive schemas, and adjustment to chronic illness.

1.8.1 Research Hypotheses

In accordance with cognitive theory and previous research findings outlined above, the following research hypotheses are put forward:

Hypothesis 1:

Individuals with chronic pain and individuals with type-I diabetes, whose quality of parenting in childhood was relatively poor, will show higher, and therefore unhealthier, levels of early maladaptive schemas than those whose quality of relationships with parents was relatively positive.

Hypothesis 2:

Individuals with chronic pain and individuals with type-I diabetes, whose perceived quality of parenting in childhood was relatively poor, will show lower levels of adjustment to their illness than those whose perceived quality of parenting was relatively positive.

Hypothesis 3:

Individuals with chronic pain and type-I diabetes with higher, and therefore unhealthier, levels of early maladaptive schemas will show lower levels of adjustment to their illness than those with lower, and therefore healthier, levels of early maladaptive schemas.

Hypothesis 4:

Early maladaptive schemas will mediate the relationship between quality of relationships with parents and adjustment to chronic pain or adjustment to type-I diabetes.

Hypothesis 5:

Use of coping styles will affect the individual's level of adjustment independently of early maladaptive schemas in chronic pain patients and type-I diabetes patients.

2 METHOD

2.1 Design

A retrospective cross-sectional design was employed. The study was questionnaire-based and compared a sample of individuals with chronic pain with a sample of individuals with type-I diabetes.

2.2 Setting

Chronic Pain Sample

The chronic pain sample was recruited from a hospital-based out-patient pain management clinic in Central London. At the time of recruitment all chronic pain participants were receiving care and treatment from the clinic. The pain management service consisted of a multi-disciplinary team of doctors, nurses, physiotherapists and clinical psychologists who provide assessment and treatment to people referred to the clinic with chronic pain. The pain management clinic takes national referrals.

Type-I Diabetes Sample (Comparison Group)

The type-I diabetes sample was recruited from a hospital-based out-patient diabetes clinic in North London. At the time of recruitment all diabetes participants were receiving care and treatment from the clinic. The diabetes service consisted of a multi-disciplinary team of doctors, nurses and a clinical psychologist who provide assessment, treatment and blood sugar monitoring to people referred to the clinic with diabetes. The clinic assesses and treats people with type-I (insulin-dependent) diabetes as well as type-II (diet and/or tablet-controlled) diabetes. The diabetes clinic takes local referrals.

2.3 Participants

Chronic Pain Sample

Participants were adults aged between 18 and 65 years who had been diagnosed with chronic pain and who were subsequently attending a hospital-based out-patient pain management service in Central London.

Type-I Diabetes Sample (Comparison Group)

Participants were adults aged between 18 and 65 years who had a type-I diabetes diagnosis and who were subsequently attending a hospital-based out-patient diabetes service in North London.

A descriptive analysis of both participant groups is presented in the Results chapter.

2.3.1 Exclusion Criteria for the Chronic Pain Sample and the Diabetes Sample

Individuals were excluded from the research study if:

- They had been diagnosed with chronic pain or diabetes as children. This controls for possible familial disruption due to a child's early onset of chronic illness (Ryan, 1997).
- The duration of their pain had been less than three months, and was therefore defined as acute rather than chronic (International Association for the Study of Pain, Subcommittee on Taxonomy, 1986).
- They had a dual diagnosis or another medical condition judged to be their primary medical complaint.

- They were receiving psychological input from a Clinical Psychologist/Counselling Psychologist within the clinic at the time of recruitment.
- They did not have sufficient knowledge of the English language to complete the study's questionnaires.
- There was evidence of a psychiatric disorder (such as extreme anxiety or depression, psychosis) or excessive alcohol or drug use.

2.4 Ethics

Following the submission of a detailed research protocol and ethics application, ethical approval for the research study was granted by the Joint UCL/UCLH Committees on the Ethics of Human Research (Appendix 2), and by the Whittington Hospital NHS Trust Ethical Practices Sub-Committee of the District Local Research Ethics Committee (Appendix 3).

Each person who volunteered to take part was given an information sheet describing the study (Appendix 4). The volunteers were then given the opportunity to ask the primary researcher any questions about the questionnaires or study, and raise any concerns. If people were then still happy to take part, they were asked to sign a consent form (Appendix 5) before filling in the questionnaires. Participants were asked to keep the information sheet, which encouraged them to contact the primary researcher either by telephone or letter should they have any questions or concerns about the study after their meeting with her.

It was recognised that some participants might experience some distress as a result of thinking about the experiences and issues referred to in the questionnaires. Participants were therefore encouraged to contact the primary researcher if they experienced any serious distress and the researcher would then suggest contacting the clinic's Clinical Psychologist or the individual's GP, if necessary. No participants contacted the researcher for this reason.

A detailed account of the recruitment procedure is described below.

2.5 Recruitment Procedure

Between September 2000 and December 2000 the primary researcher visited the pain management clinic weekly in order to recruit patients attending the clinic. Between January 2001 and April 2001 the primary researcher visited the diabetes clinic in order to do the same. During this eight-month period all participants were recruited to the study. Posters explaining the purpose of the study and asking for participation (Appendices 6 and 7) were placed in the waiting areas of the respective clinics.

Chronic Pain Sample

All chronic pain patients attending the pain management clinic on the days the primary researcher was visiting the clinic were handed an information sheet when they first reported to reception. Each patient was then met by the researcher in the waiting area after they had had the opportunity to read the information sheet. They were shown the pack containing the questionnaires and were given the opportunity to ask any questions. The pack contained questionnaires around demographics, details of their chronic illness, coping strategies, anxiety and depression, general well-being,

early experiences with their parents, and beliefs about themselves and others (see the Measures section for a detailed account). Patients were then asked whether they would be willing to take part. At this point it was made clear that the information gained would be confidential, that they did not have to participate, and that if they did decide to take part they could stop at any time without giving a reason.

The individuals who decided to take part were asked to sign a consent form and were given the pack containing the questionnaires as well as a stamped addressed envelope. It was explained to all participants that they had the choice of filling in the questionnaires whilst they were waiting for their appointment or of taking the questionnaires home, filling them in there and returning the questionnaires to the researcher in the envelope provided. Individuals were encouraged to contact the researcher with any questions or concerns, and five telephone calls or letters were received from patients who had queries after reading the questionnaires in more detail. None of the participants were required to write their names on the questionnaires, and all questionnaires and consent forms were numbered before they were handed to the participants to fill in.

In total, 66 people with chronic pain were approached by the researcher in the clinic waiting room. Out of these 66 individuals approached, 56 people (84.8%) agreed to take part in the study. Ten people (17.9%) chose to complete the questionnaires in the waiting area of the clinic, whereas the remaining 46 people (82.1%) preferred to take the questionnaires away with them and to complete the questionnaires in their homes. The individuals who decided to take the questionnaires away were encouraged to send the completed questionnaires back as soon as possible. In addition to the individuals

approached in the waiting area of the clinic, three people responded to the poster advertisement and contacted the researcher directly by telephone to take part in the study. The questionnaire packs were sent out to these individuals.

In total, 40 sets of completed questionnaires were received from the chronic pain group, giving a response rate of 67.8%. Five of the people who had initially agreed to take part (8.5%) wrote to the researcher or telephoned the researcher to say that, having read through the questionnaires in more detail, they no longer wished to take part. An additional 14 people (23.7%) who had agreed to take part did not return their questionnaires.

Type-I Diabetes Sample (Comparison Group)

As the diabetes clinic was extremely busy on the days the primary researcher was visiting the clinic, and it was difficult to approach the patients in the waiting area without delaying their appointment time, it was decided by the primary researcher and the clinic staff that a better way of recruiting subjects would be to send out the questionnaire packs to suitable patients. The primary researcher discussed the recruitment criteria with the clinic staff, and the staff subsequently provided the researcher with a list of names of patients. Eighty-three names and addresses of patients with type-I diabetes fulfilling the recruitment criteria were given to the researcher by the clinic staff. The sets of questionnaires (as above for the chronic pain sample), as well as the information sheet describing the study, a consent form and a stamped-addressed envelope were sent out to these individuals. In the letter accompanying the questionnaire pack (Appendix 8) each patient was asked whether he/she would be willing to take part in the study. It was made clear that the

information gained would be confidential, that the individual did not have to participate, and that if he/she did decide to take part he/she could stop at any time without giving a reason. Individuals were urged to send the questionnaires and consent form back promptly should they decide to participate in the study. In the letter a telephone number was given so that individuals would be able to contact the primary researcher about any queries they may have had. Eight people contacted the researcher with questions about the study (9.6%). Nobody telephoned the researcher to take part in the study as a result of seeing the poster advertisement in the waiting area of the clinic. None of the participants were required to write their names on the questionnaires, and all questionnaires and consent forms were numbered before they were sent to the participants to fill in.

Of the 83 people with type-I diabetes contacted, 32 sets of completed questionnaires were returned to the researcher, giving a response rate of 38.6%. Two people who were sent the questionnaires (2.4%) contacted the researcher by telephone and explained that they did not wish to take part in the study. In total, 51 individuals (61.4%) did not return their questionnaires.

The lower response rate in the type-I diabetes sample compared to the chronic pain sample is likely to reflect the fact that most of the latter group were recruited when attending a clinic appointment. These individuals, therefore, had face-to-face contact with the researcher, who was able to answer any queries they may have had about the study. The type-I diabetes sample was recruited solely by post and therefore had no face-to-face contact with the researcher. This type of recruitment is known to have a much poorer response rate.

2.6 Measures

When selecting the questionnaire measures for this study, it was recognised that a large amount of information was required, and that various factors needed to be taken into account in the selection process. It was also recognised that lengthy questionnaires could produce a lower response rate. The measures finally selected represent a best compromise of these competing factors.

What follows is a detailed description of the selected measures.

Demographics and Illness Information (Appendices 9 and 10)

Two short questionnaires (one for the chronic pain sample and one for the type-I diabetes sample) were developed for the specific purpose of this research. These included items pertaining to demographics and information about the participant's chronic illness. The demographic items on both questionnaires were identical and solicited information on gender, age, marital status and ethnicity.

The questionnaire given to the chronic pain sample sought information regarding the duration of their pain complaint, how long ago they had been diagnosed with chronic pain, the site of their pain, and the length of time they had been attending the pain management clinic.

The questionnaire given to the type-I diabetes sample asked when they had received their diabetes diagnosis, when the onset of their diabetes symptoms had been, whether they had experienced any complications as a result of their diabetes, and the length of time they had been attending the diabetes clinic.

Parental Bonding Instrument (PBI; Parker, Tupling and Brown, 1979)

The Parental Bonding Instrument (PBI) assesses participants' retrospective perceptions of their mother and father during the participant's first 16 years of life. It was chosen for use in this study in order to assess participants' early childhood/family experiences. The measure is based upon attachment theory and looks at the separate bonds formed between an individual and his/her mother and father. The measure was chosen firstly, as it was the only measure found by the researcher that investigates childhood experiences, and secondly, because it was felt to be relatively non-threatening in nature.

The PBI is a 25-item self-report measure. The measure contains two dimensions, 'care' and 'overprotection'. The 'care' scale relates to the affective and empathic component of the relationship. Items include "Spoke to me in a warm and friendly voice", and "Made me feel I was not wanted". The 'overprotection' scale relates to the degree of control exhibited by the parent upon the child. Items include "Tried to control everything I did", and "Tried to make me dependent on him/her". Each item is scored on a four-point Likert scale (zero to three), ranging from 'very like my parent' to 'very unlike my parent'. The 'care' scale consists of twelve items, allowing a maximum score of 36 for each parent, and the 'overprotection' scale consists of thirteen questions, allowing a maximum score of 39 for each parent. Parker (1983) suggests that unhealthy parent-child bonding is indicated by lower 'care' scores and higher 'overprotection' scores. All 25 questions are completed twice, once regarding the mother and once regarding the father. The questions are worded positively and negatively to reduce any effects of acquiescence. 'Care' and 'overprotection' have

been proposed by several authors to be the two key dimensions that underlie the attitudes and behaviours of parents (e.g. Raskin et al., 1971; Parker et al., 1979).

The PBI has been used with a wide range of clinical and non-clinical populations (Parker, 1993), and it has been found to have good psychometric properties. The reliability and validity of the measure was found to be satisfactory in the original study of 65 medical students, 43 psychiatric nurses, 13 technical college students and 29 parents of school-children (Parker et al., 1979). Test-retest reliability was .76 for the 'care' scale and .63 for the 'overprotection' scale, and split-half reliability was .88 for the 'care' scale and .74 for the 'overprotection' scale. Concurrent validity was determined following two interviewer ratings of 'care' and 'overprotection' for 65 of the participants. The Pearson correlations were .77 and .78 for the 'care' scale, and .48 and .51 for the 'overprotection' scale. Parker (1983) found the PBI acceptable when assessing the instrument as a measure of both perceived and actual parenting. He additionally found that it was resistant to biases induced by depressed affect. Shah and Waller (2000) assessed the internal consistency of the PBI on 60 depressed out-patients and 67 healthy volunteers. They found Cronbach's alpha coefficient of .93 for the 'maternal care' scale, .92 for the 'paternal care' scale, .66 for the 'maternal overprotection' scale, and .87 for the 'paternal overprotection' scale.

Schema Questionnaire – Short Version (YSQ-S; Young, 1998)

Young's Schema Questionnaire (YSQ) assesses participants' core beliefs (schemas) and was developed to assist clinicians in the assessment of the cognitions, affects, and behaviours that underlie psychopathology. The YSQ was chosen for use in this study to assess participants' early maladaptive schemas, resulting largely from their early

developmental experiences. The short version (YSQ-S) was used in this study in preference to the 205-item original version (YSQ; Young, 1994). It was hoped that this would improve compliance and accuracy of completion.

The YSQ-S is a 75-item self-report inventory with scales that measure fifteen core beliefs, which are grouped into five higher-order schema domains. The YSQ-S consists of only fifteen scales, as the 'social desirability' scale in the original YSQ (long version) was found to lack clinical validity (Schmidt et al., 1995; Lee et al., 1999) and was therefore omitted from the short version. The fifteen sub-scales of the YSQ-S are 'abandonment', 'mistrust/abuse', 'emotional deprivation', 'functional dependence', 'vulnerability to harm', 'enmeshment', 'defectiveness/shame', 'failure to achieve', 'subjugation', 'emotional inhibition', 'self-sacrifice', 'unrelenting standards', 'entitlement', 'insufficient self-control', and 'social isolation'. Each sub-scale consists of five items, and all items are scored on a six-point Likert scale (one to six). The overall score for each sub-scale is calculated from the mean of the items in that sub-scale. A higher score reflects a less adaptive, unhealthy core belief.

The original version of the YSQ has been shown to have good psychometric properties. Schmidt et al. (1995), in studies using an undergraduate student population and a psychiatric out-patient population, and Lee et al. (1999), using a psychiatric in-patient and out-patient population, found that the YSQ had a factor structure that reflected Young's clinical observations. In both studies' factor structure fifteen of the original sixteen scales were replicated. The primary sub-scales were also found to possess adequate test-retest reliability and internal consistency. The measure was found to possess convergent and discriminate validity with respect to measures of

psychological distress, self-esteem, cognitive vulnerability for depression, and personality disorder symptoms (Schmidt et al., 1995). Waller et al. (2000) investigated the psychometric properties of the short version of the YSQ (YSQ-S) in bulimic and healthy samples and compared its psychometric properties to those of the original version of the YSQ. Among the bulimic subjects, the authors found Cronbach's alpha of .98 for the YSQ and .96 for the YSQ-S for the overall fifteen scales, and among the healthy subjects Cronbach's alpha of .97 for the YSQ and .92 for the YSQ-S was confirmed. When considering the individual sub-scales, the alpha level was greater than .80 for each group on each version of the fifteen sub-scales. These results indicate that both the original and the short versions of the YSQ have good internal validity, with neither being superior to the other. The original and short versions of the YSQ were also found to have relatively similar discriminant validity in Waller et al.'s (2000) study. Additionally, investigation of both versions' clinical utility showed that the two versions had comparable concurrent validities, and both versions showed similar patterns of bivariate association with bulimic behaviours. Given these results, the authors suggest that the short version of the YSQ can be used with confidence in clinical and research settings. It should, however, be noted that further research with different populations needs to be carried out to support Waller et al.'s (2000) results.

COPE (Carver et al., 1989)

The COPE provides a measure of individuals' most commonly used coping strategies. It was chosen for this study to determine participants' general coping styles. The COPE can be applied to two forms of coping: situational coping, i.e. responses to a specific situation or during a specific period of time, and dispositional coping, i.e.

typical responses to stressful situations, or both types of coping. The current research study used the dispositional version of the COPE in order to determine participants' general ways of coping with stress. Instructions on the inventory ask respondents to indicate to what extent they make use of each coping response when they experience stressful events.

The COPE version employed here is a theoretically-derived 60-item multi-dimensional coping inventory which consists of 14 conceptually different coping dimensions. The coping scales assess coping strategies that either facilitate or impede adaptive coping in varying contexts. Theoretically, coping strategies can be categorised into problem-focused coping and emotion-focused coping. Problem-focused coping dimensions include coping responses such as 'active coping', 'planning', and 'seeking instrumental social support'. Emotion-focused coping dimensions include coping strategies such as 'seeking emotional support', 'positive reinterpretation and growth', and 'acceptance'. Each coping scale consists of four items. Every item is scored on a four-point Likert scale (one to four), ranging from 'I usually don't do this at all' to 'I usually do this a lot'. The score for each scale ranges from four to 16, with higher scores indicating coping strategies that are used more frequently.

The COPE has been shown to have good psychometric properties. The internal consistency of the COPE sub-scales was originally determined by Carver et al. (1989). For 13 sub-scales Cronbach's alpha was found to exceed .60. Test-retest reliability for the dispositional inventory was found to range from .42 to .89 for the different scales (Carver et al, 1989). The COPE's construct validity was investigated

by administering the dispositional COPE version together with several measures of personality dimensions expected to reflect a tendency either for or against active coping. Selected active adaptive coping scales correlated positively with measures of dispositional optimism and self-esteem and negatively with trait anxiety, whereas selected active maladaptive coping strategies displayed the opposite pattern of associations (Carver et al., 1989). In a factor analysis of the responses of 978 undergraduates on the dispositional COPE version 11 factors were found. 'Social support' items (the 'seeking instrumental social support' and 'seeking emotional social support' scales) loaded on a single factor, as did the 'active coping' and 'planning' items (scales one and two). The authors nevertheless decided to keep them separate.

For the purpose of this study, twelve of the sub-scales measuring aspects of coping most relevant to chronic illness groups (Moss-Morris et al., 1996) were used. These consist of four problem-focused scales ('active coping', 'planning', 'suppression of competing activities', and 'seeking instrumental social support'), six emotion-focused scales ('positive reinterpretation and growth', 'focus on and venting of emotions', 'seeking emotional social support', 'turning to religion', 'acceptance', and 'denial'), and two disengagement scales ('behavioural disengagement', and 'mental disengagement').

Medical Outcomes Study Short Form (MOS SF-36; Ware and Shelbourne, 1992)

The MOS SF-36 provides a brief measure of individuals' general health status. It was chosen for the purpose of this research as a measure of participants' current level of functioning. The standard UK version was used.

The MOS SF-36 is a 36-item multi-dimensional inventory that was originally developed for use in clinical practice and research, health policy evaluations, and general population surveys. It consists of one-multi-item scale that assesses eight health dimensions. These are 'physical functioning' (ten items), 'social functioning' (two items), 'role limitations due to physical problems' (four items), 'role limitation due to emotional problems' (three items), 'vitality' (four items), 'bodily pain' (two items), 'general health perceptions' (five items), and 'general mental health' (five items). One item concerns change in health and is not scored as a separate dimension. The MOS SF-36 uses the Likert method of summated ratings. Responses are scored in three steps according to the scoring information provided with the questionnaire: (1) item recoding, (2) transformation of raw scores to raw scale scores, and (3) transformation of raw scale scores to a 0 – 100 scale. The items and scales are scored with a higher score indicating a better health state. For instance, functioning scales are scored so that a high score indicates better functioning, and the pain scale is scored so that a high score indicates freedom from pain.

The MOS SF-36 has been used clinically with individuals with a wide range of health problems, including mental health problems, as well as with relatively healthy populations, and it has been shown to have good psychometric properties. Roberts et al. (1997) investigated the psychometric properties of the MOS SF-36 in a population

of 8213 civil servants. Internal consistency of the scales was found to be high, with Cronbach's alpha of .75 to .85. Results found were similar to results from previous studies (e.g. Brazier et al., 1992), thus suggesting that the dimensions exhibit consistent relationships with one another across different populations. In Roberts et al.'s (1997) study test-retest reliability was shown with 95% confidence and was found to be acceptable for all scales (.60 to .89), with the exception of 'role limitations due to physical problems', which was poor (.38). Orthogonal and oblique factor analyses confirmed a two-factor structure corresponding to dimensions of physical and psychological health. Factor scores correlated .97 for the physical health factor (which included the 'physical functioning', 'role limitations due to physical problems', 'bodily pain' and 'general health perceptions' dimensions) and .98 for the mental health factor (which included the 'general mental health', 'role limitations due to emotional problems', 'social functioning' and 'vitality' dimensions). Validation of the scales against two chronic illness criterion groups (angina and diabetes) indicated that physical functioning, social functioning and general mental health have good discriminant validity. Similar psychometric properties of the MOS SF-36 have been found in other populations, such as psychotic outpatients (Russo et al., 1998) and individuals with epilepsy (Jacoby et al., 1999). These findings suggest that the MOS SF-36 may be used with chronic illness, mental illness and healthy populations.

For the purpose of this study the dimensions 'physical functioning', 'role limitations due to physical functioning' and 'social functioning' of the MOS SF-36 were chosen for the measurement of the adjustment variable 'level of functioning'. The above findings suggest that dimensions may be used separately. It must be noted, however, that the alpha-value for 'role limitations due to physical problems' was low, thus

indicating low reliability and suggesting that caution must be taken in the interpretation of results.

Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983)

The Hospital Anxiety and Depression Scale (HADS) provides a brief present-state measure of both anxiety and depression. It was used in this study in order to determine the potential impact of participants' chronic illness on their mood, specifically their levels of anxiety and depression. Given the size of the assessment battery, a further virtue is its relative brevity.

The HADS is a 14-item scale that was designed for use in general hospital out-patient services to detect clinical cases of anxiety and depression. The questionnaire consists of two sub-scales, one measuring anxiety (A-Scale), which consists of seven items, and one measuring depression (D-Scale), which also consists of seven items. Both sub-scales are scored separately. Zigmond and Snaith (1983) designed the A-Scale to measure the state of anxious mood, restlessness, and anxious thoughts. It was felt by the researchers in the present study that the A-Scale was particularly valid for use with chronic illness populations as it does not include many of the somatic symptoms which are present with anxiety. Since many individuals with chronic illness experience physical pain and other somatic complaints, the HADS is useful in not including these factors as indicators of psychological dysfunction (e.g. Bradley, 1994). The D-Scale of the HADS is focused largely upon the state of loss of interest and diminished pleasure response. Each item on the HADS is scored on a four-point Likert scale (zero to three), and the total score for each sub-scale ranges from zero to 21. Higher scores indicate greater anxiety or depression, and Zigmond and Snaith

(1983) propose the following interpretation guidelines: scores 0-7 are within the normal range, scores 8-10 are classified as 'mild' anxiety or depression, scores 11-14 are classified as 'moderate' anxiety or depression, and scores 15-21 are classified as 'severe' anxiety or depression.

The HADS has been extensively validated, particularly with medical populations, and it has been found to have good psychometric properties. The internal consistency of the two HADS sub-scales was originally determined by Zigmond and Snaith (1983), on data from 50 respondents. They found Cronbach's alpha coefficient of .76 for the A-Scale and .60 for the D-Scale. Moorey et al. (1991) found Cronbach's alpha coefficient of .93 for the A-Scale and .90 for the D-Scale in a study of 568 cancer patients. The concurrent validity of the HADS was assessed by comparison with a five-point psychiatric rating scale of anxiety and depression using 100 medical out-patients (Zigmond and Snaith, 1983). The authors report significant correlations of .54 for the A-Scale and .79 for the D-Scale. The construct validity of the HADS as a measure of two factors was confirmed by Moorey et al. (1991)'s factor analytic study. Two independent factors of anxiety and depression were found, as asserted by Zigmond and Snaith (1983). These two factors accounted for 53% of the variance. In support of Moorey et al. (1991)'s findings, Bedford et al. (1997) report bi-dimensional factors of anxiety and depression. Zigmond and Snaith (1983) report on the generalisability of the HADS across occasions (test-retest) in healthy respondents. Significant correlations over time of .89 for the A-Scale and .92 for the D-Scale were found by the authors. Herrmann (1997), in a review of international studies investigating the psychometric properties and clinical utility of the HADS, concludes that the HADS is a reliable and valid instrument for assessing anxiety and depression

in medical patients, and suggests that it gives clinically meaningful results as a psychological screening tool.

Well-being Questionnaire (Bradley and Lewis, 1990)

The Well-being Questionnaire provides a brief present-state measure of positive and negative mood states. It was used in this study in order to determine the potential impact of participants' chronic illness on their positive mood state. It was also chosen for its relative brevity, and because it was specifically designed for research purposes with diabetic populations.

The Well-being Questionnaire is a 22-item measure that was designed to provide a measure of depressed mood, anxiety, various aspects of positive well-being, and of general well-being in a diabetes population. The measure consists of four sub-scales, namely a Depression Scale consisting of six items (e.g. "I feel that I am useful and needed"), an Anxiety Scale which consists of six items (e.g. "I feel calm and can sit still easily"), an Energy Scale which consists of 4 items (e.g. "I feel dull or sluggish"), and a Positive Well-being Scale which consists of six items (e.g. "I have felt well adjusted to my life situation"). The measure can also be used as a General Well-being Scale, which consists of all 22 items. Each item is scored on a zero to three Likert scale. Sub-scales are scored so that a higher score on each sub-scale indicates more of the mood described by the sub-scale label, i.e. depression, anxiety, energy and positive well-being. The Well-being Questionnaire was designed to be particularly sensitive to 'cognitive phenomena' and to minimise, as far as possible, the tapping of somatic symptoms which may be common in more poorly controlled diabetes or other chronic conditions (Bradley, 1994).

The Well-being Questionnaire has been validated with diabetic populations. Bradley and Lewis (1990) determined the internal consistency of the four sub-scales on data from 239 type-II (tablet-treated) diabetic patients and 41 English, 69 French and 40 German type-I (insulin-dependent) diabetic patients. Among the type-II diabetic patients, Bradley and Lewis (1990) found high Cronbach's alpha coefficients for the sub-scales, with alpha-values ranging from .70 to .88. Among the type-I diabetic patients the authors found satisfactory internal consistency, with alpha-values ranging from .46 to .89 on the sub-scales. No concurrent validity of the Well-being Questionnaire has been assessed to date. Bradley and Lewis (1990) report significant interrelationships between the sub-scales (the Energy sub-scale was originally part of the Positive Well-being subscale). They reported that Depression and Anxiety scores were strongly correlated with each other (.64) and with the Positive Well-being scores (-.68 and -.60 respectively), indicating some covariance between the measures. Although the authors found a high degree of intercorrelation, there were instances where Positive Well-being was correlated with variables not related to Depression and Anxiety (e.g. whether subjects had ever experienced a stroke). This suggests that absence of negative affect does not necessarily indicate a positive state of well-being, supporting the inclusion of a separate Positive Well-being subscale. Factor analysis revealed the four factors. Bradley (1994) put forward that the use of the Well-being Questionnaire need not be restricted to individuals with diabetes. The validity, however, of its use in other populations is yet to be demonstrated.

For the purpose of this study, the sub-scales 'Energy' and 'Positive Well-being' were chosen for the measurement of the adjustment variable 'well-being'. The above findings suggest that the dimensions may be used separately.

2.7 Statistical Analysis

Statistical analysis of the data was undertaken using SPSS for Windows 9.0.0. An initial descriptive analysis of the data was undertaken, followed by the employment of inferential statistical procedures. The exploration of differences between the chronic pain group and the type-I diabetes group with regard to demographic and illness characteristics, predictor and outcome variables was conducted with independent samples t-tests and chi-square tests. Multiple regression analyses examined the relationship between perceived quality of parenting, early maladaptive schemas, coping style, and adjustment to chronic pain or type-I diabetes.

3 RESULTS

Overview

The results chapter aims to describe the statistical procedures undertaken and the subsequent output of these procedures. First, data preparation will be described. Following this, the chronic pain sample and the type-I diabetes sample will be described and compared in terms of demographic and illness characteristics. Third, prevalence results will be presented for both the dependent and independent variables for both samples. Fourth, results addressing the predicted model of the relationship between quality of childhood relationship with parents, early maladaptive schemas and present level of adjustment will be presented. The mediation of these predictive relationships will then be examined. Finally, results addressing the association between coping style and level of adjustment independent of early maladaptive schemas will be presented.

3.1 Data Preparation

Normality of Distribution

Prior to analysis, the accuracy of data entry, missing values, and normality of distribution around the mean were analysed for all variables. Missing values were replaced with the appropriate group mean, as recommended by Tabachnik and Fidell (1989). Normality of distribution was carried out through visual inspection and through inspection of skewness and kurtosis scores. The variables were examined separately for the chronic pain group and the type-I diabetes group. It was found that a number of variables exhibited unacceptable skewness and kurtosis for the planned

parametric statistical analyses. Square root and logarithmic transformations were performed in order to correct these distributions.

The Young Schema Questionnaire (YSQ) variables of 'abandonment', 'social isolation', 'defectiveness/shame', 'failure to achieve', 'dependence/incompetence', 'enmeshment', and 'subjugation' required logarithmic transformation. Square root transformations were performed on YSQ variables 'mistrust/abuse', 'vulnerability to harm', and 'emotional inhibition'. Logarithmic transformations were performed on the COPE variables 'denial', 'turning to religion', 'behavioural disengagement', and 'alcohol/drug use'. Square root transformation was performed on the COPE variable 'humour'. The Hospital Anxiety and Depression Scale (HADS) 'anxiety' variable required square root transformation. All of these variables subsequently met the assumption of normality. All three MOS 36-item Short Form Health Survey (MOS SF-36) variables, which made up 'level of functioning', were subject to square root transformation. Subsequently, however, none of these variables met the assumption of normality. It was decided to keep these three variables in the analysis, but to conduct non-parametric analyses where possible.

The data were also examined for the presence of outliers, i.e. cases whose scores were greater than 3 standard deviations from the mean. Four outlying cases were found for the 'early maladaptive schemas' variable (one for 'abandonment', one for 'failure to achieve', two for 'dependence/incompetence'). It was judged that the high scores on this measure were important to include in the analysis, as the theoretical underpinnings of the study anticipate this to be an important predictor of adjustment to chronic illness. Therefore, rather than exclude them from parametric analysis, these

scores were reduced artificially to slightly higher than the next-highest-participant-score, in accordance with procedures outlined by Tabachnik and Fidell (1989).

Reliability Analysis

Internal consistency (Cronbach's alpha) was calculated for all measures apart from the HADS and the MOS SF-36. These two measures have previously been extensively validated with medical populations (e.g. Jacoby et al., 1999; Herrmann, 1997). As outlined in the Method chapter, both measures have been found to have good psychometric properties, and it was therefore felt unnecessary to calculate their internal consistency. The internal consistency for the remaining measures for both the chronic pain and type-I diabetes populations are as follows:

Young Schema Questionnaire (YSQ-S)

Overall, the YSQ-S was found to have excellent internal consistency with both populations. The alpha value of the YSQ-S was found to be .92 for the chronic pain sample and .96 for the type-I diabetes sample. Given the limited data on the short version of the YSQ, it was decided to examine the internal consistency of each early maladaptive schema sub-scale separately. All schema sub-scales were found to have acceptable alpha levels ($\alpha \geq .70$; Nunnally, 1978). For the chronic pain sample, Cronbach's alpha ranged from .71 to .92 on the 15 early maladaptive schemas, and for the type-I diabetes sample, Cronbach's alpha ranged from .75 to .93 on the 15 schema sub-scales. These findings are comparable to those of Waller et al.'s (2000) and provide further support for the use of the short version of the YSQ.

Parental Bonding Instrument (PBI)

The PBI was found to have acceptable internal consistency. For both the chronic pain sample and the type-I diabetes sample the alpha-values were .74. The 'paternal care', 'maternal care' and 'maternal overprotection' sub-scales were found to have acceptable alpha levels. For the chronic pain sample, Cronbach's alpha ranged from .81 to .92 on the three PBI domains, and for the type-I diabetes sample, Cronbach's alpha ranged from .86 to .92 on the three PBI domains. The alpha-value was somewhat lower for the 'paternal overprotection' sub-scale (.61 for the chronic pain sample; .51 for the type-I diabetes sample).

COPE

The COPE was found to have high internal consistency for both populations (.86 for the chronic pain sample; .89 for the type-I diabetes sample). Most of the COPE sub-scales were found to have acceptable alpha levels and ranged from .71 to .95 for the chronic pain sample and from .70 to .94 for the type-I diabetes sample. The 'mental disengagement' and 'suppression of competing activities' sub-scales showed lower alpha values for both samples. The 'mental disengagement' sub-scale showed an alpha value of .40 for the chronic pain sample and .65 for the type-I diabetes sample. The 'suppression of competing activities' had an alpha value of .40 for the chronic pain sample and .50 for the type-I diabetes sample.

Well-being Questionnaire (WBQ)

The overall internal consistency for the 'energy' and 'positive well-being' sub-scales of the WBQ were found to be high for both populations. The alpha value was found to be .89 for the chronic pain sample and .91 for the type-I diabetes sample. The alpha

values were found to be acceptable for both individual sub-scales and ranged from .73 to .88 for the chronic pain sample, and .82 to .91 for the type-I diabetes sample.

3.2 Illness and Demographic Characteristics¹

A series of analyses was conducted to determine whether there were any significant differences between the chronic pain group and the type-I diabetes group in terms of demographic and illness characteristics, which might influence the interpretation of the main analyses. Chi-square tests were carried out in order to examine any systematic differences between the groups in terms of gender, marital status and ethnicity. The results are shown in Table 1. Independent samples t-tests were carried out in order to examine any systematic differences between the groups in terms of age, duration of illness, and time of diagnosis of illness. The results are shown in Table 2. Levene's Test for equality of variance was employed to test for homogeneity of variance. When significant, revealing that an assumption necessary for the t-test had not been met, the t-value for unequal variances was used.

¹ Controls for Type 1 error were not performed as the primary research hypotheses were not being tested and the analyses were for purely descriptive reasons.

Table 1 Gender, marital status and ethnicity for the chronic pain sample and type-I diabetes sample

Frequencies, percentages and group statistics						
	Chronic Pain (N=40)		Diabetes (N=32)		Chi-squared value (d.f.)	p-value
	n	(%)	n	(%)		
Gender					3.84 (1)	.050
Male	11	(27.5)	16	(50)		
Female	29	(72.5)	16	(50)		
Marital Status					7.55 ^a (3)	.056
Single	20	(50)	15	(46.9)		
Married	14	(35)	8	(25)		
Co-habiting	3	(7.5)	9	(28.1)		
Widowed	3	(7.5)	0	(0)		
Ethnicity					3.41 ^b (3)	.332
Caucasian	33	(82.5)	29	(90.6)		
Black	3	(7.5)	3	(9.4)		
Asian	1	(2.5)	0	(0)		
Other	3	(7.5)	0	(0)		

Table 2 Age, time of diagnosis, and duration of illness for the chronic pain group and the type-I diabetes group

	Chronic Pain (N=40)		Diabetes (N=32)		t-value (d.f.)	p-value
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)		
Current age	47.13 (13.57)	38.31 (8.26)	3.39 (65.74)	.001		
Diagnosis (years)	7.85 (8.19)	6.64 (4.91)	.77 (65.29)	.439		
Duration of illness (years)	10.57 (9.10)	6.84 (4.79)	2.23 (61.42)	.029		

Tables 1 and 2 show no evidence of any significance difference in ethnicity or years since diagnosis between the two groups. Most of the participants were Caucasian and had been diagnosed, on average, six to eight years previous to the study. The two samples differed significantly across age, gender, and illness duration. The chronic

^a 2 cells have an expected count less than 5.

^b 6 cells have an expected count less than 5.

pain group was significantly older than the type-I diabetes group and there were significantly more women in the chronic pain group than the type-I diabetes group. The chronic pain sample had suffered with their illness for a significantly longer period of time.

Some descriptive information that did not lend itself to comparison between the two groups was also collected. Information was gathered from the chronic pain group with regard to where their pain was located. The majority of individuals (67.5%) presented with back/neck pain. 25% presented with facial pain, whereas the remaining 7.5% experienced pain in other areas. Additionally, information was gathered from the type-I diabetes sample with regard to whether they had suffered any complications as a result of their diabetes. The majority of individuals (84.4%) had not suffered any complications, whereas the remaining 15.6% reported that they had.

3.3 Prevalence Rates of Level of Adjustment

A series of parametric and non-parametric analyses (independent samples t-tests and Mann-Whitney U tests) were conducted to determine whether there were any significant differences between the chronic pain group and type-I diabetes group in terms of outcome measures (i.e. adjustment to chronic illness). As before, Levene's Test for equality of variance was employed to test the homogeneity of the data. These analyses are described below for each adjustment outcome measure.

Mood

The HADS depression sub-scale has a maximum score of 21. Zigmond and Snaith (1983) suggest scores of 0-7 are within the normal range, 8-10 are mild, 11-14 are

moderate, and 15-21 are severe. In the chronic pain sample, 50% scored in the normal range on the HADS depression scale. Of those 50% whose scores were clinically significant, 25% scored in the mild depression range, 22.5% scored in the moderate range and 2.5% in the severe range. In the type-I diabetes sample, 78.1% scored in the normal range on the HADS depression scale. Of those 27.9% who displayed signs of clinical depression, 15.7% scored in the mild depression range, 3.1% scored in the moderate range and 3.1% in the severe range. An independent samples t-test was performed to determine whether the two samples differed significantly on levels of depression. Results are shown in Table 3 below.

Table 3 HADS depression and anxiety scores for the chronic pain sample and the type-I diabetes sample

	Chronic Pain (N = 40)	Diabetes (N = 32)		
HADS Sub-scale	Mean (S.D.)	Mean (S.D.)	t-value (d.f.)	p-value
Depression	7.70 (3.75)	5.31 (3.68)	2.71 (70)	.008
Anxiety	9.23 (4.58)	7.59 (4.30)	1.30 (70)	.197

The above table shows that both groups differed significantly in mean depression scores, with the chronic pain sample showing significantly higher levels of depression than the type-I diabetes sample.

The HADS anxiety sub-scale has the same scoring system as the HADS depression sub-scale and utilises the same cut-off scores (Zigmond and Snaith, 1983). In the chronic pain sample, 40% scored in the normal range on the HADS anxiety scale. Of those 60% whose scores were of clinical significance, 25% scored in the mild anxiety range, 20% in the moderate range and 15% in the severe range. In the type-I diabetes sample, 68.7% scored in the normal range. Of those 31.3% whose scores were

clinically significant, 9.4% scored in the mild anxiety range, 12.5% in the moderate range, and 9.4% in the severe range. An independent samples t-test was carried out to examine whether the two groups differed significantly on levels of anxiety. Results are indicated in Table 3 above. The table shows that the two groups did not significantly differ with regard to anxiety levels.

Level of Functioning

As described in the Method chapter, level of functioning was measured by using three sub-scales from the MOS Short Form Health Survey (MOS SF-36). The MOS SF-36 sub-scales are scored on a 0-100 scale, with a higher score indicating a better state of health (Ware and Sherbourne, 1992). Mann-Whitney U Tests were performed to determine whether the two samples differed significantly on levels of physical functioning, social functioning and role limitations due to physical problems.

Table 4 MOS SF-36 sub-scale scores for the chronic pain group and the type-I diabetes group

	Chronic Pain (N = 40)	Diabetes (N = 32)		
MOS SF-36 Sub-scale	Mean (S.D.)	Mean (S.D.)	z-value	p-value
Physical Functioning	41.25 (24.46)	82.19 (25.81)	-5.17	< .001
Social Functioning	40.63 (29.25)	77.73 (26.32)	-4.62	< .001
Role Limitations due to Physical Problems	16.88 (29.63)	63.28 (43.99)	-4.13	< .001

As the results in Table 4 indicate, the chronic pain patients rated themselves as moderately impaired with regard to physical and social functioning, and as very limited as a result of their pain. The type-I diabetes patients rated themselves as much less impaired on all three variables than the chronic pain sample. The two groups differed significantly on all three level of functioning domains. The type-I diabetes

sample showed significantly higher levels of physical functioning and social functioning, and they were significantly less limited due to physical problems than the chronic pain sample.

Well-being

The Well-being sub-scales are scored so that a higher score on each sub-scale indicates more of the mood described by the sub-scale label (Bradley & Lewis, 1990). The 'energy' sub-scale ranges from 0-12 and the 'positive well-being' sub-scale ranges from 0-18. Independent samples t-tests were carried out to determine whether the two samples differed significantly in terms of energy and positive well-being.

Table 5 Well-being scores for the chronic pain sample and the type-I diabetes sample

	Chronic Pain (N = 40)	Diabetes (N = 32)		
Well-being Sub-scale	Mean (S.D.)	Mean (S.D.)	t-value (d.f.)	p-value
Energy	4.5 (2.67)	6.41 (3.17)	-2.77 (70)	.007
Positive Well-being	8.78 (4.27)	11.06 (4.56)	-2.19 (70)	.032

As Table 5 indicates, both samples showed low energy levels and relatively low levels of positive well-being. The two samples differed significantly in well-being, with the type-I diabetes sample showing significantly higher energy levels and higher levels of positive well-being than the chronic pain sample.

3.4 Prevalence Rates of Independent Variables

A series of parametric analyses (independent samples t-tests) were conducted to examine whether there were any significant differences between the two samples with

regard to predictor variables. As before, Levene's Test for equality of variance was employed to test the homogeneity of the data. The analyses are described below.

Perceived Quality of Parenting

As outlined in the Method chapter, perceived quality of parenting was measured using the Parental Bonding Instrument (PBI). The two dimensions ('care' and 'overprotection') are scored so that a higher score on each dimension indicates a higher level of that dimension. 'Care' dimension scores can range from 0-36 for each parent, and 'overprotection' dimension scores can range from 0-39 for each parent. As some participants only grew up with one parent or no parents at all, data were only analysed for 35 out of the 40 chronic pain patients and 31 out of the 32 type-I diabetes patients for the paternal dimensions, and 38 out of the 40 chronic pain patients and 31 out of the 32 type-I diabetes patients for the maternal dimensions. Independent samples t-tests were carried out to examine whether the two samples differed significantly on the two dimensions. Results are shown in Table 6.

Table 6 PBI dimension scores for the chronic pain group and the type-I diabetes group

PBI Dimension	Chronic Pain			Diabetes			t-value (d.f.)	p-value
	N	Mean (S.D.)	Range	N	Mean (S.D.)	Range		
Paternal Care	35	19.94 (10.56)	0-34	31	22.81 (9.83)	0-36	-1.14 (64)	.260
Paternal Overprotection	35	14.09 (7.59)	2-28	31	10.29 (6.91)	0-27	2.11 (64)	.038
Maternal Care	38	25.16 (8.41)	6-36	31	26.84 (8.22)	6-36	-.89 (67)	.377
Maternal Overprotection	38	13.50 (7.20)	1-27	31	12.65 (8.02)	0-33	.47 (67)	.064

The above table shows that, overall, both groups rated the quality of the relationships with their parents whilst growing up as relatively good, as is reflected in the higher 'care' scores and lower 'overprotection' scores. However, it should be noted that there was a wide variation in scores, as indicated by the range of scores. The two groups only differed significantly on the paternal 'overprotection' dimension, with individuals with chronic pain having received significantly higher levels of 'overprotection' from their fathers than the type-I diabetes group.

Early Maladaptive Schemas

As described in the Method chapter, the short version of Young's schema questionnaire (YSQ-S) is divided into 15 early maladaptive schemas, which are scored from 1-6. Independent samples t-tests were performed to examine whether the two samples differed significantly on any of the 15 schemas. The results are depicted in Table 7 overleaf.

Table 7 Early maladaptive schema scores for the chronic pain sample and the type-I diabetes sample

Early Maladaptive Schema	Chronic Pain (N = 40)		Diabetes (N = 32)		t-value (d.f.)	p-value
	Mean (S.D.)	Range	Mean (S.D.)	Range		
Emotional Deprivation ²	2.52 (1.47)	1-6	2.28 (1.28)	1-6	.74 (70)	.460
Abandonment ²	1.88 (1.03)	1-4.8	1.86 (1.05)	1-5	.03 (70)	.976
Mistrust/Abuse ²	2.21 (.95)	1-4.6	2.29 (1.42)	1-5.6	.01 (70)	.995
Social Isolation ²	1.74 (.89)	1-4	2.05 (1.16)	1-5.4	-1.14 (70)	.260
Defectiveness/Shame ²	1.57 (.84)	1-4.8	1.79 (1.14)	1-4.6	-.64 (70)	.522
Failure to Achieve ³	1.77 (.76)	1-3.6	1.73 (.77)	1-4	.07 (70)	.948
Dependence/Incompetence ³	1.68 (.72)	1-3.6	1.56 (.68)	1-4	.76 (70)	.448
Vulnerability to Harm ³	2.18 (1.34)	1-6	1.96 (.90)	1-4	.58 (70)	.567
Enmeshment ³	1.61 (1.02)	1-4.6	1.58 (.96)	1-5.4	.04 (70)	.971
Subjugation ⁴	1.92 (.88)	1-6	1.73 (1.04)	1-5.4	1.21 (70)	.232
Self-sacrifice ⁴	3.28 (1.41)	1-6	3.08 (1.40)	1-6	.62 (69)	.540
Emotional Inhibition ⁵	1.92 (.98)	1-5	2.21 (1.31)	1-5.4	-.95 (70)	.344
Unrelenting Standards ⁵	3.27 (1.28)	1.2- 5.6	3.64 (1.38)	1-6	-1.21 (70)	.232
Entitlement ⁶	2.27 (.94)	1-5.2	2.70 (1.34)	1-6	-1.60 (70)	.114
Insufficient self-control ⁶	2.47 (1.15)	1-5.2	2.65 (1.06)	1.2- 4.8	-.68 (70)	.498

As can be seen from Table 7, both samples appeared to have relatively low (and therefore healthy) scores on the schema questionnaire overall. However, it should be noted that, as was the case with the PBI, there was a wide variation in scores, as

² Disconnection and Rejection schema domain

³ Impaired Autonomy and Performance schema domain

⁴ Other-Directedness schema domain

⁵ Overvigilance and Inhibition schema domain

⁶ Impaired Limits schema domain

indicated by the 'range'. Clinically, Young (1994) suggests that any schema item score of 5 or 6 should be discussed with the client. It is assumed that the more items scored 5 or 6, the higher the individual is on that schema dimension. Given that the primary focus of Young's work was on the assessment and treatment of early maladaptive schemas in those with personality disorders, it was felt that a clinical scoring criteria of 5 or 6 would be too stringent for the current research purposes. For the present data analysis it was therefore decided that the presence of an early maladaptive schema would be indicated by a mean group score greater than 3. Given this criteria, both the chronic pain group and the type-I diabetes group positively endorsed the 'self-sacrifice' early maladaptive schema, which is part of the 'other-directedness' schema domain. 65% of chronic pain patients and 47% of type-I diabetes patients positively endorsed the 'self-sacrifice' early maladaptive schema. Both groups also positively endorsed the 'unrelenting standards' early maladaptive schema, which is part of the 'overvigilance' schema domain. 50% of chronic pain patients and 68% of type-I diabetes patients positively endorsed the 'unrelenting standards' early maladaptive schema. The above table indicates that the two groups did not show any significant difference in mean group scores on any of the 15 early maladaptive schemas.

Coping Styles

As described in the Method chapter, the COPE is divided into different coping dimensions, with scores on each dimension ranging from 4-16. Independent samples t-tests were performed to examine whether the two samples differed significantly on any of the coping styles employed. The results are depicted in Table 8 overleaf.

Table 8 COPE sub-scale scores for the chronic pain group and the type-I diabetes group

COPE Sub-scale	Chronic Pain	Diabetes	t-value (d.f.)	p-value
	(N = 40)	(N = 32)		
Active Coping ⁷	11.98 (2.84)	11.16 (2.57)	1.27 (70)	.209
Suppression of Competing Activities ⁷	9.80 (2.38)	9.18 (2.53)	1.06 (70)	.295
Planning ⁷	11.63 (3.03)	11.41 (2.63)	.32 (70)	.748
Seeking Instrumental Social Support ⁷	9.88 (3.04)	9.72 (3.27)	.21 (70)	.835
Positive Reinterpretation and Growth ⁸	11.08 (3.47)	11.75 (3.18)	-.85 (70)	.398
Seeking Emotional Social Support ⁸	9.13 (2.96)	9.19 (3.39)	-.08 (70)	.934
Acceptance ⁸	11.18 (2.66)	12.84 (2.52)	-2.71 (70)	.008
Turning to Religion ⁸	8.38 (4.50)	5.34 (3.06)	3.76 (69.6)	< .001
Focus on and Venting of Emotions ⁸	9.15 (2.88)	8.94 (3.22)	.29 (70)	.769
Denial ⁸	6.20 (2.53)	5.75 (2.45)	.81 (70)	.422
Behavioural Disengagement ⁹	6.70 (2.40)	5.78 (2.45)	1.85 (70)	.068
Mental Disengagement ⁹	9.53 (2.63)	8.41 (3.01)	1.68 (70)	.097

The COPE suggests that higher scores indicate coping strategies that are used more frequently. In order to identify the most frequently used coping styles, those with a mean of ≥ 10 were detected. The table shows that the problem-focused coping styles ‘active coping’, ‘planning’ and ‘seeking instrumental social support’ were used the most frequently by both samples, as were the emotion-focused coping styles ‘positive reinterpretation and growth’ and ‘acceptance’. T-tests indicated that individuals with chronic pain used the emotion-focused coping strategy ‘turning to religion’ significantly more frequently than the type-I diabetes group, whereas individuals with type-I diabetes used the emotion-focused coping strategy ‘acceptance’ significantly more often than the chronic pain sample.

⁷ Problem-focused coping

⁸ Emotion-focused coping

⁹ Disengagement coping

3.5 Testing Research Hypotheses

Before the proposed multivariate statistical analyses could be carried out to investigate the primary research hypotheses, a series of statistical procedures were performed on the predictor and outcome variables to prepare the data for the subsequent analyses.

First, all of the variables that made up the ‘adjustment’ dependent variable (three ‘level of functioning’ variables, two ‘mood’ variables, two ‘well-being’ variables) were standardised (the z-score was calculated), so that all of the variables were of the same metric. After this procedure, all of these variables were collapsed into one overall ‘adjustment’ variable (with a higher score indicating better adjustment, and a lower score indicating poorer adjustment). This was carried out for several reasons. Previous exploratory analysis of these variables had shown that these seven variables correlated highly with each other, thus suggesting that they were highly related and actually tapping into the same, or similar, concept. This lies in accordance with previous adjustment literature (e.g. Williams, 1995). Collapsing the variables into one overall ‘adjustment’ variable helps to maintain a good ratio between participants and variables and reduces the probability that any associations identified statistically at a later stage emerge by chance.

Second, the 15 early maladaptive schemas were collapsed into their five schema domains (‘disconnection and rejection’, ‘impaired limits’, ‘impaired autonomy and performance’, ‘other-directedness’, and ‘overvigilance and inhibition’), in accordance with cognitive theory proposed by Young (1990; 1994). Subsequently, the ‘early maladaptive schema’ variable consisted of five schema domains, rather than the

original 15 early maladaptive schemas. Collapsing the 15 variables into five variables reduces Type 1 error.

Finally, the twelve coping strategies that made up the 'coping style' independent variable were collapsed into three coping variables, in accordance with previous research (Moss-Morris et al., 1996) and the theoretical conceptualisation of coping (Lazarus and Folkman, 1984); 'problem-focused coping', 'emotion-focused coping', and 'disengagement coping'. The 'coping style' independent variable subsequently comprised of only three variables, rather than the original 12. Again, this procedure was performed in order to reduce rates of Type 1 error.

Subsequent statistical analyses testing the primary research hypotheses were conducted with the above collapsed variables.

3.5.1 Hypothesis 1

In accordance with theoretical considerations and current evidence outlined in the Introduction chapter, it was predicted that individuals with chronic pain and individuals with type-I diabetes whose perceived quality of parenting had been relatively poor would show higher, and therefore healthier, levels of early maladaptive schemas than those whose quality of relationships with their parents had been relatively positive.

Linear multiple regression analyses were conducted in which perceived quality of parenting ('maternal care', 'maternal overprotection', 'paternal care', 'paternal overprotection') was used to predict the presence of early maladaptive schemas

(‘disconnection and rejection’, ‘impaired autonomy and performance’, ‘other-directedness’, ‘overvigilance and inhibition’, and ‘impaired limits’ schema domains). Separate analyses were performed for the chronic pain sample and the type-I diabetes sample. The results for the chronic pain sample are shown in Table 9 overleaf, and the results for the type-I diabetes sample are shown in Table 10.

Table 9 Multiple regression analysis summary statistics for the PBI sub-scales on the schema domains for the chronic pain sample (N = 35).

Variables	R Square	Adjusted R Square	p-value for R Square	β -value	t-value	p-value for β
<i>Disconnection and Rejection</i>						
Overall	.578	.520	< .001			
Paternal Care				-.155	-1.056	.300
Paternal Overprotection				-.730	-4.282	<.001
Maternal Care				-.525	-3.471	.002
Maternal Overprotection				.701	4.930	<.001
<i>Impaired Autonomy and Performance</i>						
Overall	.274	.174	.048			
Paternal Care				.069	.357	.724
Paternal Overprotection				-.259	-1.156	.257
Maternal Care				-.392	-1.975	.058
Maternal Overprotection				.477	2.559	.016
<i>Other-Directedness</i>						
Overall	.340	.245	.017			
Paternal Care				.093	.504	.618
Paternal Overprotection				-.455	-2.118	.043
Maternal Care				-.316	-1.631	.114
Maternal Overprotection				.628	3.522	.001
<i>Overvigilance and Inhibition</i>						
Overall	.107	.017	.497			
Paternal Care				.117	.548	.588
Paternal Overprotection				.017	.069	.946
Maternal Care				-.289	-1.291	.207
Maternal Overprotection				.164	.794	.434
<i>Impaired Limits</i>						
Overall	.309	.213	.026			
Paternal Care				.042	.225	.824
Paternal Overprotection				-.249	-1.141	.263
Maternal Care				-.122	-.632	.532
Maternal Overprotection				.633	3.481	.002

Multiple regression analysis indicated that, for the chronic pain sample, there was an overall significant association between perceived quality of parenting and the

'disconnection and rejection' schema domain (R Square = .578, $F(4, 29) = 9.95$, $p < .001$), the 'impaired autonomy and performance' schema domain (R Square = .274, $F(4, 29) = 2.74$, $p = .048$), the 'other-directedness' schema domain (R Square = .340, $F(4, 28) = 3.60$, $p = .017$), and the 'impaired limits' schema domain (R Square = .309, $F(4, 29) = 3.24$, $p = .026$). No overall significant association was found between perceived quality of parenting and the 'over-vigilance and inhibition' schema domain (R Square = .107, $F(4, 29) = .865$, $p = .497$).

For the chronic pain sample, findings suggest that perceived quality of parenting predicted 57% of the variance in 'disconnection and rejection' schema scores. 'Paternal overprotection' ($t = -4.28$, $p < .001$), 'maternal care' ($t = -3.471$, $p = .002$), and 'maternal overprotection' ($t = 4.93$, $p < .001$) all independently predicted the 'disconnection and rejection' schema domain. Lower levels of 'maternal care', higher levels of 'maternal overprotection', and, interestingly, lower levels of 'paternal overprotection' were associated with higher (and unhealthier) scores on the 'disconnection and rejection' schema domain.

Perceived quality of parenting predicted 27% of the variance in 'impaired autonomy and performance' schema domain scores. Results suggest that the 'maternal overprotection' variable independently predicted the 'impaired autonomy and performance' schema domain ($t = 2.56$, $p = .016$), and that 'maternal care' approached significance in independently predicting this schema domain ($t = -1.975$, $p = .058$). Higher levels of 'maternal overprotection' and lower levels of 'maternal care' were therefore associated with higher (and unhealthier) scores on the 'impaired autonomy and performance' schema domain.

Analyses indicate that 34% of the variance in 'other-directedness' schema scores were predicted by perceived quality of parenting, and that 'maternal overprotection' ($t = 3.52, p = .001$) and 'paternal overprotection' ($t = -2.12, p = .043$) independently predicted the 'other-directedness' schema domain. Higher levels of 'maternal overprotection' and, interestingly, lower levels of 'paternal overprotection' were associated with higher (and unhealthy) scores on the 'other-directedness' schema domain.

Results indicate that, when taken together, the parenting variables predicted 30% of the variance of the 'impaired limits' schema scores in the chronic pain sample, and that 'maternal overprotection' independently predicted this schema domain ($t = 3.48, p = .002$). Higher levels of 'maternal overprotection' were therefore associated with higher (and unhealthier) scores on this schema domain.

Table 10 Multiple regression analysis summary statistics for the PBI sub-scales on the schema domains for the type-I diabetes sample (N = 31).

Variable	R Square	Adjusted R Square	p- value for R Square	β - value	t-value	p-value for β
<i>Disconnection and Rejection</i>						
Overall	.397	.301	.011			
Paternal Care				-.250	-1.226	.231
Paternal Overprotection				-.239	-1.263	.218
Maternal Care				-.392	-2.045	.050
Maternal Overprotection				.223	1.147	.262
<i>Impaired Autonomy and Performance</i>						
Overall	.215	.089	.179			
Paternal Care				-.030	-.127	.900
Paternal Overprotection				.025	.115	.909
Maternal Care				-.273	-1.249	.223
Maternal Overprotection				.225	1.016	.320
<i>Other-Directedness</i>						
Overall	.288	.174	.066			
Paternal Care				-.022	-.097	.923
Paternal Overprotection				-.123	-.599	.555
Maternal Care				-.105	-.505	.618
Maternal Overprotection				.498	2.361	.056
<i>Overvigilance and Inhibition</i>						
Overall	.254	.135	.107			
Paternal Care				.230	-1.015	.320
Paternal Overprotection				-.146	-.692	.496
Maternal Care				-.383	-1.797	.084
Maternal Overprotection				.039	.183	.857
<i>Impaired Limits</i>						
Overall	.139	.001	.423			
Paternal Care				.149	.612	.546
Paternal Overprotection				-.004	-.018	.986
Maternal Care				-.397	-1.731	.096
Maternal Overprotection				.038	.164	.871

The results shown in Table 10 indicate that, for the type-I diabetes sample, there was an overall significant association between perceived quality of parenting and the

‘disconnection and rejection’ schema domain (R Square = .397, $F(4, 25) = 4.12$, $p = .011$), and that the association between perceived quality of parenting and the ‘other-directedness’ schema domain approached significance (R Square = .288, $F(4, 25) = 2.52$, $p = .066$). No significant association was found between perceived quality of parenting and the ‘impaired autonomy and performance’ schema domain (R Square = .215, $F(4, 25) = 1.71$, $p = .179$), the ‘over-vigilance and inhibition’ schema domain (R Square = .254, $F(4, 25) = 2.13$, $p = .107$), or the ‘impaired limits’ schema domain (R Square = .139, $F(4, 25) = 1.01$, $p = .423$).

For the type-I diabetes group, findings suggest that, when taken together, the four parenting variables predicted 39% of the variance in the ‘disconnection and rejection’ schema scores, and that the ‘maternal care’ variable independently predicted this schema domain ($t = -2.05$, $p = .050$). Lower levels of ‘maternal care’ were therefore associated with higher (and healthier) scores on the ‘disconnection and rejection’ schema domain.

Results also indicate that perceived quality of parenting predicted 28% of the variance in the ‘other-directedness’ schema scores. None of the parental bonding domains independently predicted this schema domain.

3.5.2 Hypothesis 2

In accordance with theoretical conceptualisation and empirical evidence outlined in the Introduction chapter, it was predicted that individuals with chronic pain and individuals with type-I diabetes whose perceived quality of parenting had been

relatively poor would show lower levels of adjustment to their chronic illness than those whose quality of relationships with their parents had been relatively positive.

Linear multiple regression analyses were carried out in order to investigate the association between perceived quality of parenting ('maternal care', 'maternal overprotection', 'paternal care', 'paternal overprotection') and level of adjustment. Separate analyses were performed for the chronic pain sample and the type-I diabetes sample. The results for the chronic pain sample are shown in Table 11, and the results for the type-I diabetes sample are shown in Table 12.

Table 11 Multiple regression analysis summary statistics for the PBI domains on adjustment for the chronic pain sample (N = 35)

Parental Bonding Domain	R Square	Adjusted R Square	p-value for R Square	β-value	t-value	p-value for β
Overall	.089	.037	.592			
Paternal Care				-.002	-.011	.991
Paternal Overprotection				.069	.275	.785
Maternal Care				.171	.768	.449
Maternal Overprotection				-.257	-1.230	.229

The multivariate analysis indicates that, for the chronic pain sample, contrary to expectations, there was no overall significant association between the four parenting variables and adjustment ($R^2 = .089$, $F(4, 29) = .709$, $p = .592$), and none of the parenting variables independently predicted adjustment. Contrary to expectations, therefore, perceived quality of parenting did not predict level of adjustment to chronic pain.

Table 12 Multiple regression analysis summary statistics for the PBI domains on adjustment for the type-I diabetes sample (N = 31)

Parental Bonding Domain	R Square	Adjusted R Square	p-value for R Square	β -value	t-value	p-value for β
Overall	.199	.071	.217			
Paternal Care				-.171	-.727	.474
Paternal Overprotection				-.298	-1.364	.185
Maternal Care				.381	1.724	.097
Maternal Overprotection				.025	.111	.912

The multiple regression analysis suggests that, for the type-I diabetes sample, contrary to expectations, there was no significant association between perceived quality of parenting and adjustment (R Square = .199, $F(4, 25) = 1.56$, $p = .217$), and none of the parenting domains independently predicted adjustment. Contrary to expectations, therefore, there was no significant predictive relationship between perceived quality of parenting and level of adjustment to type-I diabetes.

3.5.3 Hypothesis 3

In accordance with cognitive theory and empirical evidence discussed in the Introduction chapter, it was predicted that individuals with chronic pain and individuals with type-I diabetes with higher, and therefore unhealthier, levels of early maladaptive schemas would show lower levels of adjustment to their chronic illness than those with lower, and therefore healthier, levels of early maladaptive schemas.

Linear multiple regression analyses were conducted in which the five early maladaptive schema domains ('disconnection and rejection', 'impaired autonomy and

performance’, ‘other-directedness’, ‘over-vigilance and inhibition’, and ‘impaired limits’ schema domains) were used to predict level of adjustment. Separate analyses were performed for the chronic pain sample and the type-I diabetes sample. The results for the chronic pain sample are presented in Table 13, and the results for the type-I diabetes sample are shown in Table 14.

Table 13 Multiple regression analysis summary statistics for the early maladaptive schema domains on adjustment for the chronic pain sample (N = 40)

Early maladaptive schema domain	R Square	Adjusted R Square	p-value for R Square	β -value	t-value	p-value for β
Overall	.300	.194	.031			
Disconnection and Rejection				-.380	-1.499	.143
Impaired Autonomy and Performance				-.275	-1.168	.251
Other-Directedness				-.077	-.351	.728
Over-Vigilance and Inhibition				-.032	-.183	.856
Impaired Limits				.206	.948	.350

The multivariate analysis indicates that, for the chronic pain sample, there was an overall significant association between early maladaptive schemas domains and adjustment, with early maladaptive schemas predicting 30% of the variance in adjustment scores (R Square = .300, $F(5, 33) = 2.83$, $p = .031$). Higher (and unhealthier) levels of early maladaptive schemas were therefore associated with lower levels of adjustment to chronic pain. Results indicate that none of the five schema domains, however, independently predicted level of adjustment to chronic pain.

Table 14 Multiple regression analysis summary statistics for the early maladaptive schema domains on adjustment for the type-I diabetes sample (N = 32)

Early maladaptive schema domain	R Square	Adjusted R Square	p-value for R Square	β -value	t-value	p-value
Overall	.232	.085	.203			
Disconnection and Rejection				-.103	-.385	.703
Impaired Autonomy and Performance				-.342	-1.174	.251
Other-Directedness				-.043	-.152	.880
Over-Vigilance and Inhibition				-.111	-.434	.668
Impaired Limits				.084	.383	.705

The results suggest that, contrary to expectations, there was no overall association between early maladaptive schemas and adjustment to type-I diabetes (R Square = .232, $F(5, 26) = 1.57$, $p = .203$), and that none of the five schema domains independently predicted level of adjustment to diabetes. Contrary to expectations, therefore, there was no significant predictive relationship between early maladaptive schemas and level of adjustment to type-I diabetes. Additionally, results indicate that none of the five schema domains independently predicted level of adjustment in the type-I diabetes sample.

3.5.4 Hypothesis 4

In line with cognitive conceptualisation and research evidence as outlined in the Introduction chapter, and in relation to the above research hypotheses, it was hypothesised that early maladaptive schemas would mediate the relationship between perceived quality of parenting and adjustment to chronic pain or type-I diabetes.

This mediational model (Baron and Kenny, 1986) is illustrated in Figure 2.

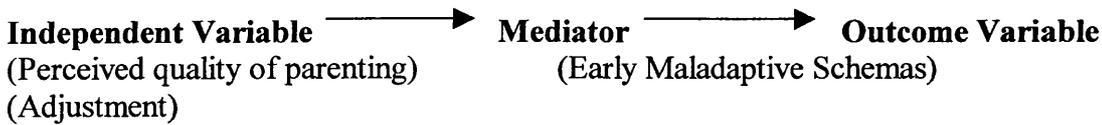


Figure 2: A conceptual model indicating relations between perceived quality of parenting, the presence of early maladaptive schemas and present level of adjustment.

The earlier analyses with regard to Hypothesis 2 demonstrated that, contrary to expectations, no predictive relationship was found between perceived quality of parenting and level of adjustment to chronic pain or type-I diabetes. As no association was found between these two variables, it was not possible to determine whether early maladaptive schemas actually mediated an association. As a result of the lack of prediction, therefore, further analyses regarding the potential mediational relationship of early maladaptive schemas (mediator) between perceived quality of parenting (independent variable) and adjustment (dependent variable) were not conducted.

3.5.5 Hypothesis 5

In line with theoretical conceptualisation and research evidence outlined in the Introduction chapter, it was hypothesised that an individual's coping style would affect the individual's level of adjustment independent of the presence of early maladaptive schemas.

Hierarchical multiple regression analyses were carried out in which coping style ('emotion-focused coping', 'problem-focused coping', and 'disengagement coping') was used to predict level of adjustment after controlling for early maladaptive

schemas. Separate analyses were performed for the chronic pain sample and the type-I diabetes sample. The results for the chronic pain sample are presented in Table 15, and the results for the type-I diabetes sample are shown in Table 16.

Table 15 Hierarchical multiple regression analysis summary statistics for coping style independent of early maladaptive schemas on adjustment for the chronic pain sample (N = 40)

Step and Variable	R Square	R Square Change	p-value for R Square Change	β	p-value for β
1. Early Maladaptive Schemas	.300	.300	.031		
2. Coping Style	.379	.079	.302		
Emotion-Focused				-.371	.099
Problem-Focused				.325	.090
Disengagement				-.012	.946

The hierarchical regression analysis indicates that, contrary to expectations, after controlling for the effect of early maladaptive schemas, coping style did not significantly predict adjustment to chronic pain (R Square Change = .079, $F(8,30) = 1.27$, $p = .302$), and that none of the three styles of coping independently predicted adjustment after controlling for early maladaptive schemas.

Table 16 Hierarchical multiple regression analysis summary statistics for coping style independent of early maladaptive schemas on adjustment for the type-I diabetes sample (N = 32)

Step and Variable	R Square	R Square Change	p-value for R Square Change	β	p-value for β
1. Early Maladaptive Schemas	.232	.232	.203		
2. Coping Style	.481	.249	.027		
Emotion-Focused				.688	.013
Problem-Focused				-.303	.207
Disengagement				-.541	.014

The hierarchical regression analysis indicates that, after controlling for the effect of early maladaptive schemas, coping style overall significantly predicted adjustment in the type-I diabetes sample (R Square Change = .249, F Change(8,23) = 3.67, p = .027). Coping style therefore predicted a further 24% of the variance in adjustment scores. The multivariate analysis also indicates that the 'emotion focused' (t = 2.69, p = .013) and 'disengagement' coping styles (t = -2.657, p = .014) independently predicted level of adjustment in the type-I diabetes sample. The more frequent use of emotion-focused coping and the more infrequent use of disengagement coping were therefore associated with higher levels of adjustment to type-I diabetes.

4 DISCUSSION

Overview

This study was a preliminary investigation aiming to explore the relationship between early childhood/family experiences, early maladaptive schemas and adjustment to chronic pain. The major aim of the study was to identify and test a possible mechanism by which adjustment difficulties to chronic pain in adulthood could have developed as a result of poor perceived quality of parenting in childhood and core beliefs formed as a result of this experience. This is the first known study investigating this relationship in chronic pain.

Childhood familial adversity has been linked with the development and maintenance of chronic pain in adulthood (e.g. Engel, 1959). The basis of the present study was a theoretical model (based upon Young's (1990) cognitive model of early maladaptive schemas), suggesting that, through its impact on the development of early maladaptive schemas, the quality of care received from parents during childhood could influence present adjustment to chronic pain.

The study utilised a retrospective cross-sectional design, comparing a group of people diagnosed with chronic pain with a group of people diagnosed with type-I diabetes. Data collection was conducted through clinic attendance and postal questionnaires.

In summary, findings suggested that the chronic pain sample and the type-I diabetes sample, on average, were moderately impaired in terms of mood, level of functioning and well-being. On comparison, the chronic pain sample was found to be more poorly

adjusted to their condition than the type-I diabetes sample. Both chronic illness groups, on average, were found to have experienced relatively positive parenting and had quite low early maladaptive schema scores. The 'self-sacrifice' and 'unrelenting standards' early maladaptive schemas were found to be the most pertinent for both the chronic pain group and the type-I diabetes group. Both samples used similar problem-focused and emotion-focused coping strategies, however the chronic pain sample used the strategy 'turning to religion' more frequently, whereas the type-I diabetes sample used the strategy 'acceptance' more often. Perceived quality of parenting predicted four of the five higher-order schema domains in the chronic pain sample, and two in the type-I diabetes sample. Results indicated that 'overprotection' (maternal and paternal) was the important factor in the development of schemas in the chronic pain sample, whereas 'maternal care' and 'maternal overprotection' appeared to play a greater role in the development of schemas in the type-I diabetes sample. In both samples, perceived quality of parenting was not found to predict adjustment. Early maladaptive schemas were found to predict adjustment to chronic pain but not to type-1 diabetes. Coping style was found to be non-predictive of adjustment to chronic pain, but was found to be predictive of adjustment to type-1 diabetes, independent of early maladaptive schemas.

The Discussion chapter aims to investigate both the clinical and theoretical meaning of the results in the current study. First, a discussion of the illness and demographic characteristics, and prevalence findings of both samples aims to place the current study in the context of empirical evidence, and specifically to address any differences that may have been due to the different chronic illnesses investigated. Second, the main findings with regard to the individual research hypotheses will be discussed and

placed in the context of theoretical and empirical work. Third, both theoretical and clinical implications of the current study are outlined. Finally, methodological limitations and strengths of the study are discussed, and implications for future research are described.

4.1 Interpretation of Illness and Demographic Characteristics

Although individuals with chronic pain cannot be classified as an homogenous group (Crombie et al, 1994), results from the initial descriptive analysis indicated that the chronic pain sample in the current study were comparable with regard to demographic and clinical characteristics (for example, current age, site of pain, duration of pain) to samples used in other recent studies (Flor et al., 1992; Plant, 1999). For the type-I diabetes sample, results indicated that individuals showed some similar as well as some dissimilar characteristics to samples in other studies (e.g. White et al, 1996). In this study, compared with others, participants were somewhat older at the time of the study, and were found to have been older when diagnosed with their diabetes. Unusually, most of the individuals in this study had had no diabetic complications, however, this might be related to the fact that they had not been diagnosed with their diabetes for a long period of time. These differences between the diabetic population used in this study and the diabetic populations used in other studies suggest that individuals with type-I diabetes are an heterogeneous group.

The difference found in gender of the participants between the two chronic illness groups is in line with previous literature, reporting that more women than men attend pain management clinics (Unruh, 1996). Indeed, a gender bias was found among the chronic pain population, but not among the type-I diabetes sample.

Results suggested that, on average, individuals with chronic pain had waited approximately two and three-quarter years after onset of their pain before being diagnosed. Individuals with type-I diabetes had waited, on average, only approximately two months after onset of their symptoms before a type-I diabetes diagnosis was made. This is in line with type-I diabetes being a clearly identifiable organic illness, which can therefore be diagnosed easily and rapidly once the individual presents at a diabetes clinic. The aetiology of chronic pain, on the other hand, frequently takes years to diagnose as often no medical basis for the pain complaint can be identified.

4.2 Interpretation of Prevalence Findings

Adjustment

Consistent with other recent studies (Tauscke et al, 1990; Plant, 1999), mood, current functioning and well-being, which were viewed within the global concept of 'adjustment', were seriously compromised in the chronic pain sample. In the type-I diabetes sample, these adjustment variables were also found to be compromised. Upon comparison with the chronic pain sample, however, the type-I diabetes sample showed much higher levels of current functioning, higher levels of well-being and significantly lower rates of depression, although anxiety levels were comparable. These findings could be explained by the fact that chronic pain and type-I diabetes have very different aetiologies, symptoms, and illness development. It would therefore be expected that individuals with chronic pain would be much more restricted in their physical functioning and to show lower levels of well-being, as individuals tend to experience pain most of the time. The diabetes literature suggests

that, if type-I diabetes is well controlled, the majority of individuals feel well most of the time (e.g. Dreary et al., 1997). Some previous studies have related this to the quality of metabolic control an individual has (e.g. Mayou et al., 1991). In the current study, only very few individuals had had diabetic complications due to poor metabolic control, which would account for the type-I diabetic individuals, on average, showing less physical and psychological impairment than the chronic pain population.

Perceived Quality of Parenting

Before entering a discussion on perceived quality of parenting (and later in this chapter, the relationship of perceived quality of parenting with early maladaptive schemas and adjustment), it should be pointed out that this study accepts memories of being parented as a reflection of actual parenting (Brewin et al., 1993; Parker, 1989). Indeed, Parker (1983) points out that the subjective experience of parental characteristics could be more important than objective characteristics in the development and maintenance of psychopathology. Other researchers (e.g. Main, 1991) have argued, however, that such memories should only be accepted as reconstructions of the parenting received.

The present study indicated that the chronic pain group's responses to the Parental Bonding Instrument (PBI) were comparable to those found in Tauschke et al.'s (1990) study. Tauschke et al. (1990) found that, on average, the perceived quality of parenting of individuals suffering from chronic pain in their study had been relatively positive, with higher levels of care and lower levels of overprotection having been received from both mother and father as children. In this study, the chronic pain population's perceived quality of parenting was found to be similar to that of the type-

I diabetes population. Both chronic illness groups can therefore, on average, be seen as having received 'optimal parenting' from both parents (Parker, 1979; Parker and Hadzi-Pavlovic, 1992). The chronic pain group, however, was found to have been less encouraged towards becoming independent than the type-I diabetes group, particularly by their fathers (as indicated by significantly higher 'overprotection' scores). When comparing the results found in this study with results found in Shah and Waller's (2000) study, where the PBI had been used as a measure of parenting with a depressed and a healthy population, the perceived quality of parenting in both chronic illness samples of this study was found to be comparable to the PBI scores of Shah and Waller's (2000) healthy population rather than the psychiatric population.

The findings above are inconsistent with Engel's (1959) theory of the 'pain-prone' patient, in which he proposed that individuals without obvious organic cause for their pain are more likely to use pain as a 'psychic regulator'. Engel (1959) hypothesised that this stemmed from detrimental psychosocial factors during childhood. Engel (1959) asserted that factors such as having physically or verbally abusive parents, or having one brutal and one submissive parent contributed to a child becoming 'pain-prone' as an adult. The current study's findings suggest that, on average, the chronic pain patients did not experience particularly poor parenting as children which would have led them to become 'pain-prone' as an adult. It should be noted, however, that participants in this study were not asked whether they had received an organic explanation for their pain, or whether their pain was viewed as unexplained pain. Given, however, that many individuals with chronic pain never receive an organic explanation for their pain, it can only be assumed that a high percentage of chronic pain participants in this study will have had pain without an identifiable organic

aetiology. The findings of this study therefore provide further evidence incongruent to a model (Engel, 1959) that explains chronic pain in adulthood as caused by dysfunctional familial experiences.

Early Maladaptive Schemas

Analysis of the responses made to Young's Schema Questionnaire (short version; YSQ-S) revealed that, although no particular early maladaptive schema was universally held within either the chronic pain sample or the type-I diabetes sample, two early maladaptive schemas were found to be more pertinent for both samples than other schemas. The 'self-sacrifice' early maladaptive schema (which is part of the 'other-directedness' higher-order schema domain) and the 'unrelenting standards' early maladaptive schema (which is part of the 'overvigilance and inhibition' higher-order schema domain) achieved the highest mean scores among individual schemas in both the chronic pain sample and the type-I diabetes sample. Example items from the 'self-sacrifice' early maladaptive schema include *'I'm the one who usually ends up taking care of the people I'm close to'* and *'Other people see me as doing too much for others and not enough for myself'*. Example items from the 'unrelenting standards' early maladaptive schema include *'I must be the best at most of what I do; I can't accept second best'* and *'I feel there is constant pressure for me to achieve and get things done'*. Over half of the chronic pain sample and just under half of the type-I diabetes sample positively endorsed the 'self-sacrifice' schema, and half of the chronic pain sample and over half of the type-I diabetes sample positively endorsed the 'unrelenting standards' schema.

The results from this study are consistent with Plant's (1999) research findings that the 'self-sacrifice' and 'unrelenting standards' early maladaptive schemas are the most relevant to individuals with chronic pain. It is of note that Plant (1999) used the long version of the schema questionnaire (YSQ-L) rather than the short version, which was employed for the purpose of this study. Although different versions of the schema questionnaire were used, the very similar findings among the chronic pain groups across both studies provide further support for the fact that these two early maladaptive schemas are of issue for individuals with chronic pain.

When discussing these findings, it must be noted that mean scores on the YSQ-S were actually quite low for both the chronic pain sample and the type-I diabetes sample. There could be two explanations for this finding. Firstly, this may indicate that a genuinely modest level of schemas was held by both samples. The second explanation could be that the criteria of scoring 'five' or 'six' on the schema questionnaire to indicate the presence of a schema, as proposed by Young (1990) for individuals with personality disorders, may be too stringent. Young (1990) posited that early maladaptive schemas be viewed on a continuum, and it may therefore be that individuals with chronic pain and individuals with type-I diabetes hold certain schemas less strongly than people with characterological difficulties, but more than a non-clinical population. This suggestion is supported when comparing the findings from this study with the findings from Shah and Waller's (2000) and Leung et al.'s (1999) studies. The schema mean scores for the chronic pain and type-I diabetes samples in the current study are similar to the schema mean scores for the healthy populations used in Shah and Waller's (2000) and Leung et al.'s (1999) studies, except for the 'self-sacrifice' and 'unrelenting standards' schemas, which had higher

mean scores. For these two early maladaptive schemas, the mean scores for the chronic pain and type-I diabetes samples are more similar to those of the depressed and eating disordered individuals used in the two other studies. This would suggest that the levels of early maladaptive schemas for the two chronic illness populations used in this study were, on average, comparable to those for the normal population, apart from levels on the 'self-sacrifice' and 'unrelenting standards' early maladaptive schemas, which were comparable to the clinical axis-I disordered (i.e. depressed or eating-disordered) populations.

According to Young's theoretical definition, 'self-sacrifice' refers to the "excessive focus on voluntarily meeting the needs of others in daily situations, at the expense of one's own gratification" (McGinn and Young, 1996; p.203). It is suggested that this early maladaptive schema can develop from a need to prevent causing pain to others or to avoid feeling guilty about acting selfishly. As a consequence, this often results in feeling that one's own needs are not being adequately met, and resenting those individuals who are being taken care of. This early maladaptive schema may have particular relevance to chronic illness groups, as having a chronic condition means that you have to pay more attention to your own physical, and possibly emotional, needs. This particular schema may thus be triggered by the experience of having a chronic illness. In particular, this may be the case for individuals who believe that their needs are not being met by health care professionals. This is frequently the case with chronic pain sufferers, as for many the physiological source of their pain is not identified and they get referred to various specialists in an attempt to diagnose their condition and gain relief from their pain (Banks and Kerns, 1996).

'Unrelenting standards' refers to "the underlying belief that one must strive to meet very high internalised standards of behaviour and performance, usually to avoid criticism" (McGinn and Young, 1996; p.204). It is hypothesised that people who hold this schema often have difficulty slowing down, which in turn leads to impairment in pleasure, relaxation, health, or satisfying relationships. This early maladaptive schema may relate to clinicians' observations and reports that chronic pain sufferers frequently succumb to their personal expectations and role demands (Williams and Erskine, 1995). An individual with chronic pain may therefore over exert him/herself during a time period when the pain is less severe in order to compensate for recent inactivity and to meet his/her high standards of functioning, which in turn may exacerbate the pain. This may be just as applicable to other chronic illnesses where an individual's general functioning or health status may be compromised. Type-I diabetes can result in serious complications, which will affect an individual's overall functioning. Although in this study the type-I diabetes sample generally had very few complications and their level of functioning was much higher than the chronic pain sample, they nevertheless rated their physical and psychological functioning as somewhat compromised. An alternative reason for the majority of individuals with type-I diabetes positively endorsing this schema could be that a high level of vigilance over diet and exercise and strict adherence to a regime of insulin injections is required, if optimal glycaemic control is to be achieved. This chronic condition, therefore, actually demands high personal standards in order for the diabetes to be well controlled (White et al., 1996), which could trigger this schema. It could also make this schema adaptive in this situation. Those individuals with type-I diabetes who positively endorse this schema may have better control over their condition, and

therefore show fewer complications than individuals who do not positively endorse this schema.

Overall, findings revealed that the chronic pain group and the type-I diabetes group did hold certain early maladaptive schemas that, within the theoretical context of schema definitions, seem meaningful given their conditions. It should be noted, however, that the suggestion that these certain early maladaptive schemas may be particularly pertinent to people with chronic pain and type-I diabetes must be interpreted with caution, not least due to the fact that there are no norms available for these two chronic illness groups for the schema questionnaire (long and short versions) at the present time. Standing alone, it is therefore not viable to interpret reliably such findings. Comparable findings from Plant's (1999) study with regard to individuals with chronic pain, however, lend support to the present findings.

Coping Strategies

The present study indicated that the two chronic illness groups were similar in the coping strategies they frequently used. On average, the two groups frequently used the 'active coping', 'planning', and 'seeking instrumental social support' problem-focused coping styles, as well as the emotion focused coping styles 'positive reinterpretation and growth' and 'acceptance'. These coping styles are generally viewed as adaptive ways of coping (Folkman and Lazarus, 1985), and have been found to be positively associated with control and adaptation within the chronic pain literature (Rodriguez-Parra et al., 2000). This study also found that the chronic pain individuals used the emotion-focused strategy 'turning to religion' significantly more frequently than the type-I diabetes group. With regard to chronic pain, this finding

may relate to literature indicating that many individuals with chronic pain never receive adequate explanations or diagnoses that are consistent with their high level of experienced pain. As their pain is frequently perceived to be not under their control, religion may therefore have come to play an important role in providing meaning for their pain as well as support in times of distress. The type-I diabetes group, on the other hand, was found to use the emotion-focused strategy of ‘acceptance’ significantly more frequently than the chronic pain group. In relation to their diabetes, individuals will have had the experience that their diabetes was an easily diagnosable condition with an organic cause, therefore possibly making the diagnosis and its associated control regime much easier to accept. As a group, the type-I diabetes sample had very few diabetic complications. This indicates that, on the whole, they were able to accept their illness and were willing to follow medical guidelines in order to control the illness.

It must be noted, however, that a general coping inventory was used for the purpose of this study, rather than a chronic pain-specific or diabetes-specific coping measure, as the inventory needed to be applicable to both chronic illness groups. It is possible, therefore, that the use of illness-specific coping inventories may have yielded different results.

4.3 Interpretation of Research Hypotheses

4.3.1 The Relationship between Perceived Quality of Parenting and Early Maladaptive Schemas

The results of this study indicate that perceived quality of parenting was associated with the presence of several early maladaptive schema domains in adulthood in

individuals with chronic pain and two schema domains in individuals with type-I diabetes. This reported relationship is consistent with other studies in other populations (Shah and Waller, 2000; Leung et al., 2000). Unfortunately, there are no known previous comparable studies with these or other chronic illness populations.

Among the chronic pain sample, overall perceived quality of parenting was associated with the 'disconnection and rejection', 'impaired autonomy and performance', 'other-directedness', and 'impaired limits' higher-order schema domains, but not the 'over-vigilance and inhibition', higher-order schema domain. Findings from this study also demonstrated a strong link between some specific unhealthy parental bonding behaviours and early maladaptive schema domains. High levels of 'maternal overprotection' were highly predictive of high ratings on all four schema domains. Low levels of 'maternal care' were found to be highly predictive of the 'disconnection and rejection' schema domain. These findings suggest that high levels of maternal overprotection, and in one instance low levels of maternal care, provide the foundation for the development of the 'disconnection and rejection', 'impaired autonomy and performance', 'other-directedness', and 'impaired limits' higher-order schema domains. This is consistent with literature which states that high levels of 'overprotection' and low levels of 'care' are proposed to be detrimental to offspring (Bowlby, 1977). Interestingly, however contrary to expectations and theoretical underpinnings (Bowlby, 1977; Parker and Hadzi-Pavlovic, 1991), 'paternal overprotection' was negatively associated with the 'disconnection and rejection' and 'other-directedness' schema domains, suggesting low levels of 'paternal overprotection', rather than high levels, to be more detrimental and providing the

foundation for the development of early maladaptive schemas within these two schema domains.

These findings suggest that parental ‘overprotection’ is a key influencing factor in the development of specific early maladaptive schemas in individuals with chronic pain, and specifically high levels of ‘maternal overprotection’ but low levels of ‘paternal overprotection’. Within such a model, one can propose that, when the perceived level of ‘maternal overprotection’ was high, the chronic pain group developed beliefs that their need for security, safety, empathy and acceptance would not be met in a constant or predictable manner (as encompassed by the ‘disconnection and rejection’ schema domain), that they would not be able to separate, survive or function independently (as encompassed by the ‘impaired autonomy and performance’ schema domain), that they would be deficient in internal limits, responsibility to others, or long-term goal-orientation (as encompassed by the ‘impaired limits’ schema domain), and that they would have to excessively focus on the needs of others at the expense of their own needs in order to gain love and approval and maintain their sense of connection (as encompassed by the ‘other-directedness’ schema domain). Findings also suggest that, contrastingly, when ‘paternal overprotection’ was low, the chronic pain group developed beliefs that their need for security, safety, empathy and acceptance would not be met in a predictable manner (as encompassed by the ‘disconnection and rejection’ schema domain), and that they must excessively focus on the needs of others at the expense of their own needs (as encompassed by the ‘other-directedness’ schema domain).

Among the type-I diabetes sample, overall perceived quality of parenting was associated with fewer higher-order schema domains than for the chronic pain sample. Perceived quality of parenting was found to be associated with the ‘disconnection and rejection’ and the ‘other-directedness’ higher-order schema domains, but not the ‘impaired autonomy and performance’, ‘over-vigilance and inhibition’ and ‘impaired limits’ higher-order schema domains. Present findings demonstrated that, among this population, low levels of ‘maternal care’ were predictive of high ratings on the ‘disconnection and rejection’ schema domain, whereas high levels of ‘maternal overprotection’ were predictive of the ‘other-directedness’ schema domain.

These findings suggest that maternal behaviours, rather than overall parental behaviours, played a more important role in the development of specific early maladaptive schemas in individuals with type-I diabetes. Within such a model, one can propose that, when the perceived level of ‘maternal care’ was low, the type-I diabetes group developed the belief that their need for security, safety, empathy and acceptance would not be met in a constant or predictable manner (as encompassed by the ‘disconnection and rejection’ schema domain). When the perceived level of ‘maternal overprotection’ was high, they formed the belief that they must excessively focus on the needs of others at the expense of their own needs in order to gain love and approval and maintain their sense of connection (as encompassed by the ‘other-directedness’ schema domain).

Although differences were found between the two chronic illness groups, findings from this study suggest that, overall, across the two illness groups, ‘overprotection’, and particularly ‘maternal overprotection’ played a key role in the presence of early

maladaptive schemas as an adult. These findings are inconsistent with Leung et al.'s (2000) findings with eating disordered individuals, who found that low parental 'care', rather than 'overprotection' influenced the development of early maladaptive schemas. Two possible reasons for this result are considered. First, it can be proposed that chronic illness populations (chronic pain and type-I diabetes in this instance) are very different in their presentation compared to psychiatric groups, and that not every person with a chronic illness will necessarily present with psychological disturbance. They may be particularly different in their presentation compared to individuals with bulimia or anorexia. Therefore, these groups do not necessarily lend themselves to adequate comparison. A second reason may relate to methodological limitations. The associations with parental 'overprotection' in this study and parental 'care' in Leung et al.'s (2000) study could be largely a product of covariance with the other PBI subscales. It is also important to bear in mind that, on average, the PBI and YSQ-S scores were not particularly dysfunctional. Therefore, parenting experiences that were normal or 'optimal' (Parker and Hadzi-Pavlovic, 1992) may lead to different predictors from more abnormal or dysfunctional parenting.

The findings from this study are, overall, consistent with previous literature which suggests that the relationships with primary caregivers and the perceived quality of parenting received as a child provide an important foundation for, and long-term influence on, personality throughout the lifespan (Bowlby, 1973; Young, 1994). Young (1994) proposed that early maladaptive schemas develop as a result of ongoing dysfunctional experiences during childhood, particularly with parents but also with siblings and peers, and that these schemas develop as children attempt to make sense of their experiences and to avoid further psychological pain.

It is of interest to note that not all higher-order schema domains showed a relationship with perceived quality of parenting. One possible reason for this could be the small sample size in both chronic illness groups, which would inevitably have resulted in loss of power to predict relationships reliably. It could therefore be hypothesised that, had the study been able to employ a larger sample size, significant associations between all higher-order schema domains and perceived quality of parenting might have been found. Clearly, this hypothesis requires empirical investigation.

4.3.2 The Relationship between Perceived Quality of Parenting and Adjustment

Contrary to expectations based on cognitive theoretical conceptualisation of psychopathology (Young, 1990; 1994), findings from this study indicate that perceived quality of parenting did not play a significant role in predicting adjustment to chronic pain or type-I diabetes in adulthood. Young (1990; 1994) hypothesised that it is dysfunctional early childhood experiences, and particularly familial experiences, which lead to psychopathology in adulthood through the development of early maladaptive schemas. The findings from this study are also inconsistent with previous research with depressed and eating disordered patients (Shah and Waller, 2000; Leung et al., 2000), which showed an association between psychopathology and unhealthy parental bonding behaviours.

Following on from Young's (1990; 1994) model and previous research, it is therefore surprising that the current study failed to find a predictive relationship between

perceived quality of parenting and adjustment to chronic pain or type-I diabetes in adulthood. This may, however, have been due to several methodological reasons. Firstly, the concept of 'adjustment' was not seen in purely psychological terms but also in physical terms. It could be questioned whether a predictive relationship may have been found if adjustment had been purely psychological (in terms of depression and/or anxiety). Secondly, as above, it is likely that the small sample size in both groups will have resulted in loss of power to find a predictive relationship, and one could hypothesise that a larger sample size might have found a predictive relationship. It is also possible that, as discussed above, parenting did not predict adjustment as, on average, the parenting experiences of the chronic pain and type-I diabetes samples were reported to have been good.

On the other hand, the findings from this study may suggest that adjustment to chronic pain and to type-I diabetes is less based on predisposing psychological factors (such as poor relationships with parents and poor parenting), but that it might be more a reaction to the illness and illness experience, and may be more due to how ill an individual feels and how disabled he/she is as a result of the illness. With regard to depression, there has been much debate surrounding the primary and secondary nature of depression in chronic pain individuals, i.e. whether depression precedes chronic pain, whether the two appear simultaneously, or whether depression is secondary to chronic pain (Banks and Kerns, 1996). The debate is still ongoing. Tauschke et al. (1990) found high levels of depression but low levels of abnormal early experience (as measured by the PBI) in their chronic pain sample. The authors suggested that depression in their sample was therefore more likely to have been due to the actual

pain experience and associated disability, rather than any dysfunctional early experience.

Given the methodological limitations of this study (which will be further discussed later on in this chapter), it is difficult to deduce whether predisposing psychological factors, such as the experience of a poorer childhood, influence how an individual with chronic pain or type-I diabetes adjusts to their chronic condition. The findings of the current study may reflect conceptual problems in the 'adjustment' variable or low power to predict relationships.

4.3.3 The Relationship between Early Maladaptive Schemas and Adjustment

Given the above non-significant findings between perceived quality of parenting and adjustment, it was not possible to test and establish a mediational model between parenting, early maladaptive schemas and adjustment to chronic pain and to type-I diabetes. Previous research has been able to do this, albeit with other populations (Shah and Waller, 2000; Leung et al., 2000). Nevertheless, results from this study indicate that, for the chronic pain sample, the presence of early maladaptive schemas overall predicted adjustment to chronic pain. This is consistent with previous research (Plant, 1999). For the type-I diabetes sample, however, this was not the case, and early maladaptive schemas were not found to predict adjustment in this chronic illness population.

This difference between the two samples could be due to several reasons. Again, due to the methodological limitations stated above a predictive relationship may not have been detected in the type-I diabetes sample. However, these findings may also be due

to the two chronic illnesses differing greatly in terms of illness presentation and experience, as well as the response of the medical profession to the two chronic illness groups. One suggestion could be that one needs to be much more psychologically robust to be able to adjust well to chronic pain compared with type-I diabetes. An important difference between chronic pain and type-I diabetes, as well as many other chronic illnesses, stems from the lack of direct correspondence between structural pathology and pain severity, impairment, and disability in chronic pain. In turn, this frequently gives rise to a conflict between the messages that patients receive from health care professionals and their own subjective pain experience (Banks and Kerns, 1996). On the one hand, the frequent absence of structural pathology findings may lead health care professionals to inform their chronic pain patients that their condition should not interfere with activities. Yet, on the other hand, chronic pain patients do feel pain and, as a result, experience significant loss. This conflict between health care professionals' messages and a patient's own subjective experience is therefore likely to promote self-doubt, distrust of the medical profession, confusion and frustration (Goldman, 1991). The chronic pain experience might therefore be much more likely to trigger existing early maladaptive schemas than a condition such as type-I diabetes, where a patient's credibility is not in doubt as organic aetiology is easily established. One could therefore hypothesise that it may actually be the whole negative chronic pain experience, in which the often frustrating experience with the medical system will play a large part, rather than simply the onset of chronic pain, which may trigger early maladaptive schemas and thus influence adjustment.

It should be noted that it is difficult to ascertain whether the core beliefs that influence adjustment are actually early maladaptive schemas, which have developed as a result

of dysfunctional early experience, or beliefs that developed as a result of the whole pain experience. As discussed above, although perceived quality of parenting was found not to predict adjustment to chronic pain, perceived quality of parenting nevertheless was found to predict early maladaptive schemas. This lends support to the argument that the core beliefs that influence adjustment are, in fact, early maladaptive schemas, however this cannot be stated conclusively.

4.3.4 The Relationship between Coping Style and Adjustment

For the chronic pain group, this study found that coping style did not predict adjustment independent of early maladaptive schemas. For this chronic illness group, therefore, coping was not predictive of adjustment to chronic pain irrespective of the presence of early maladaptive schemas. This suggests that an individual's general schema about the self, the world, or the future overrides how an individual generally copes with a situation. Lazarus and Folkman (1984) describe coping in terms of a person's cognitive and behavioural attempts to manage stressful situations. It could be hypothesised that a person's cognitive or behavioural coping response may trigger detrimental beliefs, i.e. schemas, about the self, if the coping response is found to be unsuccessful. Early maladaptive schemas may therefore be more important in the adjustment process. Folkman (1997) proposed a third type of coping, 'meaning-based coping', which could be seen as particularly pertinent for chronic pain sufferers in view of the difficulty faced by many sufferers in finding meaning for their unexplained pain. The coping inventory used in this study, however, did not encompass this type of coping, and it could be questioned whether this style of coping might be more predictive of adjustment to chronic pain.

The results in the present study lie in contrast to those from Turner et al.'s (2000) study, in which the authors investigated whether pain-related beliefs, coping, and catastrophizing predicted functioning in patients with chronic pain. Turner and colleagues found that coping style independently predicted physical disability (when controlling for pain-related beliefs and catastrophizing) in their chronic pain sample. The difference in findings could be due to several reasons. Firstly, it may be due to Turner et al. (2000) investigating pain-related beliefs, rather than core beliefs (about the self, others and the world). Plant (1999) proposed that early maladaptive schemas might actually play a greater role in adjustment to chronic pain than pain-related beliefs. This could account for the fact that coping style was not found to independently predict adjustment (when controlling for early maladaptive schemas) in the present study, but was found to do so in Turner et al.'s (2000) study (when controlling for pain-specific beliefs). Early maladaptive schemas may therefore predict adjustment more strongly than pain-specific beliefs. An alternative explanation for the difference in findings may be due to methodological issues. Turner and colleagues used pain-specific coping inventories (the Coping Strategies Questionnaire (Rosenstiel and Keefe, 1983) and the Chronic Pain Coping Inventory (Jensen et al., 1995)), whereas the present study employed the COPE, as it could be used across chronic illness conditions. It should also be borne in mind that in the present study, adjustment incorporated physical as well as psychological disability. Turner et al. (2000) found that coping style only independently predicted physical disability, but not depression. Had the present study been able to differentiate between physical and psychological adjustment, comparable findings to Turner et al.'s (2000) might have been found.

In their study, Turner et al. (2000) make an important distinction between coping style and catastrophizing. The authors suggest that catastrophizing is better conceptualised as a series of negative automatic thoughts (Beck, 1976) rather than coping efforts (Lazarus and Folkman, 1984). The catastrophizing thoughts (from the Coping Strategies Questionnaire) in Turner et al.'s (2000) study were very pain-specific (e.g. "I wonder all the time whether the pain will end", "It is terrible and I think it is never going to end") rather than more general. It could therefore be proposed that these catastrophizing thoughts would be linked more closely to pain-specific beliefs, rather than early maladaptive schemas. The coping inventory in the present study (the COPE) did not include catastrophizing and was not specific to pain. It would be interesting to follow on from the present study to investigate whether catastrophizing generally would predict adjustment to chronic pain independent of early maladaptive schemas.

The type-I diabetes group was found to differ from the chronic pain group, and results indicated that an individual's coping efforts predicted adjustment independent of early maladaptive schemas, and that coping style was more predictive of adjustment than early maladaptive schemas. This difference in chronic illness groups may again be linked to differences in illness presentation. Type-I diabetic individuals are given clear guidelines on how to control their condition, as there is a matter of mortality if an individual is unable to keep their diabetes stable. Clear-cut treatment regimes therefore help individuals to keep their condition stable and therefore aid adjustment to type-I diabetes. This is not so clearly the case with chronic pain, and therefore there may be more scope for other factors, such as early maladaptive schemas, to intrude in individuals with chronic pain, particularly as there is no issue of mortality with this

population. Interestingly, this study found that frequent use of emotion-focused coping strategies and infrequent use of problem-focused coping strategies actually led to better adjustment in the type-I diabetes group, which is inconsistent with much of the coping literature (e.g. Endler and Parker, 1990). However, Stanton et al. (1994) point out that much of this research was subject to methodological problems. Consistent with the findings from this study are Moss-Morris et al.'s (1996) results

from a study with chronic fatigue patients, in which the authors suggest that emotion-focused strategies such as 'seeking emotional social support' and 'positive reinterpretation and growth' should be encouraged for positive adaptation. Findings from the present study support the encouragement of emotion-focused strategies in type-I diabetic individuals, however it is unclear how these findings might generalise to other chronic illness groups.

4.4 Methodological Limitations

This particular model assumed for the exploration of perceived quality of parenting, early maladaptive schemas, and coping style in adjustment to chronic pain or type-I diabetes has raised some interesting findings, but it is essential to consider the limitations of this study.

Method of Data Collection

Due to cost and time restrictions, information was only collected using questionnaire measures. All of the measures used in this study were, therefore, necessarily self-report by nature. There are inherent difficulties with this (Barker, Pistrang and Elliott, 1994), such as social desirability bias. In addition to this, among the chronic pain

sample, most individuals chose to take the questionnaires home with them and complete them in the privacy of their own home, rather than to complete them in the clinic. As the questionnaires were sent out to all type-I diabetes patients, these, again, were filled out at their home. Although this method was felt to be useful in order to optimise participation and reduce inconvenience for participants, this may have increased the likelihood of conferring with others, taking much longer than desirable to complete them, and possibly faking answers.

Although all of the measures used were standardised and psychometrically robust (see Method chapter), the Young Schema Questionnaire (YSQ), nevertheless, requires particular attention with regard to methodological limitations. The YSQ was originally developed as a clinical tool, and there are currently no guidelines available for the use of the questionnaire for research purposes. Many research studies are, nevertheless, currently employing the YSQ, as there is no other measure as yet available for investigating early maladaptive schemas. Scoring procedures for the short version of the YSQ are yet to be clearly established, and it can be questioned whether taking a score of 'five' or 'six' to suggest a person positively endorsing a schema might be too stringent with populations who do not have a personality disorder. The short version of the YSQ was employed for the purpose of this study, in order to increase the probability of individuals completing it. Nevertheless, even in its 75-item format, it is still somewhat time-consuming and tiring to fill in.

Despite being assured of confidentiality, it was felt that the sensitivity and intimacy of the YSQ and the Parental Bonding Instrument (PBI) might have impacted upon some individuals answering the questions honestly. Some of the individuals who contacted

the researcher to inform her that they did not wish to take part in the study explained that the reason they did not wish to take part was due to the intimate nature of the YSQ and the PBI. Because of this, it may be that the levels of early maladaptive schemas and parental bonding behaviours reported in this study were an underestimate.

The Parental Bonding Instrument (PBI) was the measure used to assess the level of childhood adversity experienced by participants. As the questionnaire measures perceived quality of parenting during childhood, rather than a more global measure of childhood experience, it is not likely to encompass the whole range of dysfunctional childhood experience, which Young (1994) proposed leads to the development of early maladaptive schemas. However, given the lack of questionnaires measuring the more global concept of childhood experience, the PBI was felt to be the best of the measures identified. The alternative would have been a structured clinical interview, which was not possible.

The nature and length of the questionnaire pack given to participants was strongly felt to limit the response rate, particularly with regard to the type-I diabetes sample. It is very likely that the use of postal questionnaires will have substantially reduced the response rate in the type-I diabetes sample. 32.2% of chronic pain patients contacted and 61.4% of type-I diabetes patients contacted decided not to respond to the invitation to take part in the study. A substantial proportion of type-I diabetes and chronic pain patients therefore elected not to take part. No information was available to compare participants with those who declined to be in the study.

Generalisability of Findings

The two samples in the present study showed similar demographic and clinical characteristics to other chronic pain or type-I diabetes research populations, however, they also showed several differences, as outlined in the Results chapter. This indicates the importance of viewing these populations as heterogeneous, rather than homogeneous. The difficulty of generalising findings has been a particular criticism of previous research, particularly within the chronic pain literature, as most of the chronic pain research has been conducted on specialist clinical pain samples and then been generalised to the wider population of pain sufferers (Crombie and Davies, 1998; Gamsa, 1994b). It is important to note that individuals attending chronic pain clinics are a highly selected group for several reasons. They tend to be individuals who are significantly disabled by their pain and who have been selected by their general practitioner, and later various specialists, to be referred to a chronic pain clinic. Thus, differential referral is likely to create a bias in pain clinic populations, as doctors are more likely to refer a more emotionally disturbed patient who is coping poorly to a pain clinic (Gamsa, 1994b). Individuals attending specialist pain clinics have been found to have a greater tendency to emotional disturbance (Crook and Turks, 1985). This is not so much the case with type-I diabetes patients as, once diagnosed, all individuals need to attend diabetes clinics, regardless of whether they are coping well or poorly with their condition.

Design

A retrospective research design must lead to caution in the interpretation of results. Data was subject to hindsight bias and the probability of many confounding experiences since childhood. The limitations in the correlational design of the study

should also be emphasised (Barker, Pistrang and Elliott, 1994), and it must be pointed out that the findings provide no support for causal relationships between perceived quality of parenting, early maladaptive schemas, coping style and adjustment to chronic pain or type-I diabetes. However, the study indicated that some early maladaptive schemas, parental behaviours and coping styles deserve further attention.

The five higher-order schema domains were employed for the inferential statistical analyses, and the adjustment variables and coping styles were collapsed in order to minimise the extent of Type 1 error as much as possible. This, however, runs the risk of missing important information with regard to more specific variables. With a much larger sample, it would have been possible to examine the role of each early maladaptive schema and coping style on each adjustment variable.

Comparison Group

The choice of comparison group was somewhat difficult as several factors needed to be taken into consideration. A comparison group that was perceived to have a clear organic cause was sought, due to the fact that the cause of chronic pain is frequently not discovered and thus viewed as a 'psychogenic' condition. Also, a comparison group in which levels of psychiatric illness were similar to other chronic illness groups was considered important. The two samples did differ in terms of age, gender, and duration of illness, but nevertheless the type-I diabetes group is likely to have been as comparable as any alternative chronic illness with a clear organic aetiology.

4.5 Methodological Strengths

Despite the limitations outlined above, the current study incorporates a number of robust methodological features, which lend support to both results and subsequent conclusions. The adoption of a design which had a precedent from previous research with other clinical populations, the recruitment of fairly substantial representative chronic illness samples, and the use of widely-used, psychometrically standardised measures increase the confidence with which results can be interpreted. Furthermore, the use of theoretically-driven hypotheses, which take a much wider psychosocial view than many previous studies have, by including early childhood experience as well as core beliefs, allow for results to be incorporated directly into current clinical and theoretical conceptualisations of adjustment to chronic pain.

4.6 Clinical Implications

An important finding of this study is that particular early maladaptive schemas were present in both the chronic pain and the type-I diabetes sample ('self-sacrifice' and 'unrelenting standards'), and that four of the five early maladaptive schema domains were found to predict adjustment in the chronic pain sample. This lends some support to the argument that, for some individuals with chronic pain, assessment of early maladaptive schemas may be beneficial. At the present time it is unknown whether appropriate adaptation of psychological treatment programmes that are already based upon cognitive-behavioural principles, to incorporate some schema-focused therapy elements would result in improved adjustment to chronic pain and, in the long-term, prevent relapse. Results from the present study suggest that this might be the case. Outcome research studies with chronic pain patients, which compared treatment programmes that incorporated schema-focused elements with those that did not would

therefore be welcome. Although it is important to note that individuals may differ greatly on which early maladaptive schemas they positively endorse, the fact that the early maladaptive schemas 'self-sacrifice' and 'unrelenting standards' had the highest mean scores among the chronic pain population indicates that these schemas may have particular relevance for the incorporation of schema-focused elements into current cognitive-behavioural treatment programmes. Addressing the importance of paying more attention to your own physical needs (with regard to the 'self-sacrifice' schema) and focusing on individuals' personal expectations and role demands (with regard to the 'unrelenting standards' schema) may therefore require particular attention in the psychological treatment of chronic pain.

A further important clinical finding of this study is that individuals with chronic pain, which is frequently viewed as a condition with a large psychological component, did not show a very dissimilar psychological profile to individuals with type-I diabetes, which has a clearly identifiable physical origin. This suggests that much of the previous literature pointing to a typical psychological profile of pain patients suffering from unexplained pain should be questioned. Within the medical profession, unexplained chronic pain is still frequently viewed as 'psychogenic', and it has been questioned whether in some cases psychological factors actually cause the pain (Gamsa, 1994a; 1994b). The present study supports the view that chronic pain patients have not had, on the whole, a more dysfunctional childhood compared with individuals with an organically explained chronic illness, and that they also do not show a stronger presence of early maladaptive schemas, hypothesised to have resulted from a dysfunctional childhood. These findings therefore provide further evidence for unexplained chronic pain not to be viewed as 'psychogenic', and that the notion of

'psychogenic' pain should be further questioned and its usefulness considered by the medical profession.

Gamsa (1994b) asserts that, except where there is clear positive evidence for pain of psychological origin, it is much more clinically sound to describe the problem as 'pain of unknown origin', rather than 'psychogenic' pain. It is likely that an individual receiving the diagnosis of 'pain of unknown origin' will still feel frustrated and distressed by such a diagnosis. Nonetheless, it can also be proposed that the affective distress, self-doubt and annoyance the individual might experience would be far less than if he/she was told that the pain were of psychological origin, i.e. that it was not actually 'real'. Having their chronic pain validated as a chronic physical illness by the medical profession, even in the absence of medical findings, would appear to be an important factor in reducing some of the affective distress of the sufferer. Research has shown that chronic pain sufferers commonly become high users of the medical system (James and Large, 1992), possibly in search of validation of their experiences (Banks and Kerns, 1996). It is possible that this, to a large extent, is due to the invalidating experience of many chronic pain sufferers by health care professionals. Therefore, being more validating of the sufferer's pain experience may in turn reduce the rate at which sufferers use the medical system.

4.7 Future Research and Concluding Remarks

The present study provides some tentative insight into the exploration of the role of perceived quality of parenting, early maladaptive schemas, and coping efforts in adjustment to chronic pain. It offers some evidence that certain early maladaptive schemas ('self-sacrifice' and 'unrelenting standards') are more pertinent to individuals

with chronic pain, and it suggests that early maladaptive schemas may play an important role in an individual's adjustment to chronic pain. It also offers a tentative indication for the notion that unexplained chronic pain as a 'psychogenic' condition should largely be abandoned.

Given the limitations of this study, further research is required in order to clarify these results. Additional studies are needed to determine the extent to which the findings in this study may generalise to other samples of patients with various chronic pain conditions. As chronic pain samples taken from tertiary pain management clinics are generally individuals who are the most disabled and distressed by their pain, it would be useful to conduct research with individuals from other clinical populations (primary and/or secondary care). Further studies are also needed to replicate these findings with different measures of early childhood/family experience, early maladaptive schemas or core beliefs, coping strategies, and physical and psychological functioning. The expected relationship between dysfunctional childhood/familial experience, early maladaptive schemas and adjustment (viewing early maladaptive schemas as mediators), which was based on the cognitive conceptualisation of psychopathology (Young, 1994), was not established in this study. Therefore, replication of this study with a larger sample size in order to increase power would be necessary in order to further investigate this hypothesis.

Further research is needed to investigate the efficacy of psychological interventions for chronic pain. Studies investigating current treatment programmes for chronic pain sufferers, which already incorporate cognitive-behavioural elements in relation to individuals' pain-related cognitions, have shown them to be efficacious in improving

physical and psychological functioning in patients with a variety of chronic pain conditions (Morley et al., 1999; Compas et al., 1998). Unfortunately, relapse rates have been found to be high (Turk and Rudy, 1991). It would therefore be useful to examine whether the incorporation of schema-focused therapeutic components into these already established treatment programmes would help to reduce the rate of relapse among this population. Given the current emphasis on brief, empirically supported treatments, there is a need to identify the most powerful interventions and the most important targets for long-term change.

In recent years, the conceptualisation of chronic pain has shifted from a dualistic model to a multidimensional perspective, which incorporates physiological, psychological and social factors. The recent introduction of a more cognitive conceptualisation of chronic pain can be viewed as an important advance. It can be argued that early maladaptive schemas should be taken into account in the assessment and treatment of many individuals adjusting to their pain experience. Part of the chronic pain experience, no doubt, is the detrimental experience of frequently being labelled with a 'psychogenic' condition. There is clearly a need to include, and focus on, these psychological factors in order to further enrich our understanding and guide efficacious treatment of this enduring problem.

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6 APPENDICES

Appendix 1

Definitions of Early Maladaptive Schemas (McGinn and Young, 1996):

1. Abandonment
The perceived instability or unreliability of those available for support and connection. It involves the sense that significant others will not be able to continue providing emotional support, strength, or practical protection because they are unpredictable, unreliable, will die imminently or will abandon the individual in favour of someone better.
2. Mistrust/Abuse
The expectation that others will hurt, abuse, humiliate, cheat, lie, manipulate, or take advantage. This usually involves the perception that the harm is intentional or the results of unjustified and extreme negligence. It may include the sense that one always ends up being cheated relative to others.
3. Emotional Deprivation
The expectation that one's desire for a normal degree of support will not be adequately met by others. The three major forms of deprivation are:
 1. Deprivation of nurturance (absence of attention, affection, or companionship)
 2. Deprivation of empathy (absence of understanding, listening, or self-disclosure from others)
 3. Deprivation of protection (absence of strength, direction, or guidance from others)
4. Defectiveness/Shame
The feeling that one is defective, bad, unwanted, or inferior in important respects, or that one would be unlovable to significant others if exposed. It may involve hypersensitivity to criticism, rejection and blame, self-consciousness, or a sense of shame with regard to one's perceived flaws.
5. Social Isolation/Alienation
The feeling that one is isolated from the rest of the world, different from other people, and/or not part of a group.
6. Dependence/Incompetence
The belief that one is unable to handle one's everyday responsibilities in a competent manner, without considerable help from others. The individual often presents as helpless.

7. Vulnerability to Harm or Illness
The exaggerated fear that imminent catastrophe will strike at any time and that one will be unable to prevent it. Fears focus on one or more of the following:
 - (i) Medial catastrophes
 - (ii) Emotional catastrophes
 - (iii) External catastrophes

8. Enmeshment/Undeveloped Self
The excessive emotional involvement and closeness with one or more significant others (often caregivers) at the expense of full individuation or normal social development. It often involves the belief that at least one of the enmeshed individuals cannot survive without the constant support of the other. It may also include feelings of being smothered by others or insufficient individual identity.

9. Failure
The belief that one has failed, will inevitably fail, or is fundamentally inadequate in areas of achievement relative to one's peers. It often involves the belief that one is stupid, inept, untalented, less successful than others.

10. Entitlement/Grandiosity
The belief that one is superior to other people, entitled to special rights, or not bound by social rules. It often involves the insistence that one should be able to do or have whatever one wants, or an exaggerated focus on superiority, without empathy or concern for others' needs or feelings.

11. Insufficient self-control/Self-discipline
The pervasive difficulty or refusal to exercise sufficient self-control and frustration tolerance to achieve one's personal goals, or to restrain the excessive expression of one's emotions and impulses.

12. Subjugation
The excessive surrendering of control to others because one feels coerced, usually to avoid anger, retaliation, or abandonment. The two major forms of subjugation are:
 - (i) Subjugation of needs
 - (ii) Subjugation of emotions

13. Self-sacrifice
The excessive focus on voluntarily meeting the needs of others in daily situations, at the expense of one's own gratification. The most common reasons are to prevent causing pain to others, to avoid guilt from feeling selfish, or to maintain the connection with others perceived as needy. Sometimes leads to a sense that one's own needs are not being met adequately and to resentment of those who are taken care of.

14. Approval-seeking/Recognition-seeking
The excessive emphasis on gaining approval, recognition, or attention from other people, or of fitting in, at the expense of developing a secure and true sense of self. One's self-esteem is dependent primarily on the reactions of others rather than on one's own natural inclinations.
15. Negativity/Pessimism
A pervasive, life-long focus on the negative aspects of life while minimising or neglecting the positive or optimistic aspects. It usually involves an exaggerated expectation that things will eventually go wrong, or that aspects of one's life that seems to be going well will ultimately fall apart. It usually involves an excessive fear of making mistakes.
16. Emotional Inhibition
The excessive inhibition of spontaneous action, feeling, or communication, usually to avoid disapproval by others, feelings of shame, or losing control of one's impulses.
17. Unrelenting Standards/Hypercriticalness
The underlying belief that one must strive to meet very high internalised standards of behaviour and performance, usually to avoid criticism. It typically results in feelings of pressure or difficulty slowing down, and in hypercriticalness towards oneself and others. It must involve significant impairment in pleasure, relaxation, health, self-esteem, sense of accomplishment, or satisfying relationships.
18. Punitiveness
The belief that people should be harshly punished for making mistakes. It involves the tendency to be angry, intolerant, punitive, and impatient with those people (including oneself) who do not meet one's standards. Usually involves the difficulty forgiving mistakes in oneself or others.

Appendix 2

Letter granting ethical approval for the study from the Joint UCL/UCLH Committees on the Ethics of Human Research



THE NATIONAL HOSPITAL FOR NEUROLOGY AND NEUROSURGERY

Queen Square, London WC1N 3BG

Telephone: 0171 837 3611

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The NHNN and the Institute of Neurology
Joint Medical Ethics Committee
Chairman: Dr GD Schott

Please address all correspondence to:
Iwona Nowicka

Research & Development Directorate
1st Floor, Vezey Strong Wing
112 Hampstead Road, LONDON NW1 2LT
Tel. 020 7- 380 9579 Fax: 020 7-380 9937
e-mail: iwona.nowicka@uclh.org

Nicole Jamani
Sub-Department of Clinical Health Psychology
UCL
Gower Street

17-Aug-00

Dear Ms Jamani

Study ref: 00/N063 *(Please quote in all correspondence)*
Title: **The relationship of early childhood experience and early maladaptive schemas in adjustment to chronic pain or diabetes**

Thank you very much for your letter dated 27th July enclosing the amended information sheet and also Dr Hunt's CV. I confirm that the study can go ahead.

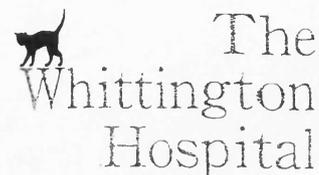
Please note that it is important that you notify the Committee of any adverse events or changes (name of investigator etc) relating to this project. You should also notify the Committee on completion of the project, or indeed if the project is abandoned. **Please remember to quote the above number in any correspondence.**

Yours sincerely

Iwona Nowicka
Administrator, UCL/UCLH/NHNN Ethics Review Committees

Appendix 3

Letter granting ethical approval for the study from the Whittington Hospital NHS Trust Ethical Practices Sub-Committee of the District Local Research Ethics Committee



Nicole Jamani
Sub-Dept. of Clinical Health Psychology
University College London
Gower Street
London
WC1E 6BT

12th December 2000

Dear Nicole

Ref: 2000/15

Title: An investigation of adjustment to chronic pain or diabetes

I refer to your submission of the above project to the Local Research and Ethics Committee. I am pleased to inform you that the above named project has been given chairman's **approval**

Approval is for two years from the date of this letter. Extension of this period will be dependent on the submission of a brief synopsis of the project together with an estimation of the time required for its ultimate completion.

The Ethics Committee will require an annual report on the progress of the study, and a copy of the completed study together with any consequent publication. In addition, the Committee must be informed, by the completion of the relevant form, of any untoward or adverse events that occur during the course of the study. The person who provided independent review of the original protocol should also be sent information regarding adverse events.

The Ethics Committee must be informed of, and approve, any proposed amendment to your initial application that has a bearing on the treatment or investigation of patients or volunteers.

A copy of the patient consent form and information sheet must be lodged in the clinical notes.

I am sure that every effort is already made to preserve the confidentiality of any patient information used in this study. Please ensure that the team of investigators are aware that everyone who has access to patient information appreciates the importance of maintaining confidentiality particularly in respect of the use of computers and the statutory regulations laid down in the Data Protection Act 1984.

In terms of the managerial and financial implications associated with the study, where these relate to additional costs for the Trust, Mr Rob Hurd (Management Accountant, Finance Department, Whittington Hospital), will be in contact with you to discuss the Trust's schedule of charges for research projects. **Approval of these issues must be obtained from your general manager before the study commences.**

In any correspondence regarding the study please quote the above Ethics Committee reference number.

Yours sincerely



PP Mr John Farrell
Chairman - Local Research and Ethics Committee

Appendix 4

Information Sheet

CONFIDENTIAL

INFORMATION SHEET

You are being invited to participate in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. The statement below explains exactly what you are being asked to do and what we hope to learn as a result of your participation. Take time to decide whether or not you wish to take part.

PLEASE READ THE FOLLOWING:

Brief title of the project

An investigation of adjustment to chronic pain or diabetes.

What is the purpose of the research study?

We are currently carrying out a study into the experience of individuals who suffer from chronic pain or diabetes and we would like to ask you to help us. It is recognised that the experience of a chronic illness such as chronic pain or diabetes is often very difficult and distressing. We would like to find out more about the factors that help individuals adjust to their chronic illness.

By conducting research in this area we hope to be able to improve our clinical service and help individuals to make the most of their individual coping strategies. In order to make these clinical improvements, we feel that it is very important to gain as much information from as many individuals as possible.

What would it involve?

Participation is entirely voluntary. If you agree to take part in this research project one of the researchers, Nicole Jamani, will meet with you. You will be asked to complete some questionnaires on one occasion which will cover a range of issues, including questions about your present and past experiences. Completing the questionnaires may take about 1 hour. In addition, we will ask a small number of people if they would agree to meet with Nicole Jamani on another occasion to discuss their experiences further. This discussion may take up to 1 hour. If you do not wish to do this, we would greatly appreciate it if you could still complete the questionnaires.

You do not have to take part in this study if you do not want to. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you may still withdraw at any time without having to give a reason. Your decision whether to take part or not will not affect your care and management in any way.

What about confidentiality?

All information gathered will be strictly confidential and will not be traced back to your hospital notes. No information about individual participants will be given to clinic staff.

If you wish to discuss the study further please contact Nicole Jamani on 0207 504 5985 at the Sub-Department of Clinical Health Psychology, University College London, 1-19 Torrington Place, London.

Thank you for reading this information sheet.

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This proposal was reviewed by the Joint UCL/UCLH Committees on the Ethics of Human Research and the Whittington Hospital NHS Trust Ethical Practices Sub-Committee of the District Local Research Ethics Committee.

Appendix 5

Consent Form

CONFIDENTIAL

PARTICIPANT CONSENT FORM

Brief title of project

An investigation of adjustment to chronic pain or diabetes.

Have you read the Participant Information Sheet? YES NO

Have you had an opportunity to ask questions and discuss this study? YES NO

Have you received satisfactory answers to the questions you have asked? YES NO

Have you received enough information about this study? YES NO

Who have you had the opportunity to speak to? -----

Do you understand that you are free to withdraw from the study:-

- At any time? YES NO
- Without giving a reason for withdrawing? YES NO
- Without it affecting your future medical care? YES NO

Do you agree to take part in this study? YES NO

Signed.....

Date.....

NAME IN BLOCK LETTERS.....

Investigator

I have spoken to the participant explaining the study and have answered his/her questions regarding it.

Signed.....

Date.....

Appendix 6

Poster Advertisement to Recruit Chronic Pain Patients

CHRONIC PAIN RESEARCH STUDY

We are asking people with chronic pain attending this clinic if they would be willing to take part in a research project. The study looks at the experience of individuals who suffer from chronic pain in order to find out more about the factors, which help these individuals adjust to their illness.

Participating in the study would involve filling in some questionnaires. This would take approximately 1 hour.

If you have recently started attending the Pain Management Clinic and think that you would like to take part in the project, please let a member of staff know.

The researcher, Nicole Jamani, will then get in touch with you to discuss the research in more detail.

Thank you for your help.

Appendix 7

Poster Advertisement to Recruit Type-I Diabetes Patients

DIABETES RESEARCH STUDY

We are asking people with insulin-dependent diabetes attending this clinic if they would be willing to take part in a research project. The study looks at the experience of individuals who suffer from insulin-dependent diabetes in order to find out more about the factors, which help these individuals adjust to their illness.

Participating in the study would involve filling in some questionnaires. This would take approximately 1 hour.

If you have recently started attending the Diabetes Clinic and think that you would like to take part in the project, please let a member of staff know.

The researcher, Nicole Jamani, will then get in touch with you to discuss the research in more detail.

Thank you for your help.

Appendix 8

Letter Sent to Diabetes Patients for Recruitment to the Study

Dear

I am currently carrying out a research project in the Whittington Hospital Diabetic Clinic which looks at the experience of individuals with insulin-dependent (type-I) diabetes in order to find out more about the factors that help individuals adjust to their diabetes. I have been given your name by the doctors and nurses from the Whittington Hospital Diabetic Clinic.

I would be extremely grateful if you would help me with my research. I have enclosed some questionnaires and would greatly appreciate it if you are able to take the time to complete them for me. Please also find enclosed an information sheet, which tells you about the research study in more detail, a consent form and a stamped-addressed envelope.

Please feel free to contact me on 0207 504 5985 to discuss any queries you may have about the study or the forms. If you are happy to take part, please complete the enclosed questionnaires and consent form and send them back in the stamped-addressed envelope as soon as possible.

Thank you very much for helping me with my research.

Yours sincerely

Nicole Jamani

Appendix 9

Demographics and Illness Information Questionnaire (Chronic Pain Sample)

Confidential

Participant Information Form

Participant No:

Gender: Male Female

Age:

Marital Status:

Single Married Cohabiting Widowed

Ethnicity:

:Black White Asian Other
Please specify

How many years/months ago were you diagnosed with chronic pain?

.....

When was the onset of your pain?

.....

Where is the site of your pain?

.....

How long have you been attending this clinic?

.....

Appendix 10

Demographics and Illness Information Questionnaire (Diabetes Sample)

Confidential

Participant Information Form

Participant No:

Gender: Male Female

Age:

Marital Status:

Single Married Cohabiting Widowed

Ethnicity:

Black White Asian Other
Please specify

How many years/months ago were you diagnosed with diabetes?

.....

When was the onset of your diabetes?

.....

Have you had any complications resulting from your diabetes?

.....

How long have you been attending this clinic?

.....