

**A CLINICAL STUDY OF PSYCHOGENIC PAIN
IN CHILDREN**

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A thesis presented for the degree
of Doctor of Philosophy

1994

LONDON UNIVERSITY.



ABSTRACT

Literature review showed that definitions of psychogenic pain were unclear and contradictory and left uncertainty about how far cases were "cryptogenic", "functional" or "psychogenic". The psychological factors that may produce pain are unknown. The specificity of psychological and social associations was therefore investigated.

A preliminary study was carried out on the case records of psychiatrically referred children and the main study in Paediatric outpatient clinics. The first study showed that many children who presented with pain also had emotional disorders. Several groups were compared: non-organic pain only, depressive disorder only, emotional disorder only, non-organic pain and depressive disorder, non-organic pain and emotional disorder. The children with non-organic pain showed different characteristics from children with depressive and emotional disorders, while the two comorbid groups showed associations with both.

The hypotheses tested in the main study were that: a) depression and other emotional disorders would be more common in children with non-organic pain than in controls; b) non-organic pain would have different characteristics than those of organic pain; c) children with non-organic pain and those with organic pain would have a different

family environment.

Groups of children with non-organic pain and organic pain did not differ in their associations with depression, anxiety, fears, or negative life events. Children with non-organic pain were more likely to have certain family problems.

Non-organic pain is a valid concept, but probably does not result directly from emotional symptoms: family interactions may be aetiologically important.

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SUMMARY

My reasons for doing a study of psychogenic pain came from years ago when I was working in a paediatric ward and outpatient clinic. Many children presented with pain but with no organic cause. Some of them had difficult relationships with their parents, teachers, siblings or peers. Other children had anxious parents, particularly mothers who also had problems with their health. The nature of these associations were unclear. Because of such observations I was interested in the different aspects of pain, such as: organic, versus psychogenic causes; the association of pain with family relationships and the co-existence of disorders such as depression and emotional symptoms with pain.

On reviewing the literature I found that the definitions of psychogenic pain were unclear and contradictory (Feldman et al. 1967; Levine et al., 1984; Nemiah, 1985; Wasserman, 1988; Geist, 1989). They were all based upon the absence of structural organic disease. They all left serious uncertainty about how far cases were

"functional" (i.e. based on organic but non-structural disease), "cryptogenic" (i.e. unknown cause) or how far they were "Psychogenic" (i.e. based on specific psychological disorders). It would help to know exactly which psychological factors may produce pain. This could lead towards a positive diagnosis of "psychogenic" pain on the basis of psychogenic factors. So far, however, there is no such knowledge and there is no mention of whether "psychogenic" pain is related to psychological problems in ICD/9, ICD10, DSM-III or DSM-III-R. For such reasons the definition of psychogenic pain should be revised and new definitions produced.

Because of the contradictory definitions of "Psychogenic" pain, specific psychosocial associations were investigated in the hope of contributing to a clearer diagnosis. Some researchers have suggested that the following factors are amongst the causes of pain: personal susceptibilities, illnesses in other family members, disturbance of intra-familial relationships and abnormal psychosocial situations. Other psychological variables that are mentioned include anxiety, preoccupation with health in parents and stressful life events.

I tried to discover from the literature whether "psychogenic " pain was a depressive symptom. The studies were inconclusive. Several authors have found evidence of an association between "psychogenic" pain and depression (Ling et al., 1970; Kashani et al., 1982; Wasserman et al., 1988; Garber et al., 1990; Larsson, 1991), but others have not (McGrath et al., 1983; Raymer et al., 1984; Walker et al., 1989; Kowal et al., 1990). Ling et al (1970) suggested that non-migraine headaches were a manifestation of depression, and Larsson (1991) argued that abdominal pain and headaches were

symptoms of depression.

The existing literature also made it clear that not all children with pain show overt depression. It is important to separate these problems for future research. It is possible that psychogenic pain in non-depressed children might have a different pathogenesis, rooted in anxious and over-close family relationships.

Several studies have suggested a link between family problems and pain (Green, 1967; Oster, 1972; Christodoulou et al., 1977; Liebman, 1978; McGrath, 1983; Hughes, 1984; McGrath et al., 1986; Larsson, 1988; Wasserman et al., 1988). However, they have not allowed for comorbidity with depression.

As a result, a preliminary study was done on systematically recorded clinical information "item sheets" and case records from the Maudsley Hospital Department of Children and Adolescent Psychiatry. The results showed that children who presented with pain also tended to show symptoms of emotional disorders including both depression and anxiety; but they were not shown by all children with non-organic pain. It was, therefore, necessary to separate children with pain and children with emotional problems and contrast groups were defined as follows: non-organic pain (without depressive disorder), depressive disorder (without pain), children with both problems (pain and depressive disorder), and psychiatrically referred controls. This left unanswered questions about non-depressive emotional disorders, and in a further analyses all cases of depressive disorder were excluded and a comparison made between the following groups: non-organic pain (without emotional disorder),

emotional disorder (without pain), children with both problems (pain and emotional disorder), and psychiatrically referred controls.

The group with non-organic pain showed characteristic features, especially: younger age group, conversion hysterical symptoms, family over-involvement, family psychosocial stress and inadequate living conditions. Children with depressive disorder showed characteristic features: older age group, female sex, normal IQ, prepubertal signs, morbid depression or sadness, situation-specific phobias, ruminations, obsession or rituals, suicidal ideas, attempts or threats, irritability, aggression or tempers, discord between the child and father, discord between patient and siblings and mental disturbance in other family members. The group with emotional disorder also showed high rates of hypochondriasis, conversion hysterical symptoms, family over-involvement and also discordant relationships with other adults. The comorbid groups (non-organic pain and depressive disorder and non-organic pain and emotional disorder) showed the characteristics both of depression and emotional disorders, and were not readily identifiable with either "pure" group. As a result the findings in the comorbid groups do not shed much light on the aetiological pathways between pain, depressive and/or emotional disorders. The main study set out to test the ideas described above and to investigate the significance of depression, emotional disorder and family factors in relation to pain.

The hypotheses tested were: a) depression will be more common in children with non-organic pain than in normal controls or children with pain caused by known organic disease; b) other emotional disorders, specifically anxiety, will be more common in

children with non-organic pain; c) children with non-organic pain and organic pain will have different family environments.

From paediatric outpatient clinics, three groups of children were selected for the study:

a) subject group - children with pain without an organic cause; b) control group A - children with pain that resulted from an organic disease; c) control group B - children who had been without pain for at least three months.

It was possible to identify a group of children with definitely non-organic pain, i.e. children in the subject group, who had experienced pain for more than a year, who had been thoroughly assessed and investigated and in whom no organic cause for the pain was found or appeared during follow-up. Such cases were uncommon but could be studied.

The issue of differential diagnosis was also addressed. Does non-organic pain have a different symptom profile from that of organic pain? The answer was that it did, but the distinction was not complete. Symptomatic distinctions were present but for the most part weak. In the group of children with non-organic pain, the pain appeared at a fixed time of day, for each child, particularly in the mornings before school, during school time, and in the evenings. In children with pain of organic cause, the pain occurred at different times of the day for the same child. Nevertheless, there was an overlap between groups; and the groups did not differ significantly in duration, frequency, intensity and onset of pain, nor in depressive symptoms, anxiety, fear, or negative life events. On the other hand, the group of children with non-organic pain

differed from the group of children without pain in their association with depression, anxiety and fears. The group of children with organic pain did not differ either from the group with psychogenic pain or from the children without pain.

Both studies showed that comorbid groups existed, those with non-organic pain and depression, and those with non-organic pain and emotional disorders. In the main study, no differences were found between the non-organic pain and organic pain groups; it therefore seemed likely that pain could be a cause of depression, anxiety and fear, rather than depression causing the pain.

Both studies showed that children with non-organic pain had families presenting with more problems than the controls (in the main study, children with organic pain and children without pain; in the preliminary study, children with other psychological problems). The main study showed that families of children with non-organic pain had a higher level of conflict and lower level of intellectual-cultural orientation than families of children without pain. These findings confirmed the suggestion from the literature review and in the clinical study done on the item sheet records. This is an important issue for further studies, which should look for psychological causes of pain inside the family. It is also important for clinicians dealing with children with pain, who may need to take a family perspective.

The literature review had suggested that family over-involvement could be a causal factor for children experiencing pain. The first study gave preliminary support to the idea. When children with non-organic pain, depressive disorder, the comorbid group, and psychiatrically referred children were compared, an association between non-

organic pain and family over-involvement was detected. However, this association was not specific to children with non-organic pain. Emotional disorder, was also strongly associated with family over-involvement. So, family over-involvement cannot be seen as an aetiological factor that is characteristic of children with non-organic pain. In the second study there was no association with high cohesion and low independence in the families of the children with non-organic pain. However, another familial characteristic appeared to be associated with children with non-organic pain: conflict within the family.

To my friend Professor Sebastião Duarte de Barros Filho who died recently. He was one of the most important paediatricians to fight for the rights of the Brazilian children to be healthy during the last 40 years. He was living far away during the time that I was doing this research but near in soul and mind. Sebastião was able to give me support and encourage me to pursue my ideals even in the difficult days of his disease.

Ao meu amigo, pediatra e renomado pesquisador das doenças infantis, Professor Sebastião Duarte de Barros Filho falecido recentemente. Sebastião sempre foi exemplo e incentivo para todos nós, que trilhamos o caminho espinhoso do ensino e da pesquisa.

ACKNOWLEDGMENT

Acknowledgements is a "little bit" of a thesis which is read by everyone, thus there is a pressure not to forget anyone. The problem is that if one has been in a place as long as I have been in this Department, one's memory is bound to fade. Therefore, before I even start I want to apologise for forgetting to thank someone...

I am indebted to my supervisor Professor Eric Taylor who led me through all the steps of my research. Without his help, optimism and encouragement this thesis would not have been possible. Thanks also to him for the necessary "gentle" pressure applied during the last year.

I am grateful to Professor Sir Michael Rutter who gave me the opportunity to develop

my study in his department. Thanks also to him for having read and criticized my proposal and Patrick Bolton who read and commented on my upgrading proposal.

From the moment that I arrived in this Department several people made my stay a very enjoyable experience. Catherine Buckley stopped her work many times to help me in dealing with those tasks which are so difficult in the very beginning. Joy Maxwell always had a kind word which lightened my day and encouraged me to continue.

Two very special young ladies (among many!), Anne-Marie Walker (Milly) and Marina Dankaerts became very good friends of mine. They were perfect company, being energetic, lively and funny even through my moody or depressive days.

Stuart Newman, my next-door neighbour, was the most "user-friendly" computer-master that anyone could hope for. He not only became a very good friend but he also changed my opinion about computers and it is thanks to him that I can now communicate with "them".

Several people read and commented on versions of chapters which benefited them and deserve special thanks. They were Anne-Marie Walker, Ellen Heptinstall, Alice Mills, Malin Lindelow and Helen Demetriou. Thanks also to Judith Elliot who helped so much to improve my English.

My thanks to Professor Richard Harrington for inviting me to his the depression team meetings. Thanks also to Hazel Fudge, Diane Bredenkamp and Christine Groothues,

Lorna Champion, the members of the staff of the department Pam Remon, Ruth Timlett, David Lucas, Susan Pawlby and my colleagues Lisa Davies, Wendy Phillips and Jane Redshaw for the support and friendship.

Special thanks to Professor Euan M. Ross and Dr. Colin Ball who allowed me to attend and approach their patients to be interviewed for the interviews in this study.

Thanks also to the members of staff of the Paediatric outpatient unit of the King's College Hospital represented by Sarah Latham, Jane Paged and Ann Reddy.

My companion, Maria Lígia who was very understanding and a great strength on a day-to-day basis. My sons, Christiano, Roberto and Marcos were very caring, making the hardship of this work an altogether easier job.

My niece Thais Martins who was sheltering me in her "Oxfordian chateau" while I was settling down. Thanks also to her being my guide in my first weeks in England.

Back to Brazil, Pedro Martins Fernandes was very helpful in handling all the bureaucratic issues of "living abroad" and without him I would certainly have failed in doing so for so long. Josimar Matta de Farias França the Head of the Psychiatric Unit of the University of Brasilia, understood my effort and also the importance of finishing this research.

Finally thanks to the CnPq for funding this research and to the University of Brasilia for allowing such a long leave. Thanks also to my friends and colleagues of the Psychiatric Unit of the University of Brasilia and the University Hospital for bearing with my absence for so long.

PART I - PSYCHOGENIC PAIN: CONCEPTS AND THEORETICAL ISSUES

CHAPTER 1.

REVIEW OF THE LITERATURE

1.1. Introduction

When I was working in paediatric wards, and outpatient clinics, many children presented recurrent abdominal pain, headaches, chest pain, or limb pains without any evidence of physical disease. Some of them also presented with difficult relationships with their parents, particularly mothers; or other family members with economic difficulties; or had family members with health problems. The cause of these associations was unclear. From these observations I felt the necessity to study the causes of pain in children who did not have organic disease and especially the extent to which pain could be caused by emotional disorders and stress in children.

Many paediatricians, psychiatrists and other researchers have studied pain (and other somatic complaints) for evidence of association with disturbance of other family members, family size, psychosocial situations and stressful life events. Other researchers have considered whether pain is associated with other psychiatric disorders, such as neurotic disorders, emotional disorders and conduct disorders.

The purpose of this introduction is to consider whether conclusions can be reached from this research, and to which main questions future research should address itself.

1.2. Concepts

1.2.1. *Pain*

The official International Association for Study of Pain (IASP) definition of pain is:

"Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.

note: Pain is always subjective. Each individual learns the application of the word through experiences related to injury in early life" (Merskey, 1979)

Pain is a sensory and emotional experience and is unique for each person. The study of pain in young children is particularly difficult, because pain is always subjective and depends on who reports it. The pain of children in their preverbal phase cannot be accessed directly by a second person; rather in this phase the communication is through nonverbal behaviour and pain is inferred. A rather different issue of communication arises when children reach the stage of articulating complaints verbally: adults tend not to give much credence to children's reports of pain, as mentioned by McGrath et al (1987). The IASP definition of pain highlights the fact that children learn during their childhood about how to communicate their pain and how to act in painful situations. A person who complains about pain even in the absence of tissue damage may have learned inappropriate communication - and this predicament may also be a ground for concern. Furthermore, the difficulty that children have in expressing pain and emotions that involve painful situations, can

impede the differentiation of organic pain and psychogenic pain. Practically, time can be lost and suffering caused by physical investigations, and frustration results in both parents and doctors if organic lesions are not found to justify the pain. It is important to remember that both diagnoses can be present together, even though in clinical medicine one is taught to seek and formulate in terms a single diagnosis.

A distinction between organic and psychogenic pain is important, but difficult to make in practice. Conceptually, the distinction is more complex than might at first appear. The idea of a "psychogenic" pain, as will be seen from the literature review, contains several elements. These include: the absence of organic disease, the presence of other symptoms of emotional disorder, and/or the presence of stressors in the psychosocial environment that could cause or intensify the experience of pain. These components of the idea of psychogenic pain are quite different, but often confused together. If it turns out empirically that they do in practice go together - if, for instance, children with no organic cause always have more psychological stress - then the concept of psychogenic pain will be better founded. However, this is an empirical question and there is no logically necessary reason that all the components should have the same meaning. The idea of psychogenic pain becomes even more complex because clinicians will in practice use other types of information to make the diagnosis. They may, for instance, recognise some patterns of pain (such as cyclical abdominal pain) that seldom turn out to have a discoverable organic basis; and then regard the child showing it as a case of psychogenic pain even if there is no other evidence for a psychological cause.

It will therefore be necessary to provide some definitions, firstly of the terms used about pain disorders, and then of the types of pain disorders that need to be distinguished.

1.2.2. *Defining pain terms*

A - Organic versus non-organic

1) - *Organic* pain is produced because tissues have been injured (e.g. rheumatic fever, juvenile rheumatoid arthritis, parasitic infestations, etc) or by changes in bodily function (e.g. esophagitis, gastritis, hepatic dysfunction, etc). 2) - *Non-organic* refers to the absence of known physical causes, either in structure or function of the body. It is necessary to refer to "known physical" causes, because it is of course very difficult to prove an absence of any parapsychical cause, especially since some physical causes may not yet have been recognized. The "causes" refer primarily to initiating factors, not to all the possible steps in pathogenesis. A fearful, anxious child might develop chronically high levels of muscle tension that in turn might result in sensations from the muscles that could be experienced as pain. This would not in itself mean that the cause had to be described as organic. Mental and physical processes are intertwined, as in the rest of human life, but this does not mean that the idea of a non-organic causation needs to be abandoned. The distinction between organic and non-organic can be subtle: thus, another anxious child might develop chronically high levels of gastric acid secretion that caused peptic ulceration and consequent pain. In this instance, the presence of tissue damage in the stomach would itself be an organic

cause of pain. Both organic and non-organic cause of pain. Both organic and non-organic factors would be involved. The question of whether any organic changes are found in particular types of pain may well need more research in the future. It could lead, for example, to a distinction between non-organic pain that is a hallucination (without any corresponding percepts) and that which is a misinterpretation of bodily sensations. But, for present purposes, the main issues is to keep the definition of organic versus non-organic in terms of the presence or absence of physical damage or dysfunction.

B - Structural versus functional

1) - *Structural pain* is an organic pain in the presence of tissue damage. This tissue damage can be caused by an agent that could be internal (e.g. kidney stone, tumour, etc) or external (e.g. infections by virus, bacteria, parasitic worms or accident - car crash, fighting, etc). The diagnosis of the pain usually is done by medical assessment and laboratory investigations and the definition requires a causal factor to have been found. It is sometimes said to be a characteristically localized pain, but there is no empirical evidence to support this, so in present knowledge its recognition is usually based on physical examination and investigation rather than any quality of the pain itself.

2) - *Functional pain* is also an organic pain, but is produced by a physiological dysfunction of the organism in the absence of a structural lesion. The pain can be attributed to a malfunction of the organism which is not completely adjusted to the

demands upon it (e.g. autonomic instability, lactose intolerance or constipation). Aspects of the environment, such as diet, can therefore make an important contribution to improving or aggravating the pain symptoms.

C - Known versus unknown or cryptogenic

1) *Known pain* is the pain that has a defined cause, which can be organic or psychogenic. 2) *Cryptogenic pain* refers to pain whose origin is still unknown after a medical investigation. It is possible that a functional physiological maladjustment or a body tissue damage is present, but evidence for it has not been found. Many cases previously regarded as psychogenic should perhaps be regarded simply as of unknown aetiology. There are two main reasons for an organic origin being undetected: a disease may be in its early stages and has not yet declared itself; or a disease may not yet be recognized by medical science.

D - Psychogenic versus non-psychogenic

1) - *Psychogenic* is a pain that is caused by psychosocial stressors. A child in a stress situation can present pain as a reaction to the stressor, or as a strategy to avoid it. The stressor might be in the wider social environment (e.g. problems in coping with school, with peers or with going outside the home) or inside the family (conflicts between parents or siblings). The pain is expected to decrease or disappear when the threatening environment is avoided.

2) - *Non-psychogenic* is the pain in which there is an absence of known psychological factors. It may in practice be even harder to be confident of the absence of psychological factors than of the absence of physical causes.

1.2.3. *Defining types of pain*

On the basis of the definitions, it is clear that more groups have to be recognised than the two traditionally distinguished ("organic" and "psychogenic"). (see figure 1).

1) - Organic pain can be structural or functional.

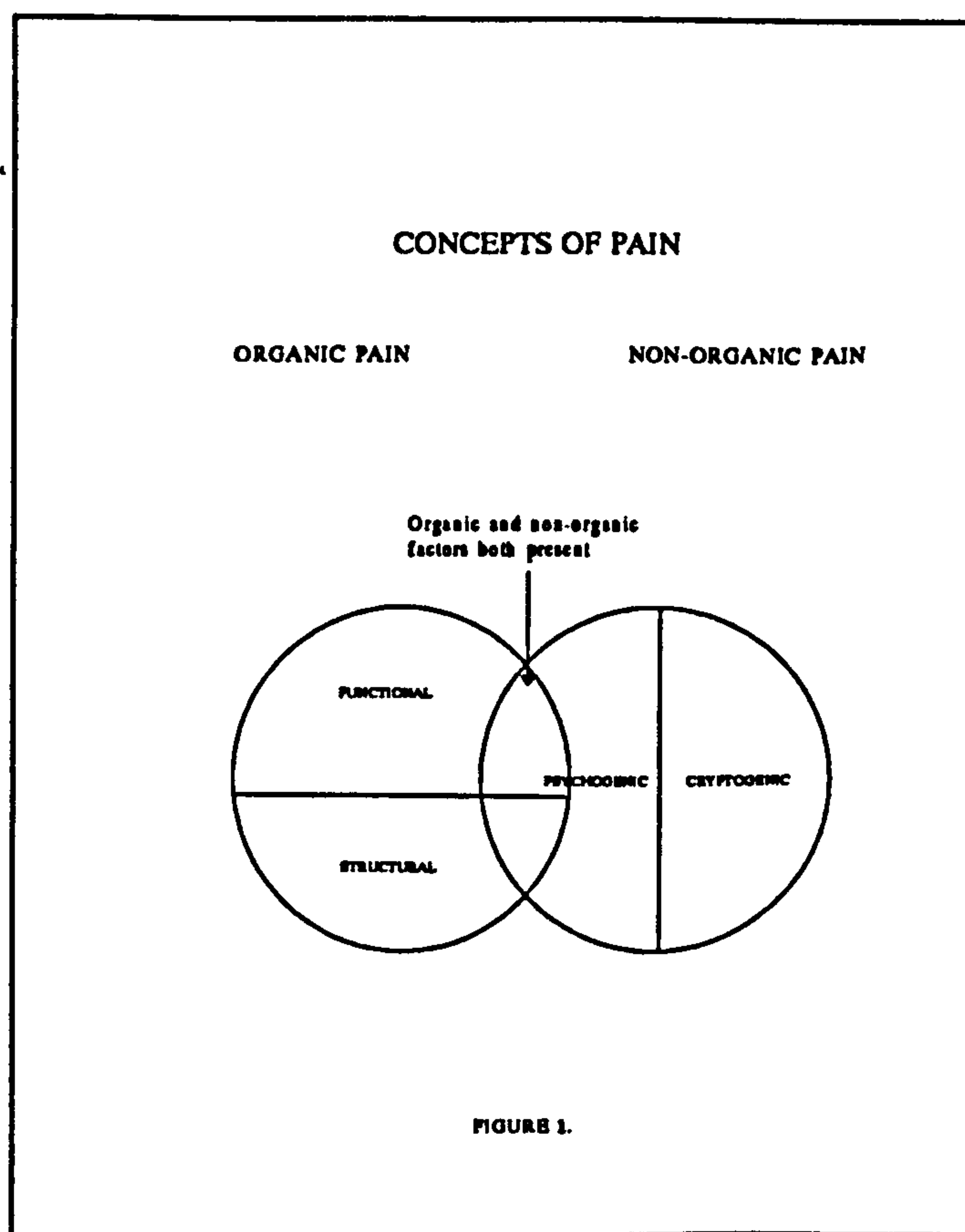
2) - There are overlapping cases where organic and non-organic factors are both present.

Organic and psychogenic pain can be involved with one another and interact to determine quality and/or intensity of pain. Psychological factors can modify the expression of, or trigger, an organic pain; and thus obscure the diagnosis of this pain. Similarly a child who presents a psychogenic pain can also have an organic disease.

The coexistence of both organic and psychological factors can occur in: a) *structural organic pain* which is based on an organic lesion but in which pain is expressed to a much greater extent than can be explained by the lesion. The exaggeration of the intensity of the pain can be attributed to the presence of the psychological factor; b) *functional organic pain* which is due to a physiological dysfunction (e.g. constipation, irritable bowel disease, etc.) that is triggered or exacerbated by psychological factors.

Both types can cause difficulties in the diagnosis and may lead to unnecessary investigations (figure 1). Ulcers due to emotional causes, ulcerative colitis, Crohn's disease associated with depression and tension headaches have all been cited as examples for pain that has both organic and psychological factors. Often, however, the actual evidence for psychological causes has been missing or flawed.

3) - Non-organic pain can either have a definable psychological cause ("psychogenic") or an unknown cause, which might as well be physical as psychological ("cryptogenic"). In this terminology, the clinical problem with which I started can be rephrased as: "Is non-organic pain psychogenic?" The attempt to answer it leads to a review of the empirical and clinical literature on a wide range of rather ill-defined conditions.



There is also a distinction to be drawn between functional pain based on physiological dysfunction and physiological disturbance associated with the experience of pain (see also p.226-229 in the discussion).

1.2.4. *Definitions of "psychogenic" pain.*

Various authors have considered that the defining quality of "psychogenic" pain is the presence of psychosocial stressors, or aspects of the pain itself, or the absence of structural disease, or the presence of psychological symptoms, or various combinations of these. It is sometimes assumed that these definitions are equivalent: this is not so. They may overlap, but they refer to rather different concepts. The extent to which different approaches to definition lead to the identification of different groups of patients is not clear.

1.2.4.1. Presence of social stressors

Asnes and Colleagues (1981), studied 123 children from the paediatric clinic of the Columbia-Presbyterian Medical Center. In 36 of them chest pain was considered to be psychogenic. In 46% of these children with psychogenic chest pain, a family member had a history of similar symptomatology or other vague somatic complaints. The authors suggested that stressful life situations and family modelling could be a cause of pain and should be part of the diagnostic process. Pantell and Goodman (1983), studied a clinical population of 100 patients with pain from the Adolescent Clinic of the Medical University of South Carolina, and found that 43% had no

specific organic problem. For those patients in whom no specific cause was identified, the pain was categorized as idiopathic. 51 out of 100 patients were afraid of cardiac problems and an additional 12% feared cancer. 31% of them reported significant negative life events within 6 months of the onset of the pain (including hospitalization of family members with severe illness, and heart attack). In the patients who presented with non-organic pain, 31% had reported significant negative life events and 26% reported events that had occurred in the last 3 months (anxiety was mentioned as a cause of gynaecomastia in male patients). The authors suggested that negative life events, anxiety, fear of being sick and family modelling (pain in members of the family) - could be the main causes of pain of unknown origin in these children. However, the uncontrolled nature of the study made it hard to know whether negative life events were necessary or sufficient for the diagnosis - or even whether the association was a real one.

Liebman (1978), in a retrospective study of 119 children (from the Division of Gastroenterology of the Department of Pediatrics, University of California, School of Medicine) with abdominal pain without apparent organic cause, between the ages of 3 1/2 to 17 years, found that 21% of the children had a previous illness. In 34% of the mothers, pregnancies had been characterized by intercurrent medical illness of more than 10 days, and by a difficult labour and delivery (breech presentation or cesarean section in 19%). He also found a positive relationship with school events in 26%, social activity in 16%, periods of excitement in 34%, punishment in 26%, and a recent change in residence or school in 9%. In addition, he found marital discord in 39% of the families and 30% of these children had perfectionism as a personality

trait. He suggested that these stresses were part of the disorder; but the study was severely limited because he did not investigate the cause of pain and there was no control group.

Nemiah (1985) said that psychogenic pain is presumably a common neurotic condition, but, nevertheless, the patients are seen more often by an internist than by a psychiatrist because of the somatic complaint. The mechanisms which are involved in the production of the pain are not clear. Pinsky (see Nemiah, 1985) found many patients with alexithymic characteristics and their descriptions suggested that emotionally stressful events were translated into somatic symptoms without the psychic elaboration in feeling and fantasy that characterizes the "neurotic mechanism" of symptom formation.

These studies pointed out the possible importance of the environment in children with abdominal pain, particularly events that occur inside the family and pain amongst family members. They left it unclear whether the association reflected an aetiological pathway, and thus whether these environmental factors should be part of the definition of psychogenic pain.

1.2.4.2. Psychosomatic disease

According to Feldman et al. (1967), the concept of "psychosomatic disease" is vague and the term is used in three different ways:

a - "True psychosomatic diseases" are those which must have a psychogenic component as a part of their cause, or they can not exist. The "true illnesses were suggested to be: duodenal ulcer, ulcerative colitis, hypertension, asthma and neurodermatitis. (This list would not be supported today!).

b - Illnesses that appear physical in origin but may be exacerbated or triggered by psychogenic factors. These would be regarded as not "truly psychogenic" illnesses but ones influenced by psychophysiological factors.

c - Illnesses whose cause and physical pathology are at present unknown.

The authors suggested seven criteria based on the indices used by psychiatrists to prove that a psychosomatic disease may exist. These criteria were: a characteristic personality disorder; an emotional precipitating factor related to the illness; general stress; basic emotional problems of long or short duration symbolically related to the illness; alteration of symptoms; characteristic patterns of illness in the life history; and efficacy of psychotherapy.

Organic pain was thought by these authors to be due to a physical pathological process that occurs during a systemic illness (e.g. infections, obstruction, injury from extrinsic agents etc); and can be identified by physical examinations and laboratory investigations and is usually localized within the body (supported by Christodoulou et al. 1977; Galler et al. 1980; Bowyer et al. 1984; Coleman, 1984; Gascon, 1984).

"Psychogenic" pain was characterized by the absence of known physical disease, with

a diffuse localization (Green, 1967; Elliot et al. 1987), and family adversity, stressful life events and/or emotional disorders can be the trigger for the onset (supported by Kashani et al. 1981, 1982; Hughes, 1984; Levine et al.1984; Hodges et al. 1984, 1985; McGrath, 1986). If there were a clear pattern of pain that predicted the absence of physical factors or the presence of psychological ones then it would be of great value in the diagnosis. However, this would require a comparison of organic and non-organic groups to determine the specificity and sensitivity of the pain pattern. This has not been done.

1.2.4.3. Absence of structural disease

The absence of evidence of physical disease an examination and investigation has often been taken as the definition of a psychogenic disorder.

In a study of 133 children aged 3 to 14 years with recurrent abdominal pain without organic disease, EEGs were recorded and compared with 133 children without abdominal pain (Apley, Lloyd and Turton, 1956). The authors did not find evidence to link epilepsy with abdominal pain in childhood and the normality of this investigation was taken to support the psychogenic origin of the symptom. Nevertheless they were not able to find any specific cause, or suggest any reason for the abdominal pain.

Driscoll et al. (1976) studied chest pain in 43 patients, between the ages of 5 and 9 years, who came to the Milwaukee Children's Hospital outpatients with a primary

complaint of chest pain. 45% of these children had "idiopathic" pain - i.e. no organic cause was found. In this study the authors tested the idea that absence of organic disease implied the presence of a psychiatric disorder, in fact, they did not find an excess of psychiatric disorders that could have initiated the pain. Those children who had chest pain with an organic etiology did not differ from children with pain of an unknown etiology. Chest pain often caused worries in the child and family but they did not find that emotional disorders were triggers for those children with idiopathic etiology. The diagnosis was based on interviews, laboratory investigations and a psychiatric clinical evaluation. In the four to eight month follow-up, in 30% of the children with idiopathic chest pain their symptoms had resolved compared to 82% of the remaining group ($p < 0.02$). The authors did not find any explanation for idiopathic chest pain and the study left considerable doubt as to whether it is related to emotional disorders. The negative conclusion might, however, have come from the insensitivity of the measures they used.

Pickering (1981), studied 17 children aged 8 to 16 years who attended either the infirmary of the John Radcliffe Hospital, Oxford, or clinics in the Oxford region, with chest pain when there was no physical evidence of a disease that would explain the pain. He found that in more than 50% of the cases, there was anxiety in either the parents or the child. The study, contradicts the negative conclusion of Driscoll et al (1976), but is flawed by the lack of satisfactory controls - it should be seen essentially as an account of one person's clinical experience. The author raised the possibility of the association of anxiety and chest pain in children and parents, but the lack of standardized measures or a control group made it no more than a clinical suggestion.

The merit of the study was that it alerted health professionals to the occurrence of chest pain in children without any physical cause.

1.2.4.4. Situations and psychological symptoms associated with pain.

Several authors (Hughes et al., 1978; Hodges et al., 1985; Selbst, 1985; Larsson, 1988, 1991; Wasserman et al., 1988; Reynolds, 1989; Walker et al., 1989, Garber et al., 1990) suggested in their studies the importance of the association of psychological symptoms with non-organic pain; Ling et al. (1970) reported that depression could be a cause of non-migraine headaches. Larsson (1991) had also referred to depression underlying somatic symptoms. Stressful situations (e.g. negative life events, disturbance of family relationships and problems in school) were considered by Asnes et al. (1981), Hodges et al. (1984), Rowland et al. (1986) and Robinson et al. (1990) to be associated with or the possible cause for children experiencing pain. All these suggestions represent the speculations of informed clinicians, not empirical data. They raise the need for evidence about whether it is actually the case that specific stressful situations are unduly common in non-organic pain. It is therefore not surprising that, in the International Classification of Disease (ICD-9/10) and in the Diagnostic and Statistical Manual of Mental Disorders (DSM-III and DSM-III-R) it is contradictory and unclear whether psychological problems should play a part in the definitions of psychogenic pain. On the one hand, depression or emotional disorder should presumably contribute to evidence for a psychogenic aetiology. On the other hand, if they are present they may well lead to an alternative psychiatric diagnosis; and in present diagnostic schemes they would therefore be an exclusionary criterion making

the diagnosis of psychogenic pain impossible. Thus psychological symptoms have a complex role in definitions, and the nature of their association with pain needs to be clarified.

1.2.4.5. Diagnostic definitions.

The ICD/9 did not have a specific code or section describing psychogenic pain.

However, in the 307.8 code - ("psychalgia") it says: "Cases in which there are pains of mental origin, e.g. headache or backache, when a more precise medical or psychiatric diagnosis cannot be made (tension headache, psychogenic backache)."

In the draft of the tenth revision of the International Classification of Disease, in the section - F45 Somatic Disorders - sub-section F45.4: Pain syndrome without specific organic cause, it says: "The predominant complaint is of persistent, severe and distressing pain, which cannot be explained fully by a physiological process or physical disorder. It often occurs in circumstances which suggest that the pain is related to conflicts or problems, or results in significantly increased support attention, either personal or medical, but is not always the case. Some patients with this disorder have undergone surgical procedures or operations (e.g. laparotomy) which have produced minor residual changes that could give rise to discomfort or short-lived pain, far less severe and persistent than the current complaints". It excludes pain due to psychophysiological mechanisms (e.g. migraine) and pain occurring during the course of depressive disorders or schizophrenia.

According to DSM-III criteria, psychogenic pain disorder is a condition characterized by the presence of severe and prolonged pain as the primary complaint. In addition, the pain pattern is not consistent with the known neuroanatomic distribution of pain receptors, no organic aetiology is detectable to explain the pain and no known pathophysiologic mechanisms can fully account for the pain. Although related organic pathology may be present, the complaint of pain is grossly out of keeping with what would be expected from the physical examination.

The DSM-III-R does not use the term psychogenic pain. The criteria for it are almost as described in DSM-III, but it is called "Somatoform Disorder" (307.80).

Stoudemire (1988) said that the symptoms of somatoform disorders are not under the patient's voluntary control. The somatoform disorders are distinguished from "psychological factors affecting physical disorders" (DSM-III-R) in that in psychophysiological conditions there is evidence of physiological mechanisms that can explain the patient's symptoms - which might, presumably, be either structural or functional.

This definition included references to psychogenic factors, the absence of known physical pathology, the effects of the environment, and a neurotic condition (in which a person under stressful life events converts or translates their feelings into somatic symptoms).

These definitions are complex and have not been validated. The draft of ICD/10 does

not have a specific item for psychogenic pain but only has somatization disorder (45.0). This suggests the influences of some psychological problems but not of conflict within the family.

The DSM-III criteria refer to psychogenic pain as a primary complaint, a complaint not associated with an organic aetiology, or exaggeration of pain from an organic pathology. There seems to be a vagueness (non-organic pain and exaggerated organic pain being expressed as the same criteria to explain psychogenic pain) in the criteria. In the DSM-III-R they abolished the term psychogenic pain; the criteria for the definition remain the same but under the name of somatoform disorder.

All the definitions are unclear, confused and controversial and do not mention whether pain is caused or related to psychological problems. Some researchers found a basis for psychological explanations, others did not. Most studies give more weight to physiological causes of pain than to possible psychological causes. It remains unclear what causes recurrent abdominal pain or other syndromes of pain in the absence of evidence of disease. In these circumstances the definition of psychogenic pain should be revised - ideally, to the point where it is diagnosed on the basis of positive rather than solely on negative evidence. Possible positive evidence would include relationship to non-organic factors - e.g. if children report pain at school time, to avoid school and the pain disappears if he/she stays at home; or they report pain during parental arguments and when the cause is removed the pain ceases. However, such evidence is not always present. Furthermore, children who are under stress and who show anxiety and somatic complaints could have psychogenic pain or organic pain or both.

Of course, a child who presents with organic pain can also present emotional disorders.

1.3. Organic versus psychogenic versus functional pain

1.3.1 *Differential diagnosis*

Green (1967), said that there were two possible diagnoses for recurrent abdominal pain: organic and psychogenic. Full assessment (interview and investigation) needs to be done to rule-out the causes of abdominal organic pain (e.g. peptic ulcer, reduplication of the bowel, malrotation, regional enteritis, polyposis, parasites, urinary tract abnormalities, cholelithiasis, chronic haemolytic anaemia amongst others). Nevertheless, when pain is psychogenic onset is more gradual than abrupt, it is generally constant and mild to moderate rather than severe or colicky. In the majority of cases, the pain is described as being poorly localized in the epigastric or periumbilical regions but in a few cases it moves from place to place and nausea, vomiting, dizziness and/or faintness accompany it or precede it. In order to make a diagnosis it is important to bear in mind any disturbance in child-parent relationships, school problems and parental preoccupation with illness. Stone and Barbero (1970), state that some of the families could be characterized by a high personal sense of "doing things right", they frequently showed anger and low tolerance in situations which did not measure up to their expectations; some families were punctuated by many illnesses, stresses and deaths.

Levine and Rappaport (1984) followed the methodology used by Barr and divided recurrent abdominal pain into three groups:

- a - organic pain: - the type of pain where discomfort is generated intra-abdominally as the result of a pathological process (among which hepatitis and giardiasis would be common in my patients in Brasilia).
- b - dysfunctional pain: - a type of pain that is also generated intra-abdominally, but results from normal physiological functions operating maladaptively as a result of intrinsic "wiring" or the effects of life-style ,e.g. lactose intolerance. (This is similar to my earlier definition of functional pain).
- c - psychogenic pain: - a type of pain that may or may not be experienced intra-abdominally but results in psychological or emotional stress. The implication of the term psychogenic pain, is that the environment or critical life setbacks cause the symptoms. Many children from divorced families, victims of child abuse and those who fail in school may develop recurrent abdominal pain. It is often said that in fact a stressful environment, preexisting somatic susceptibilities and the child's temperament in association with critical events lead to a common final pathway for pain.

Wasserman et al. (1988) agreed with the authors above and in their study a diagnosis of recurrent abdominal pain required that two of three informants (patient, parent or teacher) had to recognize that the abdominal pain was directly related to an

environmental stimulus and that no physical diagnosis was applicable. Geist (1989) defined "functional abdominal pain" as the group of abdominal pains that do not have any organic associations. This would, however, be confusing as a general definition, as it would include both my "functional" and "psychogenic" groups.

These opinions about organic pain and functional pain, particularly in abdominal pain, are concordant and they seem clear. The stressors, particularly the psychological environment and life-style are involved with psychogenic pain, although the authors try to describe individual susceptibilities and temperaments associated with stress. All of the studies emphasise the absence of physical disorders as a diagnostic criterion.

Many researchers in the area of recurrent abdominal pain, headaches, chest pain, and limb pain, have shown that many children can have various pains without an organic disease (Apley et al., 1956, 1958; Apley, 1975; Stone et al., 1970; Oster, 1972; Driscoll et al., 1976; McGrath, 1983; Pantell and Goodman, (1983). Many researchers initially tried to separate organic pain from pain with no organic base and functional pain (Apley et al., 1956; Apley, 1975; Bille, 1962; Stone et al., 1970; Oster, 1972; Asnes et al., 1981; Pickering, 1981; Pantell et al., 1983). These surveys have the great merit of highlighting these differences: pointing out that there may be both a psychological and a medical basis of pain. They suggested some indications as to how diagnoses should proceed and how children and their families should be managed. They also raise the possibility of correlations between non-organic pain and psychosocial disturbances or disturbances in the family environment.

1.3.2. *Difficulties in diagnosis and treatment*

It is difficult to define and characterize psychogenic pain, in order to diagnose it as a pain without organic cause. Several patterns of somatic dysfunctions are commonly present in the absence of known organic disease. In the past they were often classified on the basis of intrapsychic etiology as psychosomatic, hysterical, dissociative or conversion symptoms. These terms are now in disuse because they failed to make useful distinctions among symptoms on the basis of psychological mechanisms. The WHO's classification of diseases has substituted a simpler classification based upon the nature of the bodily functions that are impaired. One of these is pain and unpleasant sensations (persistent pain disorder).

To define psychogenic pain as a pain without organic cause could bring some difficulties in day-to-day clinical work. First, some children can have an underlying organic cause that is not apparent at the time of examination. Two studies showed this evidence: (a) Caplan (1970) studied 28 children diagnosed as hysteric or hysterical conversion referred to the Maudsley Hospital: 13 (46.4%) in the follow-up were found to have an organic illness explaining their symptoms; (b) 12 children who were admitted to the Neurological wards of the Hospital for Sick Children were originally diagnosed as having a psychiatric disorder (cognitive disability or behaviour and emotional disorders), but on investigation were found to have neurological disorder (Rivinus et al, 1975). Some physical symptoms are especially likely to masquerade as psychogenic, including the postural abnormalities of dystonia musculorum deformans, the amblyopia seen in cerebral and retinal degeneration, the pseudoseizures

in people who really have epilepsy as well, and recurrent abdominal pain that may appear as a result of a variety of organic causes such as parasitic intestinal, peptic ulcer or volvulus of the intestine.

The second difficulty is in the cost entailed in the investigation of pain. The doctor in charge must know how far to go because many investigations are not without risk. The family and the child expect the pain to have a physical cause and the doctor to find an organic reason for it. Excessive examination and investigation can possibly reinforce these expectations. However, there is no exemption for a psychologically disturbed child from having an organic illness and investigations are often necessary. The liaison between doctors and families is very important to establish, as well as that with other professionals (psychologists, psychiatrists and social workers).

The third difficulty is the overinclusiveness of the diagnosis of psychogenic pain if it is made only by the exclusion of organic causes. Our ignorance of an organic cause for pain may throw it into the psychologically caused group. It may be that "functional" pains due to metabolic causes or cellular malfunctions are labelled as psychogenic pain as well.

Fourth, organic pain commonly presents exacerbating psychological components that must be recognized in order to diagnose the pain's full causes. Prolonged assessment and a fair judgment of the symptoms might be necessary instead of a quick diagnosis.

Since the definition continues to be controversial, it is impossible to make estimates



of prevalence accurately. Considering the pain as psychogenic, the most common symptoms are localized diffusely in the abdomen and head. Young adolescents reported 36% with abdominal pain and 67% with headaches at least once a week in a survey done by Larsson (1991) of school children in two Swedish cities. In this survey as in others there is no means of knowing which cases are due to psychological disturbance. The associations of somatic complaints and emotional distress (83.3% in prepubertal and 71.7% in adolescents) have been mentioned by Cunningham et al. (1987), by Ryan et al. (1987), and by a study finding emotional problems in 69 to 75% of children with chronic physical disorders (Wallander et al., 1988) ; but the directions of causality are not addressed by the researchers. There is a need to study unexplained pain, applying measures that relate to psychological causes and psychological stressors, and to compare cases with other evidence of psychiatric disorder, and those where only the somatic symptom itself is the testimony to the possibility of a psychological cause. Some forms of pain symptoms can by themselves be strong evidence against a physical cause (i.e. pain which appears before the child goes to school or to avoid a stressful situation - parents arguing). Another important consideration is to know the time that the pain appears. From knowledge of what precedes the onset of pain it may be possible to infer the cause of the pain.

Special skill needs to be used in the assessment of somatic complaints when the patient and doctor come from different cultural environments. Thai parents rated their children's problems as less serious and more likely to improve than American parents (Weiz et al. 1991). They used a skilled translator to minimize cultural differences and to reduce the linguistic barriers when trying to understand the

complaints but even so, they faced profound cultural differences.

Different cultures can have different ways of approaching pain and illness or somatic complaints. Kleinman (1986) who studied "neurasthenia" in Chinese people noted that "neurasthenia" was defined as weakness or exhaustion of the nerves and was defined solely in terms of somatic symptoms; but then many similarities were found between those affected and those falling into the Western category of depression. The great majority of those with "neurasthenia" responded to antidepressant medication. Following the social and political reforms in China, somatic complaints were thought of solely in terms of an organic disease. Of course, this did not mean that the somatic complaints were unreal, nor that the Chinese patients "really" had depression rather than neurasthenia. The study shows the importance of knowing about the cultural and social development of a people in order to understand the meaning of their somatic complaints and the illnesses that they can present.

In the treatment of somatic complaints, most authorities suggest an early liaison between the physician the child and the parents, in an attempt to understand the abnormal illness behaviour that emerges in the family, by explaining and proposing solutions to the problems (Goodyer and Taylor, 1985); establishing a programme of physical rehabilitation without delay and encouraging patients to gradually reassume normal function; and involvement of a psychiatric team in assessing and dealing quickly with any important stressor that could appear at home or school (Dubowitz and Hersov, 1976). The management of recurrent abdominal pain is described as having an excellent short-term outcome by one paediatrician (Graham, 1986).

However, the follow-up studies suggest that between a third and a half of children seen in paediatric services continue to present abdominal pain in adulthood (Apley and Hale, 1973) and particularly children whose parents continue themselves to suffer abdominal pain are likely to show pain persistence (Christensen and Mortensen, 1975).

In the whole section the discussion is opened about the difficulties of diagnosis organic, functional and non-organic pain ("psychogenic"). Familial conflicts, psychosocial stress and stressful life events are suggested as the causal factors for non-organic pain. If the cause for the organic pain is not found it could be thrown into the non-organic group. Further studies must be done in order to clarify better these differences to help the diagnosis.

1.4. Prevalence of pain

Rutter et al. (1970) studied the total population (3,316) of children resident on the Isle of Wight who were born between 1st September 1952 and 31st August 1955, and screened them using behavioural questionnaires (Rutter parents' and teachers' questionnaires). They found, using the parental scale, that in boys headaches occurred in 17.5% of the psychiatric group and in 9.4% of the general population, stomach-aches occurred in 36.5% of the psychiatric group and in 31.4% of the general population. In girls, headaches occurred in 35.1% of the psychiatric group and in 10.1% of the general population, stomach-aches occurred in 62.2% of the psychiatric group and in 33.5% of the general population (this last comparison being statistically

significant). On the teachers' scales they found that in boys, 8.1% of the psychiatric group and 3.3% of the general population scored on the item that describes aches and pains. 16.3% of girls in the psychiatric population scored on this item - significantly more than the 3.4% in the general population. Aches, pain, headaches and stomach-aches showed no association with psychiatric disorders in boys but there was a significant association in girls, despite a high incidence of those items in normal children. Somatic complaints were not associated with social class and IQ but showed a significant association with family size for both sexes and were more marked in boys than in girls.

The strength of this study is that it was a study done in a population that showed the association of somatic complaints with psychiatric disorders in girls.

Apley and Naish (1958), surveyed 1,000 school children and found a high incidence of abdominal pain (10.8%), especially in girls (12.3%) compared with boys (9.2%). They also found a high incidence of abdominal pain and other complaints in the families of the affected children. There was no evidence of physical associations with pain but there was evidence of frequent emotional disturbances (children were timid, nervous, and over-conscientious).

Oster (1972), a school medical officer, in a one year period investigated recurrent abdominal pain, headaches and limb pains in 1,062 children. He found recurrent abdominal pain in 12.3% of the children (9.6% in boys and 14.8% in girls), headaches in 20.6% of the children (18.3% in boys and 22.8% in girls) and pain in

the limbs of 15.5% of the children (12.5% in boys and 18.4% in girls). Amongst children with headaches he found 38.6% of these had a known cause (26.5% had migraines) and 61.4% had an unknown cause. Christodoulou et al (1977), studied 1,233 children over almost 3 years who were admitted to the Pediatric Department of Tzaneion Hospital. They found 2.02% (25) of the children suffered from peptic ulcers.

Larsson (1991) studied a total of 602 students with an age range of 13 to 18 in two Swedish cities. He used standardized measures scoring depression (Beck's Depression Inventory) and a self reported checklist designed to assess 23 items covering various somatic complaints. 539 students returned the questionnaires (269 girls and 270 boys). This study had the following groups: school sample with 63 girls and 7 boys who suffered from recurrent tension or migraine headaches. They were recruited from the earlier surveys on headache (larsson, 1988). When the headache occurred "rarely" or never the author called it a headache-free group. He compared a control group of 70 headache-free students (63 girls and 7 boys) with a psychiatric sample of 89 patients (57 girls and 18 boys completed the task). Both groups had the same sex ratio. The other suggestion of the author was that the analyses indicates that girls in the headache-free group displayed fewer somatic symptoms than those in the school group (headache group) who had significantly lower score than those in psychiatric severe somatic symptoms than those in the headache group, which in turn had significantly higher scores than those in the headache-free group. Somatic complaints similar to abdominal pain were reported in 36% of the patients and pain in the limbs in 26%; both complaints were reported as occurring at least once a week. The most frequently reported somatic complaints by normal adolescents were general tiredness,

tiredness of the eyes, feeling chilly, sleep problems and headaches. The results were presented only for girls because of the small number of boys (10% of the headache and headache-free sample from schools and 21% of the psychiatric sample). This study was done in a population with a good study design and standardized measures, which gives confidence in the prevalence of headaches.

These studies show agreement, with a figure of nearly 10% for the incidence of recurrent abdominal pain but there are different rates for headaches of unknown causes. These discrepancies make us think about the necessity of further studies in a representative population to try to extend these findings.

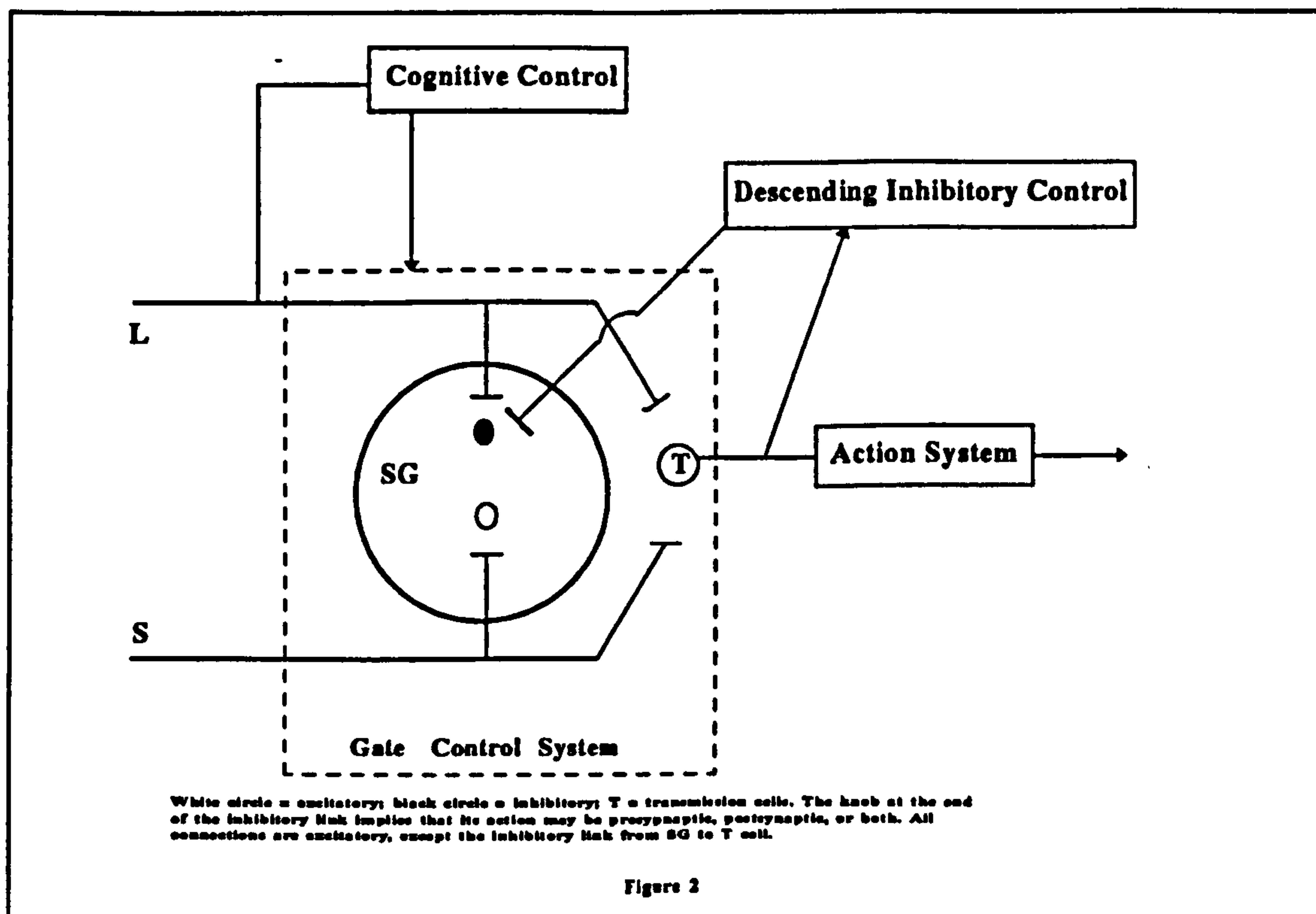
1.5. Theories and empirical findings

1.5.1. *Neurophysiology of Pain*

Melzack (1965, 1978), in his Gate Control Theory, said that pain was a highly personal and variable experience which was influenced by cultural learning, the meaning of the situation, attention and other cognitive activities. Pain is generally acknowledged as a primary signal that body tissues are being, or have been injured, yet pain may persist for years after wounds have healed and damaged nerves have regenerated. He felt that pain was not the end product of a linear sensory transmission system but a dynamic process which involved continuous interactions among complex ascending and descending systems.

Melzack (see McGrath, 1987) proposed that neural mechanisms located in the substantia gelatinosa layers of the dorsal horn of the spinal cord, act as a gate to increase or decrease the flow of nerve impulses from receptors via peripheral fibres to the central nervous system. In the diagram (figure.1) the substantia gelatinosa receives axons directly and indirectly from both large (L) diameter and small (S) diameter fibres. The dendritic cells deeper in the lamina enter into the substantia gelatinosa where they interconnect and influence each other via the Lissauer tract on the same side. The gating can be pre- and postsynaptic. Inputs from afferents signalling events are carried by large myelinated fibres which activate inhibitory interneurons that block the input from the classical nociceptors to the spinal cord transmission (T) cells.

In recent years the descending control of the gate has received particular attention because there are multiple systems that may be important in this process. These include the cognitive mechanisms such as attention, anxiety, anticipation and past experience. The brain inputs, as well as direct brain stimulation, produce descending messages transmitted by large diameter, rapidly conducting fibres (the central control trigger) that produce relative analgesia. Their transmission is in part mediated by the endorphin system. When the output of the spinal cord transmission cells exceeds a threshold, the action system is activated and pain is experienced.



The physiological dysfunction of pain is not believed to be produced by emotional distress and the complaint must appear proportionally to the level of physical insult; the insult triggers the gate-pain mechanism which results in the sensation of pain. When it is not proportional to the degree of physical insult it is less likely to be accepted as an important and genuine physiological dysfunction. The argument, however, is complicated by the probability that some physiological change is likely to appear, both in reaction to anxiety and in association with pain.

The anxiety could be the cause of the release of hormones which trigger the mechanism of pain in the physiological disturbance, of course without any physical tissue damage. So, emotional distress associated with psychosocial factors could be one of the stimuli to produce pain.

The theory also has the merit of providing a physiological explanation for the psychological factors that can influence pain. Pain is determined by the past history of the individual, by his state of mind at the moment, by the meaning of the stimulus to him, as well as by the sensory nerve pattern evoked by physical stimulation.

The over-involved families were associated with pain of mental origin. Maybe these since these children early years, they learned from their parents the advantages in experiencing pain, such as mentioned on page 241.

1.5.2. *Psychogenic Pain*

According to the neurophysiological theory of pain and the Gate-Control Theory (Melzack and Dennis, 1978), psychogenic pain can be produced by the interaction of the three psychological dimensions of pain connected with central control: a sensory-discriminative dimension, a motivational-affective dimension and a cognitive-evaluative dimension.

Psychogenic pain is thought to be related to conflicts, stressful environments, or to previous pain experiences in the past. These stimuli may be the trigger for the activation of these three psychological dimensions that interact with each other to release pain.

The cognitive-evaluative dimension may evaluate previous pain experience by weighting it to cultural values, to the amount of attention given and the amount of

anxiety experienced and may reflect the central control of the sensory-discriminative dimension and motivational-affective dimension.

The motivational-affective dimension of pain has been brought about by clinical studies of frontal lobotomy, congenital insensitivity to pain and pain asymbolia (Sternbach, 1963). Patients who have undergone a frontal lobotomy rarely complain about clinical pain or ask for medication (Freeman, Ward and Watt, 1948). They do report postoperative pain but it does not bother them. It is certain that they are still able to experience pain because they will detect a pin prick or mild burn.

People who are congenitally insensitive to pain also are able to feel pin pricks, warmth, cold and pressure. They give accurate reports of increasing intensity of stimulation but the input even at intense, noxious levels, seems never to well up into intolerable pain. The evidence suggests that as well as a reduction in the sensory properties of the input, the motivational-affective properties of the input are also absent (Sternbach, 1963).

1.5.3. Behavioural and Learning Processes in Pain

According to Fordyce (1978), a behavioural approach has two essential conceptual features:

The first is that behaviour (the observable, measurable, overt actions of the organism) has significance in its own right. It does not have a simple linkage, associated with

or inferred from internal events but it is subject to influence by a variety of factors, a major one of which is learning/conditioning effects.

The second feature in the behavioural approach is the emphasis on operationalization of measurement and observation.

1.5.4. *Behavioural and Social Analyses of Pain*

According to Skinner (1953), two classes of actions or behaviour exist: respondent and operant. Respondents are the organism's actions which occur in response to antecedent stimuli ("antecedent stimuli" refer to events preceding the occurrence of the respondent the "stimulus" and can appear in or outside the organism). A respondent can be controlled by antecedent stimuli and involves glandular or smooth muscular actions, i.e, autonomically mediated actions.

Operants are actions of the organism which involve striated or voluntary musculatures.

Operants are overt or visible/audible and therefore have an effect on, or operate on, the environment. They are capable of being elicited by antecedent stimuli and have an additional and important characteristic: sensitivity to the influence of consequences.

If they are followed by a reinforcing consequence they are more likely to occur again.

Repeated contingent reinforcement of an operant can result in that operant coming under essential control of the reinforcing consequence.

All pain behaviours are operant. The visible/audible cues given out by a patient

experiencing pain are operant and are therefore sensitive to the influence of contingent environmental reinforcement.

Non-organic pain with psychological factors may be seen as an operant that appears in response to a stimulus coming from the environment (family, school, or social), or as an exaggeration of a physical pain. The way in which a child with pain behaves may produce a response which in turn reinforces the child's action. The reinforcement may result in the child repeating a similar behaviour when an unpleasant stimulus appears again. The environment may change to adapt to the child's behaviour, so that it further reinforces the operant factor and as a result facilitates or perpetuates the behaviour.

The sociological aspects of pain are in part, implicit in the operant behaviour of the psychogenic pain because of the concept of the sick role (Mechanic, 1972). The sick role implies that to be sick is to be different. When a person is sick, he/she can avoid normal social life, and/or stressful, and/or unpleasant obligations. The unpleasant situations are the unpleasant stimuli and the reward is avoidance.

During the 1950s, the Chinese were encouraged to have an organic explanation for being sick (Kleinman, 1986). Doctors and laymen sought to report the physical problems that could be responsible for failures in work, studies or even in family, or social life. Neurasthenia was considered a weakness of nerves and depression appeared in the form of many somatic complaints. When an explanation for their symptoms is based on organic failure, people do not feel ashamed or experience guilt

as a result of failure of their normal activities and may get some attention as a reward. These aspects of pain are cultural, political and socially related and set up by a political regime.

Behaviour and social factors are not strict alternatives to other formulations, but coexist. In support of a theory of psychogenic pain, McGrath and Feldman (1986), reviewed the literature on recurrent abdominal pain and suggested that both psychogenic and physiological factors were important. Amongst the psychological factors that could be cited are:

a - Operant factors: - children express pain because they are reinforced by the environment or can be reinforced in order to gain parental attention or special privileges and the avoidance of difficult situations such as school. For example, children complain about pain to avoid school and are allowed to stay at home, then when the pain is gone they are allowed to get out of bed, play with their favourite toys, or watch television.

b - Stress factors: - stress can be a factor that leads children to experience pain, or may be a precipitant of pain: stress may cause anxiety and fear and interfere with the child's ability to cope with pain. Claims that children with recurrent abdominal pain have anxious personalities and are more prone to the effects of stress, are not well supported. Apley and Naish (1958) and Liebman (1978) using unstandardized measures, suggest in their studies that children with recurrent abdominal pain do have more anxiety. However, McGrath (1983) and Raymer et al. (1984) using standardized

measures were unable to replicate this. Faull and Nicol (1986) studying six year old children in the community, found a prevalence of 2.5% for recurrent abdominal pain, and in a six month follow-up, 96% of these children were pain free. This study suggests that when children, who are predisposed to the effects of stress and anxiety, are confronted with stressors they develop short-lived, abdominal pain. Astrada et al. (1981) studied 18 children with recurrent abdominal pain and found that 4 had a DSM-III diagnosis of separation anxiety disorder and 3 had overanxious disorder.

c. - Modelling factors: - the modelling of pain behaviour could be difficult to disentangle from constitutional predispositions. However, children who had parents currently complaining of pain were much more likely to have pain themselves. Apley and Naish (1958), Stone and Barbero (1970) and Oster (1972), suggested that in families of children who experienced pain, the roles of physiological and psychological modelling could not be distinguished from each other. Christensen and Mortensen (1975) did not find that parents who had pain when they themselves were children were more likely to have pain than controls as adults. However, they did find that children who had parents currently complaining of pain, were much more likely to have pain. Craig (1975, 1975a) suggested that the reaction to painful stimuli could be modified by modelling.

d. - Depressive factors: - depression either as a result of pain or for other reasons may hinder the ability to cope with pain. Hughes (1984) found that 23 hospitalized children who presented with recurrent abdominal pain met DSM-III criteria for depression. McGrath (1983) using standardized measures found more depression and

immaturity in children with recurrent abdominal pain, however these differences were small and non-significant. Hodges et al. (1985) found that children with recurrent abdominal pain were less depressed than behaviourally disturbed children when compared with healthy control children. Raymer et al. (1984) found that children with organic pain and recurrent abdominal pain scored higher than controls on the Children's Depression Inventory but the children with organic and non-organic pain did not differ significantly. The study suggested that depression was part of the result rather than the cause of the pain; but it was uncertain whether the "non-organic" pain was in truth undiagnosed physical pain, and thus the limitations of the measure might have led to non-significant findings.

e - Family enmeshment: - the over-involvement of parents was mentioned as a cause of the abdominal pain in the studies of Stone and Barbero (1970), Apley (1975), and Hughes and Zimin (1978). Minuchin et al. (1975) suggested that families of psychosomatically ill children are enmeshed, overprotective and rigid. No unequivocal evidence has been forthcoming - except that it is clear that many children who present with abdominal pain do *not* have enmeshed or over-involved families.

f - Somatization disorder: - some children who have recurrent abdominal pain for more than one year may develop into adults with somatization disorders. In a follow-up study of 8 to 14 year olds with recurrent abdominal pain Apley and Hale (1973), found that many untreated and treated children continued to present with the same or similar, symptoms as before. Ernst et al.(1984), studying a medical chart of 149 children with recurrent abdominal pain, found that 73% of them had more symptoms

of somatization disorders than children with organic abdominal pain.

These studies present confusing results that may incite researchers to continue to look for positive evidence for psychogenic factors in pain.

Amongst the physiological factors that have been considered are:

a - Autonomic irritability: - children with recurrent abdominal pain might be supposed to have a general autonomic imbalance. Feuerstein et al. (1982), used a cold pressure stimulus that resulted in significant autonomic, somatic, subjective and behavioural arousal. He did not find significant differences between children with recurrent abdominal pain and matched controls for physiological or behavioural measures or for children's reports about the sensations either in the stress phase or in the recovery phase.

b - Lactose intolerance: - Barr et al. (1979) described the role of lactose intolerance in children with recurrent abdominal pain and their response to a lactose-free diet. However, neither Christensen (1980) nor McGrath (1983) found any differences in lactose tolerance between children with recurrent abdominal pain and pain-free controls. It seems improbable that this cause accounts for many cases.

c - Constipation and gut motility: - constipation can cause abdominal pain but most children with recurrent abdominal pain are not constipated. Barr et al (1979a) have shown that many children are constipated without being aware of it or without

showing classic signs of constipation. This is probably because many parents do not know or notice their children's bowel habits.

1.5.5. *Psychodynamic View*

According to Pilowsky (1978), the psychodynamic view differs because it focuses on the conscious and unconscious mental life and behaviour, the model of the personality, as well as on the genetic developmental aspect of the personality, the demands of the environment and the strategies and styles of coping with them and the influences of social and cultural factors in shaping human behaviour.

Many studies were done but many of them lack any standardized measurement or statistical analysis (Furmanski, 1952; Engel, 1959; Tiling and Klein, 1966; Pederson, 1975; Driscoll et al. 1976). The studies were based on clinical observations and psychoanalytic therapies and they cannot prove whether pain was caused by guilt, loss, low frustration tolerance, or attempts to dispel the guilt they feel for experiencing "murderous wishes with aggressive acts in fantasy". All of these assumptions were based on clinical observations and not on controlled experimental studies, and as a result they may suggest the influence of the unconscious but they cannot show them. Pilowsky and Spence (1975, 1976) studied the relationship of pain with anger and illness behaviour in 100 patients with chronic intractable pain. They showed that the patients were more likely to inhibit anger than a control group and that the patients who both experienced anger and inhibited it were most likely to show hypochondriasis and affective disturbance. These studies did not show whether the anger inhibition or

experience caused pain or were the effects of pain. The psychodynamic view of pain suggests that internal conflicts are based on experiences obtained through relationships with parents, but rests on clinical observations with a lack of scientific foundation.

It is possible to infer that the mechanism of pain is based on physiological dimensions of pain in connection with a central control. The stimuli of the gate control is triggered by the following dimensions: psychological, cognitive-evaluation and motivational-affective. However, physiological and psychological factors are involved in the complex and multiple mechanism.

1.6. Associated Symptoms

1.6.1. *Pain and Depression*

It is important to study whether pain is associated with depression in order to know if it is a symptom of depression, if it can result in depression or whether depression can produce pain in those children who:

- a) Become more sensitive, adopt a bad posture for walking or sitting
- b) Eat less.
- c) Eat more producing abdominal distension.
- d) Become more "prone" to pain, become more conscious of their own health .
- e) Begin to complain of pain because the family do not pay enough attention to them.

Many researchers have examined correlations between pain and depression. In table 1 a variety of studies in this area are shown.

In a study of 25 children with headaches, Ling et al. (1970) found that 16 of them had migraine and 9 headaches (non-migraines). Amongst the patients with depression, 4 were in the group experiencing migraines and 6 were amongst those with headaches. They treated 9 patients with antidepressants. These patients consisted of all those with migraine and 5 of those with headaches. Seven patients showed a marked improvement and 2 showed a mild improvement in their headaches or migraines and depression. Some of the others were treated with anti-convulsants and the remainder with aspirin. Five of the twelve patients with migraines without depression were treated with anti-convulsants; four had marked improvement and one had a slight improvement. The sample was small and they presented no statistical analysis.

Kashani et al (1981), studied 100 children, between the ages of 7 and 12 years, who were admitted to hospital for orthopaedic procedures. They found that 23% of them were depressed and that there were significantly more adjustment or emotional problems among the depressed children.

Astrada et al. (1981), studied 22 children with recurrent abdominal pain from the Division of Child and Adolescent Psychiatry services of Georgetown University. They used the DSM-III to diagnose the children and found that 18.2% of them had separation anxiety, 18.2% of them were experiencing psychological factors that were affecting their physical condition, 13.6% of them were overanxious, 13.6% had

psychogenic pain, 13.6% had conversion, 9.1% had dysthymia and 4.5% had atypical psychosis or a factitious disorder. They did not have a control group nor did they carry out any statistical analysis.

In a study by Kashani et al (1982), correlations between complaints of chest pain with lack of evidence of physical disease and major depressive disorders were found in 4% of a sample of 100 children and adolescents with cardiovascular symptomatology. All 4 patients with chest pain and normal physical examination were found to be in the depressed group and made up 30% of the depressed group. No children with chest pains were found in the non-depressed group ($p < .0002$).

McGrath et al. (1983), studied 30 children with recurrent abdominal pain and 30 pain free controls. They did not find statistically significant differences between the two groups for ratings of depression, nor for parent or sibling ratings of depression.

Hughes (1984), studying 152 children with abdominal pain from paediatric units, found that children with abdominal pain without any physical problems had major depressive disorders. Raymer et al. (1984) studied 44 children with abdominal pain of organic origin (Crohn's disease, 13; ulcerative colitis, 20), 16 children with non-organic abdominal pain and 30 pain-free controls. They found unusually poor self-esteem in 1 in 4 of the children with Crohn's disease, 1 in 6 of the children with ulcerative colitis, and 1 in 3 of the group with non-organic pain. Unusually severe depression was noted in 1 in 8 of the Crohn's patients, 1 in 7 of the patients with ulcerative colitis and 1 in 5 patients with non-organic pain. Burke et al. (1989), in a

study of 41 children with Crohn's disease, 12 children with ulcerative colitis, and 52 children with cystic fibrosis, found that 22% of children with Crohn's disease, 21% of children with ulcerative colitis and 5.8% of those with cystic fibrosis had atypical depression. The atypical depression was significantly more common in Crohn's disease than cystic fibrosis and the difference between ulcerative colitis and cystic fibrosis approached significance.

Despite small numbers in the sample and despite the fact that Burke et al. did not have a healthy control group, they were able to compare this study with other studies of Crohn's disease and cystic fibrosis because they used the semi-structured interview Schedule for Affective Disorder and Schizophrenia for School-Age Children (K-SADS); this gives more strength to the study.

Kaplan and colleagues (1987), in a sample of children with cancer, found that these children had a significant mean level of depressive symptoms that was lower than children of the same age in the general population.

This lower depression score was accountable for by the good support given to the families by health professionals who strove to prevent anxiety and help the children to cope with stress in the inpatient unit, or during laboratory examinations.

Walker et al. (1989), studied patients with recurrent abdominal pain (RAP) from the paediatric outpatient clinics of a university medical centre. The patients were classified into two groups: RAP (n=41), consisting of patient without organic aetiology

for their pain and an organic group (n=28), consisting of patients with organic causes for their pain (eg. primary ulcers). They used several measures, as described in table.1. They found that patients with recurrent abdominal pain and organic pain had higher anxiety, depression and somatic complaints than a control group without pain but that the two groups experiencing pain did not differ from each other. Mothers of the children with recurrent abdominal pain and organic pain experienced more anxiety, depression and somatization than the mothers of the control group. Fathers' symptomatology did not differ between the groups.

The study has three very strong aspects; firstly these present two different clinical groups and a control group, secondly their use of standardised measures and finally full statistical analysis of the data. On the other hand, the unspecified criteria for the diagnosis of RAP leave it possible that anxiety, depression, etc. might have contributed to the diagnosis in the first place: or that undiagnosed physical illness was present. Their findings are in agreement with those of Hodges et al. (1984) with respect to increased anxiety in mothers but not in fathers, of children with recurrent abdominal pain.

Wasserman et al. (1988), studied 31 patients from paediatric gastroenterology clinics at LeBonheur Children's Medical Centre with recurrent abdominal pain and 31 controls from each patient's school. They used several measures (table.1) and found 31% of the children with recurrent abdominal pain also had anxiety symptoms, 9.6% had depression, 16.1% of the children with recurrent abdominal pain had anxiety, depression and adjustment disorders. This study showed no significant differences

between the patient group and the control group on several items of the Abdominal Pain Questionnaire (APQ): weight change over past year, complaints of headaches, limb pain, or chest pain, urinary tract problems, enuresis, crying spells, or temper outburst. The families of the patients reported significantly longer histories of peptic ulcers than the families of the controls. There were no significant differences between the groups on the Life Event Scale (LES) and on the Family Environment Scale (FES), although in the latter there was a trend towards there being less expressiveness in the patients' families than in the families of the controls. The RAP patients had significantly higher scores on the internalization scale, indicating that they were more likely to be inhibited, fearful and over-controlled.

This study is well designed and they used standardized measures but even so, the relationship with psychiatric symptomatology in RAP children and adolescents is not clear-cut. They did not explain why patients with psychogenic pain also had depression or anxiety or both, only that RAP in a broad sense occurs with anxiety or depression.

Garber et al. (1990), studied 59 outpatients from a university medical centre and divided them into four groups: recurrent abdominal pain (not identifiable organic aetiology, $n = 13$), organic group ($n = 11$), psychiatric controls ($n = 19$) and healthy control group ($n = 16$). They used several measures that are cited in table 1. They found a significantly higher rate of psychological disorders in both groups of children with abdominal pain than in the healthy control group, but these groups were not significantly different from the psychiatric group. Children with recurrent abdominal

pain were primarily characterized by anxiety and depressive disorders. Overall, the psychiatric group were rated as significantly more dysfunctional on the Children's Global Assessment Scale (CGAS) than were the other three groups. Both groups of children with abdominal pain were not significantly different from each other but they were significantly more disturbed than the healthy control groups. The recurrent abdominal pain and organic pain groups reported significantly more abnormal symptomatology than did the healthy group. The psychiatric group did not differ significantly from the group with recurrent abdominal pain in the number of reported abdominal pain symptoms but the psychiatric group did report significantly fewer symptoms than the organic pain group. Garber and colleagues found that both anxiety and depression were significantly associated with both organic and RAP in both groups but there were no significant differences between the two groups for depression and anxiety.

This study has the merit of being able to show the comparison between recurrent abdominal pain without any organic aetiology and abdominal pain with an organic aetiology and to compare both groups with a psychiatric control group and a healthy control group. They present a well designed study and standardized measures which allowed them to compare this study with other similar studies. Despite a lot of measures, they did not explain whether the association of psychogenic pain with depression exists or whether depression is a cause or a consequence of recurrent abdominal pain.

Kowal and Pritchard (1990), studied 23 primary school children and 23 controls,

between the ages of 9 and 12 years who suffered from headaches. They did not find a significant association in the children with headaches, or depression but these children were significantly more likely to be more shy and sensitive and have more psychosomatic problems and other behavioural disturbances than children without headaches.

Table. 1

Prevalence of depression in children with organic and non-organic pain.

Study	Sample	Method Assessment	Results
Ling et al. (1970);Amer. J.Dis.Child.	Patients with severe headaches (n = 25)	Interview	40%-depressed includes 60% non-c: migraine & 40% migraine headache.
Astrada et al. (1981);Amer. J.Psychiatr.	Patients with recurrent abdominal pain; Department of Division of Child Adolescent, Georgetown University (n=22)	DSM-III	4/22-separation anxiety; 4/22- psychological factors affecting conditions; 3/22-overanxious; 3/22-conversion; 2/22-dysthymic; 1/22 - hypochondriasis.
Kashani et al. (1981);Br.J. Psychiatr.	Orthopaedic patients (n=100)	DSM-III	23% were depressed.
Kashani et al. (1982);J.Amer. Acad.Adolesc. Psychiatr.	Cardiovascular patients (n = 100)	DSM-III	13%-depressed; 21% - normal examinations; 4/21-had chest pain were depressed.

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Table 1. (cont.)

Prevalence of depression in children with organic and non-organic pain

Study	Sample	Method Assessment	Results
McGrath et al. (1983); Arch. Dis.Child.	Children's Hospital of Eastern Ontario; 30 patients; 30 controls;	Quay-Peterson Behaviour Checklist; Posnanski- Depression Scale; Lacke-Wallace Marital Adjustment Scale.	Small non-significant differences in the direction of more depression and immaturity in the recurrent abdominal pain group.
Hughes, (1984); Amer.J. Orthopsychiatr.	Paediatric Units of Medical Center Boston (n = 162)	DSM-III	30% - with abdominal pain; 10% - abdominal pain with organic disease; 15% - abdominal pain.
Raymer et al. (1984); Lancet	Hospital for Sick Children Toronto (n = 60)	Cooper-Smith Self- Esteem Inventory (Form A); Personal Adjustment Inventory; Heisel Life Scores; The Moyal-Miezitis Children Stimulus; Appraisal Questionnaire; CDI.	Crohn's Children and those with non-organic abdominal pain scored significantly lower in self-esteem. The organic and non-organic pain children with Crohn's disease or ulcerative colitis scored higher than controls on CDI. Organic and non-organic pain groups did not differ significantly on depression scores.

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Table. 1 (cont.)

Prevalence of depression in children with organic and non-organic pain

Study	Sample	Method Assessment	Results
Wasserman et al.(1988);J. Amer.Acad. Child.Adolesc. Psychiatr.	Recurrent abdominal pain; Paediatric Gastro-enterology Clinic at LeBonheur Children's Medical Centre (n = 31)	DSM-III; Abdominal Pain Questionnaire; Family Environment Scale; Life Event Scale; CBCL; Teacher's Child Behaviour Checklist.	12/31-anxiety; 3/31 - depression; 5/31-anxiety and depression plus adjustment disorder; 6/31-psychogenic pain disorder.
Walker et al. (1989);J.Ped. Psychology	Patients with recurrent abdominal pain (RAP) from paediatric outpatient clinics, University Medical Center; organic group (n=28); Controls (n = 41)	Child Somatization Inventory; Functional Disability Inventory; Pain Intensity; State-Trait Anxiety Inventory for Children (STAIC); Children Depression Inventory (CDI); Child Behaviour Checklist (CBCL); Hopkins Symptoms Checklist.	RAP and organic group scored significantly higher than well group on the Child Somatization Inventory, Disability Inventory, Functional Inventory, CDI and STAIC, but did not differ from each other
Burker et al. (1989);J.Amer. Acad.Child. Adolesc. Psychiatr.	Patients with Crohn's disease (CD=41); ulcerative colitis (UC=12); Cystic fibrosis (CF=52)	K-SADS	CD-29% with depression; UC-21% with depression; CF-11.5% with depression.

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Table. 1 (cont.)

Prevalence of depression in children with organic and non-organic pain

Study	Sample	Method Assessment	Results
Garber et al. (1990);J.Amer. Acad.Child. Psychiatr.	Patients from several outpatients clinics of University Medical Centre; recurrent abdominal pain (n=13); organic group (n=19); healthy children (n=16).	DSM-III; K-SADS; CGAS; CBCL; CSI; HSCL; FHQ.	RAP=38% with MDD, 14% separation anxiety, 62% overanxious disorder; ORGANIC PAIN = 36.4% with MDD, 45.5% separation anxiety, 73.5% overanxious disorders; PSYCHIATRIC CONTROL = 73.7% with MDD, 15% separation anxiety, 21% overanxious disorder; HEALTHY CHILDREN = 12.5% with ADHD, 6.2% oppositional/ conduct disorder.
Kowal et al. (1990);J. Child.Psychol. Psychiatr.	23 primary school children with headaches; 23 control children.	"What I Think I Feel "Scale; The Children's Depression Scale; The Adelaide Parenting Scale; Children's Life Inventory; Family Environmental Scale; Headache Questionnaire; Headache Diary.	Non-significant difference between headache and control children with anxiety and depression.

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Table. 1 (cont.)

Prevalence of depression in children with organic and non-organic pain

Study	Sample	Method Assessment	Results
Larsson, (1991);J. Psychol. Psychiat.	13-18 year old school students (n=539); 15-18 years headache and headache-free (n=70 each group); 13-18 year old children from child Psychiatric Clinic of the University Uppsala (n=89).	BDI; Self-reported Checklist.	For all subjects the most powerful somatic symptom item and their predictors of total BDI scores; feeling chilly, headaches, tiredness ($p<.001$); abdominal pain, nausea, ($p<.01$), sleep problems ($p,.05$).15% of normal adolescent population presented headaches.

Larsson (1991), studied the prevalence and frequency of somatic symptomatology in normal Swedish adolescents, between the ages of 13 and 18. There were four groups: one school sample, one subject group made up of adolescents who suffered from recurrent tension or migraine headaches (aged 15 to 18 years); a third group was a control group made up of the same age students who were headache-free. There was also a fourth group of adolescents with acute psychiatric disorders of a non psychotic type who were admitted to the University Clinic of Child Psychiatry in Uppsala. A score of depression was calculated using the Beck's Depression Inventory; a score for somatic complaints was given on the basis of a self-reported checklist designed to assess 23 items. Larsson found that tiredness, headaches and sleep problems emerged as the most powerful indicators of depressive symptomatology for all subjects in the school sample. In addition, the association between depressive symptoms and the frequency, intensity and index of somatic complaints was significant for the headache

subjects and psychiatric sample but the association between depressive and somatic complaints was lowest for the headache subjects and strongest for those in the psychiatric sample. All the associations between the depressive and somatic symptomatology were strongest for adolescents between the ages of 13 and 18 years old. Larsson also suggested that nausea, syncope attacks, sleep problems and abdominal pain could differentiate depressed from non-depressed girls and that somatic symptoms in adolescents with no apparent organic explanation may indicate an underlying depressive disorder.

The merit of this study is the large sample and the use of statistical methods. However, he used Beck's Depression Inventory which was designed for adults, not adolescents. It has been used in adolescents but its validity is not clear. If high scores reflected a general malaise rather than a specific illness, they could have resulted from poor physical health as well as from mental disorder.

Despite the good statistical methods, the large size of samples and the standardized measures, it is interesting to note the conflicting results of the last two last studies [Kowal and Pritchard (1990) and Larsson (1991)]. The results were obtained in different countries; it is not possible to say whether different cultural behaviour could be responsible for the different sets of results or whether the methodology of rating scales was too weak to give relevant findings, or whether the age differences between the samples could be important reasons for the different results.

1.6.2. *Emotional and psychosocial disorders*

There are many contradictory studies about the association of non-organic pain with other disorders, particularly with emotional disorders, psychosocial abnormalities or disturbed families. It is important to consider these associations in order to know if other disorders are also associated with non-organic pain or could be the cause of pain and which disorders could be perpetuating the pain.

Apley and Hale (1973) followed-up a group of untreated children 8-20 years after they presented with recurrent abdominal pain and a group of treated children 10 to 14 years after they presented with recurrent abdominal pain. The treatment for the pain consisted simply of discussion and an explanation of the pain to the children and the parents, there was no medical treatment. They found that pain ceased more rapidly in the treated group than in the untreated group. In the untreated group the pain was also more likely to change into migraines, headaches and other pain. They said in the discussion that depression can occur with pain or, albeit uncommonly, may develop later in life but the most important factor that accompanies pain is anxiety.

The strength of this study is the time of the follow-up in the two different series of patients and the comparison between them. The authors suggested that pain treated not by drugs but by explanation and discussion can be useful and indicates that there may be a psychological basis for differences in improvement between these groups. The weakness of this study is the lack of statistical comparisons between the two series of patients and the lack of a control group treated by formal psychotherapy.

The authors want to call attention that the existence of recurrent abdominal pain could be due to the psychological aspects. So, they mentioned the discussion and explanation as a treatment which improved more quickly the pain on treated group than the group of untreated patients.

Hodges and colleagues (1984, 1985), compared 30 children with recurrent abdominal pain (RAP) with 67 behaviourally disordered children (BD) and 42 healthy children, on the number of life events experienced the previous 12 months. In the RAP group 30 mothers and 21 fathers participated in the study. All children had mothers living at home, while eight children had no fathers in the home. The BD children had 60 mothers and 38 fathers living with them. All mothers and 27 fathers participated in the study and all children had received a DSM-III psychiatric diagnosis. The authors excluded children with psychotic symptomatology and those with an IQ below 79. The RAP and BD groups were more anxious than the healthy group but did not differ significantly from each other. The BD group scored significantly higher than both other groups in four of the final remaining symptom complexes (overanxious disorders, depression, oppositional disorder and attention deficit with hyperactivity). The authors also found that children in the recurrent abdominal pain group and behaviourally disordered children had significantly more life events and more stressors associated with them than did healthy children.

In another study, the same groups of children were compared using measures of anxiety in children using the State-Trait Anxiety Inventory for Children and in parents using the State-Trait Anxiety Inventory for Adults. They found that children in both

the recurrent pain and behaviourally disordered groups were more anxious than the healthy group. Mothers of the RAP and BD groups showed significantly more anxiety than the mothers of healthy children and fathers of the RAP children scored significantly higher on measures of anxiety than fathers of healthy children and fathers of behaviourally disordered children.

The strength of these two studies lies in the study design and the measures. The authors used the State-Trait Anxiety Inventory for Children (STAIC), the Child assessment Schedule (CAS) for children, the State-Trait Anxiety Inventory for Adults (STAIA) and the Child Behaviour Checklist (CBCL) for adults. In the second study, all children were given the Coddington Life Events Inventory and parents were given a modified version of the Schedule of Recent Experience Survey (LES).

In a study of stomach-aches and headaches in 308 preschool children, children with recurrent stomach-aches were more likely than controls to have mothers who were emotionally depressed, who had marital problems and who perceived their own health to be poor. Other psychological stressors and demographic factors were not associated with stomach-aches. The only variable associated with headaches was maternal depression (Zuckerman, Stevenson, Bailey, 1987).

The importance of this study is based on the use of the semi-structured interviews in which the interviewers were blind to the aims of the analysis. To measure depression they used the General Health Questionnaire for mothers, marital problems were evaluated using a shortened version of an interview developed by Rutter and Brown

and behaviour problems were measured using the Behaviour Screening Questionnaire.

Larsson (1988), studying headaches in adolescent students from high school, found that the group with headaches had significantly more psychological stressors and somatic symptoms than matched headache-free controls.

The weakness of this study is the choice of the subjects, because those who met the criteria were offered treatment and were invited to participate in the study. This kind of choice can lead to bias. It is probable that they agreed to participate in the study because they had psychological problems and were willing to have a treatment.

Some authors reported that pain may be preceded by anxiety, anger or feelings of guilt (Galler, Neustein, and Walker, 1980). Some studies emphasise the importance of the family environment or stressful life events as factors associated with pain and suggest that families with parents who are overanxious, preoccupied with concern for their own health or who have somatic complaints (Hughes and Zimin, 1978) or family members with abdominal pain (Wasserman, Whittington, Rivara, 1988) and who experience adverse life events (Robinson, Alvarez and Dodge, 1990) are more likely to have children who experience recurrent abdominal pain.

In this sections there are suggestions that somatic symptoms such as abdominal pain could be an equivalent of depressive disorder. Anxiety, anger and guilt could precede the non-organic pain. Further studies could be useful to help to answer these questions.

1.7. Familial associations

A few studies looking at pain in children raise the possibility that intra-familial relationships are associated with or may be the trigger for children to experience pain.

Oster (1972), assessed 636 parents of children with recurrent abdominal pain. He divided them in two groups, 334 parents of children with pain and 302 parents of children without pain. He found that in the group of parents of children with pain, 16% were free from pain, in contrast 29% of the parents of children without pain were free from pain. He suggested from these findings that the child's environment with frequent manifestation of pain in the parents may be a precipitating factor for the development of pain in children. However, it is impossible to know whether or not there was a psychologically released reaction pattern or a constitutional low pain threshold in the family. He said that there was a possibility that the child's pain concentrates the focus in the home on a painful reaction and that the parents' own experiences of pain become intensified.

Apley and Hale (1973), studied 30 children with recurrent abdominal pain and found that 11 of them came from "painful families" (in which other family members had abdominal pain or headache). 2 came from seriously disturbed families, and their prognosis was worse than the "non-painful families". Christensen and Mortensen (1975), also found a higher incidence of abdominal pain among children of parents who were complaining of abdominal discomfort at the time of the child's investigation than among children whose parents were without such symptoms ($p < 0.005$).

However, some of this family association may arise for organic reasons. Christodoulou et al. (1977), studying 1,233 children from the Pediatric Department of Tzaneion Hospital, found that in 2.02% of children ($n=25$) with definite peptic ulcers, 60% of their relatives also had an ulcer and nearly half of these had more than one relative with an ulcer as well. They suggested that traumatic environmental events, anxiety and overprotective parents were associated with a genetic background and that the introverted and shy personalities who were perhaps too closely attached to their parents, may precede the onset of ulcer symptomatology. They compared these children with 25 healthy students and found that 11 mothers and 2 fathers were anxious and over-protective ($p<0.005$). They also found that 12 out of 15 of these children had more positive relationships with their submissive parents than did the controls ($p<0.025$).

Robinson et al. (1990) studied 40 children with recurrent, non-organic abdominal pain who had been referred to hospital and 40 children with abdominal pain from schools. They compared both of these groups with 2 control groups (40 children in each group), one from hospital and another one from school. They found a significantly higher level of separation anxiety among mothers of children with pain and no significant differences between the two groups with pain. They also found a significant lack of communication with the parents ($p<0.001$) of the group with pain who came from hospital. They also mention a higher mean level of punishment, parental hypochondriasis and parental somatic complaints in children with pain than in controls. Many factors can account for the reasons why children experience pain, they may have "painful" families as a model, a strong genetic background and negative life

events.

These studies point out that stressful life events, psychosocial familial abnormalities associated with the personalities of the children, a genetic background, dependency on parents and organic disease may all cause children to experience pain.

Edwards et al. (1985) studied "pain models" in 28% college students who had experienced some type of pain approximately 6 times during the most recent months. They found that the participants reported an average of 6 pain models (i.e. family members with pain). Females reported having experienced pain significantly more frequently than males ($p < 0.001$) but there were no significant differences in the numbers of pain models.

In these cases it can be postulated that the subjects learned about social sick roles and the benefits they could get from behaving as if they were experiencing pain and could not have internal control over it. However, the possibility of genetic components must not be forgotten. This argues that sickness behaviours can be acquired from learning and modelling with a possible genetic contribution.

Stone et al. (1970), studied 102 children with recurrent abdominal pain (which he described as irritable bowel syndrome), who were referred by community physicians after intensive outpatient management and occasional hospitalization. He found that 41% of the pregnancies were accompanied by an increase in physiological symptoms such as nausea and vomiting for a duration of more than 5 months, 20% of mothers

had a significant medical illness lasting more than a week and 31% had a complicated labour or delivery (10% required a cesarean section). In the neonatal history 19% of the patients had respiratory distress, exchange transfusion or bowel obstruction, 31% had significant colic lasting more than 3 months. In the proctoscopic examination there were no specific inflammatory lesions, thus the diagnosis of irritable bowel syndrome was given. It is interesting to notice that in this study the prenatal and natal history put a lot of stress on the parents, but the absence of a control group makes it difficult to draw any conclusion.

Minuchin et al. (1975) working with families of psychosomatically ill children, suggested that these families were enmeshed, overprotective, rigid, and unlikely to resolve conflicts and that in such families the child plays an important role in the family's pattern of conflict avoidance. Most of the children did not have pain, but the argument was intended to apply to those who did.

These suggestions were based on clinical observations without a control group, or statistical studies but had the merit of bringing to attention the influence of the intra-familial relationships in the child's disease. They did not explain whether the familial relationships were a cause or the consequence of the child's pain.

During Clinical observations of 23 inpatient children who presented with recurrent abdominal pain without organic aetiology and their parents, Hughes (1984) suggested that their mothers were anxious and protective. He did not present statistical data or have a control group but his suppositions are in agreement with those of

Christodoulou et al (1977).

In summary, several authors studied the correlation between a child's pain and the pain experienced by family members. They have presented the influences, or consequences of the intra-familial relationships on the children's pain, in an unstructured and unplanned way. For instance, the findings seem to be more accidental than expected and it still remains unclear whether the relationships are causes of or are associated with pain in children. As a result the relationship between intra-familial relationships and pain in children is one of my concerns for further studies.

1.8. Comparison with adults

A wide variety of studies on adults exist which have evidence correlating chronic pain and psychogenic pain with depression in adults, including some experimental studies (von Knorring et al., 1983; Kramlinger et al., 1983; Dworkin et al., 1986; Keefe et al., 1986; Ahles et al., 1987; Chatuverdi, 1987, 1989; Doan and Wadden, 1989; Dworkin et al., 1990), shown in table.2. While there are more studies than in children, and while they are contributory in suggesting that depression is common in adults with pain and may be part of the aetiology, one has to note that many of the same methodological problems are present - especially the failure to find appropriate control groups to allow for the testing of aetiological hypotheses.

Table. 2

Prevalence of depression in adults with organic and non-organic pain

Study	Sample	Method Assessment	Results
von Knorring, (1975); Neuropsychobiol.	Psychiatric inpatients with depressive disorders (n=40)	Cronholm-Ottonsson Depression Rating Scale.	60% of the patients were rated as significantly depressed
Pilowsky et al. (1977); Pain	Pain clinic patients (n = 100)	Levine-Pilowsky Depression Questionnaire.	10% classified as having a neurotic or psychotic depressive syndrome.
von Knorring et al.(1983); Pain	Hospitalized with depressive disorders (n = 140)	CPRS: KPS.	40% had pain, of those 19% had severe pain.
Kramlinger et al(1983); AmJ. Psychiatr.	Patients with chronic pain (n = 100)	RDC.	25% were depressed; 39% probably depressed; 36% not depressed.
Dworkin et al. (1986); Pain	Patients with chronic pain	DSM-III	18% were depressed.

(n = 454)

(continued on next page)

table.2 (cont.)

Prevalence of depression in adults with organic and non-organic pain

Study	Sample	Method Assessment	Results
Keefe et al. (1986);J. Consult.Clin. Psychol.	Patients with low back back pain (n = 207)	BDI; Behaviour Observations; Pain Measures; Activity and Medication intake; Medical status measures;	depression and physical findings were important predictors of pain and pain behaviour.
Ahles et al. (1987);Pain	Patients with primary fibromyalgia (n = 45); rheumatoid arthritis (n = 29).	Zun Self-rating	28.9%-depression from primary fibromyalgia syndrome; 31% depressed from rheumatoid arthritis. No difference between groups.
Chaturverdi (1987); Pain	Non-organic pain patients (n = 203)	DSM-III	102-depressed; 101 non- depressed.

(continued on next page)

Table. 2 (cont.)

Prevalence of depression in adult with organic and non-organic pain

Study	Sample	Method Assessment	Results
Chatuverdi (1989)Acta Psychiatr. Scand.	Psychalgic depressive disorders patient (n = 35); Psychogenic pain disorder (n=30).	DSM-III	Age,sex,educational background were studied. Depressive disorder more in older,female, married,illiterate, housewife, those with severe pain and family psychiatric history.
Doan et al. (1989); Pain	Patients with chronic pain (n = 27)	BDI	39%-mildly depressed; 27% moderately to depressed; 34% non-depressed.
Dworkin et al. (1990);Arch. Gen.Psychiatr.	Group Health Cooperative of Puget Sound (n = 1016)	DSM-III; Symptom Checklist-90- Revised (SCL).	Multiple chronic pain symptoms are associated with elevated levels of anxiety, depression, no pain symptoms/occurrence of pain at more than one bodily site was significantly associated with major depression

1.9. Methodological issues

Some researchers have used standardized measures, such as the Children's Depression Scale and the Children's Depression Inventory to rate depression. To test and rate anxiety (state and trait), the instrument most often used was the State-Trait Anxiety Inventory for Children and to test the family environment authors have mostly used the Family Environment Scale. These measures have their own norms and permit better comparisons between the groups studied and between the groups and the rates of disorder in the normal population. They also allow comparisons between other scales and measures.

Some authors have used clinical interviews and have given diagnoses based on the DSM-III. Other studies only used parent questionnaires. When children answer questions about themselves they answer differently from their parents. A child's perception of changes in his/her life may not be the same as that of the parents.

Adults see the child's problem in a different way than the child does. Parents may rate the questions less than the child does because they cannot correctly perceive their feelings or their behaviour or try to minimize the problems. It is important to use both questionnaires for parents and children to compare the answers.

Some studies have used clinically referred series using interview and/or standardized measures (McGrath et al., 1983; Wasserman et al, 1988; Walker et al., 1989; Garber et al., 1990), and Apley's classical studies (1958, 1975); or contained large samples such as those on abdominal pain, headaches and limb pain carried out by Oster (1972), Faull and Nicoll's study in (1986), Bille in (1962), or the Isle of Wight Study

(Rutter, Tizard and Whitmore, 1970). All of them found that pain or somatic complaints without organic disease were associated with psychological problems or psychiatric disorders.

Some studies of psychogenic pain and depression have shown that pain is related to depression (Ling et al., 1970; Kashani et al., 1981, 1982; Hughes, 1984), others have not found this to be a significant finding (McGrath et al., 1983; Raymer et al., 1984; Kowal et al., 1990). It is difficult to compare these studies because some of them have used only the interview and DSM-III (Ling, Kashani and Hughes), while other authors have used standardized methods (McGrath, Kowal and Raymer).

In another survey the authors (Burke et al., 1989), looked at the prevalence of depression in a group of children with organic disease. The strength of this study is the measure that was used which was the Schedule for Affective Disorder and Schizophrenia for School-Age Children (K-SADS) and also the statistical analysis. The weakness is the lack of a group of children who had pain but no organic disease or another comparison group from a different clinic. They could have done a comparison with these groups in order to see in which group depression was more apparent and in which group the association of pain with depression was more significant.

Larsson (1991) used a large sample of adolescent students and rated depression using the Beck's Depression Inventory and a self-reported checklist of somatic complaints, the results of which did not differentiate the organic and non organic group. Larsson did comment that it was possible that somatic symptoms in adolescents, with no

organic cause may indicate an underlying depressive disorder. However he did not state whether he felt that the depression was a cause or a consequence of the pain. Furthermore, it was not clear whether the somatic complaints were due to organic illness.

In some surveys, the samples were small, with lack of statistical analysis and without control groups (Ling et al., 1970; Pantel et al., 1983). Hughes (1984) did not use a control group when he studied recurrent abdominal pain without organic disease in hospitalized children and their families. This is a methodological problem, because we need a secure base rate in the population to know whether or not the association of pain and depression is significant. These studies have emphasised the aetiology of pain and its associations with stressful life events and family relationships; they have not concentrated on the association of pain with depression.

In a study done by McGrath et al. (1983), the patients were referred by family doctors and the subjects who fulfilled the criteria for the survey were offered psychological treatment and were invited to participate in the assessment. There is a substantial chance that this group was biased.

Contradictory results have been found for birth order of the children. Some authors found that birth order is an important factor in the development of psychogenic pain (Stone et al., 1970; Liebman, 1978), but recently Brown et al. (1989), did not find significant association between birth order and somatic complaints without organic disease.

1.10. Questions and Conclusions

1.10.1. *Is the definition of psychogenic pain satisfactory?*

I could not find a clear definition for psychogenic pain. The concept of psychogenic pain is sometimes mixed up with that of psychosomatic or functional pain (Coleman, 1984). It is interesting that in DSM-III-R psychogenic pain can be related to an organic pathology in as much as the intensity of an already existing pain is exaggerated, but they also acknowledge that a known aetiology is not necessary for a diagnosis of psychogenic pain. This definition is opened to different interpretations and makes for unreliable judgements about the distinction between organic and psychogenic pain.

Psychogenic pain in children has been thought of in various ways: as pain that can help children avoid difficult situations, cope with stress or receive attention from parents. This pain is not related to any organic lesion or disease, can have a diffuse localization in the body, and may disappear when the stressor is removed. The presence of stress and emotional disorder may be an important trigger for the pain. Further studies could be useful to aid the definition or conceptualisation of psychogenic pain - which of these aspects of the definition are necessary or specific?

1.10.2. *What theory of pain is more appropriate for psychogenic pain?*

"Psychogenic" pain can be produced by an interaction of the three dimensions of pain: the sensory-discriminative dimension, the motivational-affective dimension and the cognitive-evaluative dimension (Melzack et al. 1978), because it is related to previous experiences of conflict and stress in the environment.

Behavioural and learning theorists have stressed that psychological influences can act as operant factors on the child's actions and that as a result of these influences the child may experience pain. The family may then respond with another action, such as conceding privileges, or giving special attention and this in turn allows the child to avoid unpleasant situations (problems at school or arguments between parents), which in turn reinforces the pain (Mechanic, 1972).

The psychodynamic view puts the focus on psychoanalytic theory; here the unconscious interacts with the conscious to produce pain. However, this theory cannot be measured or validated using standardized instruments, despite the interesting concepts raised.

No one theory commands support. It is probable that many variables and many different circumstances are involved in the mechanisms that produce psychogenic pain and including familial, genetic background, parental anxiousness, and/or "painful" families and stressful environments. It is not possible to say which theory is better and which is not. Clinical experience argues for theories that involve the family

environment, social situations and stressful life events . All of these variables could be influencing the children who experience pain; but their role in aetiology has not been shown by controlled studies.

1.10.3. *What is the prevalence of pain?*

The prevalence of psychogenic pain varies with the type of pain reported. According to the studies of Apley et al. (1958) and Oster (1972), the prevalence of abdominal pain is 10.8% and 12.3% in the two studies respectively. The prevalence of stomach-aches in a population study (Rutter et al. 1970), was 31.4% for boys and 33.5% for girls.

As regards the prevalence of headaches in the above studies, they show a discrepancy. Oster found that 20.6% of their population experienced headaches (18.3% of the boys and 22.8% of the girls). 2/3 of these had an unknown cause. However Rutter found 9.4% of the boys experienced headaches compared with 10.2% of the girls in their population. Larsson (1991) found that 15% of normal adolescent girls experienced headaches. Issues of frequencies or duration may account for difference in the prevalence found.

The figures above show a comparable prevalence rate in the studies of Apley and Oster for abdominal pain and chest pain but both studies show a different prevalence rate for abdominal pain from the Rutter study. For the prevalence rate of headaches, the results of Oster, Larsson and Rutter are all different. These differences could be

due to the fact that Apley and Oster did not use standardized measures and their surveys were based on clinical interviews, Larsson used a self-reported check list and the Rutter study was based on parent and teacher questionnaires. .

Other differences between the studies could also be due to the age ranges of the children they studied. Oster studied school children between the ages of 6 and 19 years, Rutter studied children between 10 and 12 years old and Larsson's sample consisted of 13 to 18 year old students.

The number of the studies of non-organic pain are small and the basis for any study continues to be the reports of Apley et al. (1958), Oster (1972), Stone et al (1970 and Rutter et al. (1970).

Other differences that could be considered in these studies above are the definitions of pain. In the Oster study the abdominal pain at least had 3 consecutive years of pain or more and Apley considered 3 bouts of pain during at least 3 months. In the Larsson study, the subjects to pertain to the headache group had to have 1 year with headache at least once a week. All these differences could influence the prevalence discrepancies between these studies.

1.10.4. *What is the aetiology of psychogenic pain?*

"Psychogenic" pain is pain of an unknown cause and continues to be diagnosed by excluding organic pain. A "functional pain" can become a psychogenic pain if a

functional cause cannot be detected or vice-versa. Within those who are diagnosed as having psychogenic pain there may be some who have been misdiagnosed: a heterogeneous category that includes patients whose symptoms reflect an underlying disease or physiological dysfunction (Walker et al. 1991).

The great majority of the suggestions for the aetiology of psychogenic pain were based on the studies carried out using clinical observations. Stressful or adverse life events were mentioned by several authors (Stone et al., 1970; Hughes et al., 1978; Robinson et al., 1990). In addition, the family environment (Stone et al., 1970; Christodoulou et al., 1977; Liebman, 1978; Walker et al. 1993), school problems (Green, 1967; Liebman, 1978); traits of perfectionism in the family (Stone et al., 1970; Liebman, 1978); "painful" families (Oster, 1972; Apley et al. 1973; Christensen et al., 1975; Edwards et al., 1985) and anxious and "painful" families (Hodges et al., 1984, 1985; Zuckerman et al., 1987; Walker et al., 1989) have all been cited as possible aetiological factors in the genesis of psychogenic pain.

In contrast, Apley et al. (1956) tried to implicate epilepsy as a cause of abdominal non-organic pain but their survey was unable to support this suggestion. Faull et al. (1986), in a large sample of patients, did not find increased abdominal pain in children from families who experienced a great deal of pain.

The studies do not give an answer about the precise aetiology of psychogenic pain, although they make many suggestions. Different studies attribute the psychogenic pain to different factors which may or may not include the following; the family

environment, stressful life events, "painful" families or anxious families. The most important factors need to be clarified.

1.10.5. *Is non-organic pain associated with other psychiatric disorders?*

The authors tried to find an association between non-organic pain and other disorders caused by a known illness. Caron and Rutter (1991) said that "clinical data can be used to assess comorbidity only if the general population rates for each disorder are known and if data are available on the clinic referral rate and biases for each disorder". Several studies showed that stressful life events and anxiety were associated with non-organic pain (Larsson, 1988; Pickering, 1981; Hodges, 1984, 1985; Zuckerman, 1987) and in other studies non-organic pain was associated with somatic symptoms (Larsson, 1988), maternal depression and parents with marital problems (Zuckerman et al. 1987). These studies were carried out on clinical data and statistical analysis were not reported.

The best studies were done by Hodges et al. (1984, 1985, 1985a) and Zuckerman et al.(1987). Pickering (1981) used a small sample without a control group, and Larsson used a possible biased sample.

Pain can be associated with many emotional disorders and the tendency of the clinicians is to make only one diagnosis - as usually postulated in the practice of

medicine. However, non-organic pain or organic pain can be associated with other disorders, particularly emotional disorders. The studies so far do not allow any conclusion as to whether pain occurring in isolation is in any way different from that occurring together with other psychological disorders. Many studies must be carried out in the future to find whether non-organic pain associated with emotional disorders consists of one unique pathology.

1.10.6. *Is non-organic pain associated with depression?*

The association of psychogenic pain and depression was found in clinical studies of headaches and recurrent abdominal pain (Ling et al. 1970; Hughes, 1984), but both of these studies lack statistical methods and control groups. The value of these studies is only to raise questions about these associations.

In various studies the association of non-organic pain or organic pain with depression was positive. Some studies compared children who presented non-organic, or organic pain with healthy children and found that the differences between groups in depression were significant (Kashani et al., 1982; Raymer et al., 1984; Wasserman et al., 1988; Walker et al., 1989; Garber et al., 1990).

It is interesting to note that other authors studying non-organic pain using standardized measures did not find significant differences in depression between children who were experiencing non-organic pain and healthy children (Hodges et al., 1985a; Kowal, 1990). However, Larsson (1991) studied somatic complaints in a large sample of

adolescent students and argued that headache and abdominal pain among others could be considered an equivalent to depressive symptoms.

The contradictions in the studies above could be due to the different methods used by the researchers. The studies of Kowal and Larsson were done in headaches (Larsson also studied other complaints like abdominal pain). Kowal studied children between the ages of 9 to 12 years old and Larsson studied young people between the ages of 15 to 18 years (when depression appears more frequently). The other authors' range of ages was similar. The association of non-organic pain and depression continues to be an interesting object of study but the questions have still not been answered. Both the existence and meaning of the association are in doubt.

1.10.7. Are abnormal intra-familial relationships an aetiological factor for children who experience pain?

There are few studies concerning the association between intra-familial relationships and pain in children. Discord in child and parent relationships (Green, 1967), marital discord (Liebman, 1978), enmeshed, rigid and over-protective families with lack of conflict resolution (Minuchin, 1975) were all suggested to be aetiologic factors for children who experience pain.

These studies are impressionistic and inconclusive. We do not know whether family relationships could be an aetiological factor for children who experience pain, or if in the families whose children experience pain the relationships changed because of the

occurrence of pain. Both questions remain open. Further studies are needed, using standardized measures of suitable control group.

1.10.8. *Are abnormal psychosocial situations an aetiological factor for children who present pain?*

There are studies in abdominal pain and headaches suggesting that psychosocial environment could be an antecedent of these pains. Christodoulou et al. (1977) suggested that traumatic environments could be a precipitant of ulcer symptomatology in children who carry a genetic predisposition. In other studies the occurrence of stressful life events in children and their families seem to be important for those children who are experiencing pain (Hodges et al., 1984, Hughes et al. 1978). By contrast, Walker et al. (1993) did not find recurrent abdominal pain in children associated with stressful life events. Larsson (1988) studying headaches suggested that students who had headaches and their families, were more prone to psychosocial stress, than students who were headache-free and their families. However, Kowal et al. (1990) did not find children who had headaches to be more exposed to external stressors than the control group. In the study of Kowal, only the parents filled in the Children's Life Inventory and Family Environment Scale; they might have found different results if the children had completed both questionnaires.

This field continues to be open and could be better explored by researchers. During

my everyday work in the paediatric and child psychiatric outpatient clinic, children frequently came with a variety of psychosocial problems to have their pains investigated. Unfortunately we did not have any systematic study to indicate the importance of the environment.

Basic clinical research is therefore needed. The most pressing question is whether pain without known physical illness is the result of psychological factors and, if so, which ones: in effect, whether non-organic pain is psychogenic. Answering it would become easier if we knew the associations of non-organic pain and the extent to which they are specific to this symptom, if there were a characteristic pattern of psychological stressor or symptoms found in non-organic pain, if we knew whether emotional distress is the cause or the consequence of pain, and if it were possible to diagnose the cause of pain (physical or psychological) on the basis of the presenting pattern of symptoms. No "logitudinal studies could advance the study of causality by determining which came first, pain or emotional symptoms. These are the aims of the empirical investigations to be reported in this thesis - first of a psychiatric, and then of a paediatric population.

PART II - PRELIMINARY STUDY

CHAPTER 2.

CLINICAL STUDY IN CHILDREN WHO HAVE BEEN REFERRED TO THE MAUDSLEY HOSPITAL

2.1. Introduction

The literature review found evidence that pain without physical disease is associated with psychological morbidity and raised the possibility of the presence of stressors, in the form of abnormalities of intra-familial relationships, or in the school environment.

If these are indeed true associations, then it could be argued that such pain can validly be described as "psychogenic". However, the review also highlighted a range of further unanswered questions.

It is possible that pain without physical disease is a somatic presentation of mental distress. Unfortunately, previous work has assumed rather than tested this. There seems to be an association but its nature is not clear. My first goal was therefore to provide an empirical description of the association. Is such pain always associated with mental distress? Is the form of psychological symptomatology characteristic, or is pain a non-specific association of all forms of mental disturbance? In particular, the hypothesis that pain was specifically associated with depression, and could even

be seen as a depressive equivalent, seemed important to test. Is pain that is associated with other forms of mental distress different from non-organic pain showing no such associations? This last question is important, because it is quite possible that the theories trying to explain psychogenic pain are beside the point: given that there is a comorbidity between pain and emotional disorder (whatever the causal mechanisms), the apparent associations of pain might be an artefact of that comorbidity. The issue dealt with by studies so far may be emotional disorder rather than pain.

For these purposes a psychologically referred group has advantages. It has a high rate of psychiatric symptomatology, virtually by definition, and careful psychiatric description is feasible without the constraints on time and type of questioning that are imposed on an epidemiological sample. A psychiatrically referred group is also suitable for the further aim of describing the psychological stressors that may be present, and clarifying whether they are specific associations of pain or general associations of any psychologically deviant group. Comparison with other deviant groups is, of course, an important part of such a design.

However, pain is not a common symptom in psychiatrically referred populations. This low rate made it necessary to adopt a case record strategy, identifying cases already seen and assessed by a psychiatric service over several years. There are disadvantages, especially in that there is no experimental control over the quality of clinical information obtained. Furthermore, psychiatrically referred cases may not be at all typical of most children with pain in the absence of physical disease (the issue will be explored more fully later in the thesis; at this point it is only necessary to raise the

doubt). Accordingly, this case record survey was conceived as a preliminary study to examine the nature and the specificity of associations with psychological symptomatology and family adversity.

2.2. Aims of the study

The main purpose of this case record study is to clarify the strength and specificity of the association between non-organic pain and psychological symptoms and stressors. The specific aims are to investigate referred children with non-organic pain, with or without associated with depression and emotional disorders, in order to ask:

- 1 - Is depression more common in children with non-organic pain than in children without pain?
- 2 - Are other emotional disorders, especially anxiety, more common in children with pain than in children without pain?
- 3 - Is the association between pain and depression likely to be due to a causal relationship, with pain resulting from depression? If so, the mixed group of pain associated with depression is likely to resemble the depressive group more closely.
- 4 - Are intra-familial relationships an aetiological factor for children who

experience pain?

5 - Is non-organic pain always a symptom of emotional disorders?

2.3. Methodology

The preliminary study was based on systematically recorded clinical information ("item sheet") from the Maudsley Hospital Department for child and Adolescent Psychiatry. It included children aged 12 to 15 years of both sexes. From the item sheets the variables IQ, birth ordinal position, sexual maturity, associated abnormal psychosocial situation and abnormal intra-familial relationships were selected.

2.3.1. *Item Sheet*

The "Item" sheet is a Likert-type scale in a three-stage data record used by clinicians at the Maudsley and Bethlem Royal Hospitals' Children's Department in order to record and store key clinical data on all child and adolescent patients, providing a summary of the diagnosis, behavioural and cognitive features, familial and environmental aspects, treatment and outcome.

In the first instance, the data is collected by the clinician with day to day responsibility.

The "Item" sheets are kept in the patient's medical file and are completed in three stages: Part I, within two weeks of admission; Part II, six months after the registration, and Part III at the time of case closure. If the case is closed early (within 6 months), then part II and Part III are completed together (appendices - A.1).

Part I: - The first section contains a summary of the key clinical information. The diagnosis is based on the ICD9 (W.H.O., 1974) classification system within a multi-axial framework (Rutter et al. 1979) including psychiatric diagnosis, intellectual level, medical conditions (W.H.O., 1978), psychosocial anomalies and a record of any developmental delay.

The next section records clinical symptoms or signs that occurred twelve months prior to admission. Clinical judgments are based on the information obtained and expressed in a three-point scale: **absent = 0; dubious or minimal = 1; definitely present = 2.** This section covers the major clinical features: emotional, somatic, social relationships, speech and language, motor and conduct disturbances. The final section describes family characteristic and structure, schooling, psychiatric history, duration of psychiatric disorders and details of the referral source.

Part II: - This part records the clinical and psychological investigation (IQ and reading tests) and gives details of treatment. It also records changes in diagnosis.

Part III: - is completed when the case is closed and provides for an overall summary of treatment, frequency, outcome and mode of discharges.

Completing the Item sheets at these set intervals has in practice been combined with making written assessment and treatment summaries for each case which is then placed in the case file. This practice ensures that medical records are reviewed and summarized into a form comprehensible to all members of the clinical team and means that the database records the clinical consensus (Thorley, 1982).

The study by Goodman and Simonoff (1991) at the Maudsley Children's Department on 14 consecutive referrals, rated by trainees and senior psychiatrists, showed a reliability range of 0.61 to 0.94 in four clinically relevant dimensions of psychopathology. Rating the control cases, identified either 0 or 1, 21 of 634 rating would have misclassified cases as controls (controls 97% accurate).

2.3.1.1. The weakness of the system:

- 1) - It concentrates on symptoms, signs and clinical features, but gives few situational characteristics of the patient.
- 2) - The ratings are made by clinicians who have different skills and experiences.
- 3) - This system does not have the same strength as a full assessment procedure.

2.3.1.2. The strengths of the system:

- 1) - It is practical in that the identification and selection of cases and matched

controls is quick and easy.

- 2) - It facilitates comparisons between teams and monitors the clinics' patient profile.
- 3) - It is easy to manipulate and compare the cases selected on the hypothesis testing.
- 4) - By basing the rating on clinical signs, symptoms and features, it avoids the restriction caused by the use of diagnostic labels.
- 5) - Is systems records the absence as well as the presence of clinical problems.

2.3.1.3. Variables Considered

The variables studied were recoded as follows: IQ was considered normal if the IQ was above 70 and all grades of retardation were grouped together (IQ below 70); birth ordinal position was not modified; sexual maturity, prepubertal and any sign of sexual maturity were grouped as prepubertal and the other value considered was pubertal.

The other group of variables which were considered for the analysis were presented in table 2.3.1.3

Table 23.13.

Each column shows the list of variables for each group of disorders, symptoms or situation					
Emotional disorders and somatization disorders	Somatic symptoms	Conduct disorders	Abnormal intra-family relationships	Abnormal psychosocial situation	Family contacts psychiatric services
Morbid anxiety, worrying or panic	Eating disturbance	Disobedience or lying	Disturbance of child-mother relationships	Familial over-involvement	Parents or siblings had seen psychiatrist before or at age of 16
Morbid depression, sadness	Sleeping disturbance	Fire setting	Disturbance of child-father relationships	Inadequate or distorted intra-familial communication	Parents or siblings had seen psychiatrist after or at age of 17
Situations-specific phobias	Enuresis	Stealing	Disturbance of other adult relationships	Family psychosocial stress	
Ruminations, obsessions or rituals	Non-epileptic disturbance of consciousness	Destructiveness, malicious damage	Disturbance of patient sibling relationships	Discordant intra-familial relationships	
Suicidal ideas, attempt or threats		Truancy or staying out late	Disturbance of other children relationships	Lack of warmth in intra-familial relationships	
Irritability, screaming or temper		Running or wandering away from home		Mental disturbance in other family member	
School refusal or phobias		Sexual misbehaviour		Inadequate or inconsistent parental control	
Abnormally elevated mood		Fighting, bullying or aggression		Inadequate living conditions	
Depersonalization or derealization		Violent assault		Anomalous family situations	
Hypochondriasis		Taking drugs		Absence of any significant distortion or inadequacy of psychological environment	
Conversion hysterical symptoms		Cruelty to animals			
		Other anti-social behaviour			

2.4. Study design

The study was carried out on psychiatrically referred children:

- 1) - A simple comparison was made between children with non-organic pain and a psychiatric control group.

Subject group: were children between 12 and 15 years old, of either sex, who received a rating 2 (definitely present Pains of mental origin - (headache,

back ache, abdominal pains, nausea, leg pain) - in the Part I of the Item sheet symptoms or signs in the last year.

Control group: were psychiatrically referred children matched for age and sex with the subject group. All children with pain of mental origin were excluded.

2) - *Pain and depressive disorder.*

The next set of analyses set out to contrast children with pain (without depressive disorder), depressive disorder (without pain), children with both problems (mixed group), and psychiatrically referred controls. There are thus four groups to be compared, which can be thought of as testing the influence of two variables (pain and depression) each with two levels (absent and present). This seemed preferable to the alternative of selected pairwise comparisons of groups (such as depression only v depression plus pain) because (i) it included all the children with pain rather than a selected and possibly unrepresentative fraction, (ii) it avoided spurious findings due to multiple comparisons, and (iii) the presence of many different problems in those with pain was controlled for by the comparison with psychiatrically referred controls.

3) - *Pain and emotional disorder.*

It was necessary also to consider relationships between pain and non-depressive emotional disorder. Accordingly, a further analysis excluded all cases of depression and compared four groups: children with pain (excluding emotional disorder), emotional disorder (excluding pain), children with both problems, and psychiatrically referred children.

Definitions of groups: pain and depression analyses

- 1) - Pain group: children who were coded and rated as 2 (definitely present **Pains of mental origin** - headache, back ache, abdominal pains, nausea, leg pains) - in the Part I of the Item sheet symptoms or signs in the last year were selected. Children who also met the criteria (below) for depressive disorder were excluded.
- 2) - Depressive disorder group: it was defined according to the Pearce criteria (Pearce, 1974). Children who were rated as 2 (definitely present **Morbid depression, sadness, unhappiness plus two of the following: Suicidal attempt or threat, Altered perception: hallucinations, ideas or reference or morbid persecutory ideas, Disturbance of sleep, Disturbance of eating, Ruminations, obsession, or compulsion, Morbid irritability, Hypochondriasis and School refusal**) - in Part I of the Item sheet symptoms or signs in the last year were selected; and all children with pain were excluded.
- 3) - Mixed group: children who were coded and rated as 2 (definitely present **pains of mental origin**) in Part I on the Item sheet symptoms or signs in the last year, plus depressive disorder (as defined above), were selected .
- 4) - Psychiatric control group: all children who were coded and rated as 0 (no present) or 1 (dubious or minimal) **pains of mental origin** and did not show

depressive disorder) - in Part I on the Item sheet symptoms or signs in the last year were selected.

Definition of groups: pain and non-depressive emotional disorder analyses

All cases of depressive disorder were excluded.

1) - **Pain group**: children who were coded and rated as 2 (**definitely present Pains of mental origin** - headache, back ache, abdominal pains, nausea, leg pains) - in the Part I of the Item sheet symptoms or signs in the last year were selected. Children who presented emotional disorder were excluded.

2) - **Emotional disorder group**: a children who were rated as 2 (**definitely present**) an any two of the following symptoms in the previous years: **Morbid anxiety worrying or panic, Situation-specific phobias, Abnormally elevated mood (including hypomania) or depersonalization and derealization**). All cases with pain were excluded.

3) - **Mixed group**: children who were coded and rated as 2 (**definitely present pains of mental origin**) in Part I of the Item sheet symptoms or signs in the last year, plus emotional disorder, were selected .

4) - **Psychiatric control group**: all children who were coded and rated as 0 (**no present**) or 1 (**dubious or minimal**) **pains of mental origin** and all cases with

emotional disorder were excluded) - in Part I of the Item sheet symptoms of signs in the last year were selected.

2.5. Analysis of the sample

The comparison of pains of mental origin with the psychiatric control group was done on the variables mentioned in the table 2.3.1.3 (page 109) plus age, sex, IQ, sexual maturity, birth ordinal position and family contact with psychiatric services. The analyses were done by chi-square, with Yates correction for 2x2 contingency tables with a significance level of 5%. If the number of subjects in a cell was less than 5, Fisher's Test was done and the significant level considered was the same (Everitt, 1977).

Chi-square analyses with 3 degrees of freedom were used to test the hypotheses that there were no differences between groups in the 4 - group compositions.

Logistic regression analyses were then used to describe the main effects of (a) pain and (b) depressive disorder as predicting the various other psychological symptoms and the family factors as dependent variables; and the interaction between pain and depressive disorder. Thereafter, for the cases who did not show depressive disorder, similar analyses were done with pain and emotional disorder as predictor variables and the interaction between pain and emotional disorder. The significant values were considered at .05 level ($z > 1.96$) as the minimum level, and other values of

significance as $p < .001$ ($z > 3.2$) were considered as well.

2.6. Case notes - vignettes

The case notes show the association of pain with emotional disorders in referral children and exemplified the cases which were used in the preliminary study.

Case 1. - S.A., is a 14 years old girl, referred by GP because of school refusal. The main complaint was fear of going to school because of possible assault. She also complains of headaches and stomach pains.

She was "mugged" 8 months before outside school by a gang of seven children (2 boys and 5 girls). After that day her mother took her to school and collected her again for 2 days. Since then, she has been in 3 schools but remains unhappy because of her concern of taunting from other children and poor relationships with them. She described anxiety symptoms of breathlessness and dizziness and paraesthesia which are not situationally related.

Case 2. - R., 13 years old boy. This boy was experiencing a depressive reaction following the death of his older brother due to "zof" sniffing 2 years previously. He is a member of a family in which there was little overt expression of feelings. He felt an enormous feeling of grief and guilt that were

never adequately dealt with. He was also experiencing headaches which may have been a means to avoid school. In this context of emotional deprivation and loss R's adolescent rebelliousness is now manifesting itself.

Case 3. - P.S., 12 year old boy, presenting as the main complaint school refusal and abdominal pain. The history of the main complaint was: he is a "sickly child since he was born". At 2 he developed bronchial asthma and suffered approximately one attack per month. He lost many weeks of primary school because of the asthma. In secondary school he settled well but missed half of the first term because of illness. In the last 3 months he developed abdominal pain after the asthma attacks. This pain is alleviated slightly when he is able to concentrate on something that he enjoys doing. He did not present abnormalities in the physical examination and the paediatric full assessment did not show any evident explanation for P.S.' physical complaints.

Case 4 - J.C., 14 year old girl who presents as the main complaint school refusal and extreme tearfulness when actually taken to school. In the main history she said that she was teased about being overweight in school and did not want to go to P.E.. She had arguments with some girls on the way to school and returned home in tears. She was let off games and P.E. until she had more confidence in herself. Matters improved and she was able to go to school for 4 months. Four weeks ago she was teased by some girls at school and then began to cry and became extremely sick, vomiting profusely with headaches particularly on the days when she had games and P.E..

Case 5. - D.A., 14 years old boy presented as the main complaint stomach pains.

Since he fell off a roof onto some railings he has complained of pains due to the fall although no signs of injury were found. On the first day back at school after half term he woke up in the morning with stomach pains. On another occasion he had to be collected from school because of stomach pains and on the morning of his assessment D. woken up with pains as well. His father believed that the pain was caused by stress. He had a lot of trouble in school. He had hated being transferred from infant to junior school and on the first day had walked out and the whole class had accompanied him home. At 11 he was transferred to another school and he hated the change. He fights a lot and is constantly punished in school.

Comorbidity of Pain and Emotional Disorders

In the first case (S.A) presented, fear was associated with school refusal. This teenage girl was frightened to go to school because of the aggressiveness of the other children, and had headaches and stomach pains. The pain could be the physical expression of her anxiety and fears and her consequent school refusal. The second case (R.A.), concerned a teenager boy, who presented pain to avoid school. Living in a family with lack of expressiveness, it was difficult for him to cope with the feelings of loss and guilt after his brother's death. Therefore, he was experiencing pain associated with fear and depressive symptoms.

The third case (P.S.) showed abdominal pain also associated with school refusal. This

boy had had a long history of illness (sickly since he was born) and asthma was a chronic and important substratum of his physical manifestation. From asthma (a physical expression) he transferred to abdominal pain as a means of continuing his role of sick boy in order to manipulate his family and avoid school.

The other two cases (J.C., D.A.), presented pain to avoid an unpleasant and stressful situation at school. J.C.'s stressful situation was associated with aggressiveness of schoolmates, and D.A. had a lot of trouble and fights. It is likely that they could not handle the aggressiveness and the change to a new school and experiencing pain allowed them to stay at home. D.A. had a previous experience in an accident and presented the pain in the same body area that "could justify" the pain in the back.

The comorbidity of pain and emotional disorders is clear in all the cases above. They all had a frightening environment outside the home. These children benefitted from having pain: first of all, they changed anxiety for pain; secondly, they avoided a stressful environment; thirdly, they were getting attention from their parents.

Parents who do not give enough attention to demanding children or who become anxious when the child presents a problem or illness, often reinforce the sick role in the child's behaviour. Physicians may also reinforce the problem by initiating unnecessary investigations and labelling the children with a medical diagnosis.

Validity of the Item Sheet to Identify Pain

Out of 25 randomly sampled case notes of children with psychogenic pain, I found in 9 (36%) a diagnosis of school refusal, in 6 (24%) depression and in 4 (16%) conduct disorder. In one case of depression, pain was not mentioned in the interview or in the item sheet (probably a typing mistake during data entry) and in 12 % of the 24 remaining cases of pain (one conduct disorder, one depression and one anxiety and adjustment reaction depression) the pain complaint was not mentioned in the interview but was coded on the item sheet.

I also took 12 randomly sampled cases of emotional disorders and read the case notes with particular reference to the association with psychogenic pain. All cases presented emotional disorders without pain.

These data show the validity of systemically recorded clinical information from the item sheets. They help researchers to obtain information about patients' diagnoses that could be helpful for research.

Family Environment

Case 6. - A.A., a 15 years old boy, with a 2 year history of headaches and abdominal pains interfering with school attendance and culminating in the inability to go to school for 1 month. The problem started at the age of 11 years when the family moved, and A.A., started grammar school. He presented many different tics. At the age of 12 he also had temper outbursts and some enuresis. At the age of 13, he developed abdominal pain and one year later

headaches when he was asked to go to a cousin's wedding. He went to see a paediatrician for his abdominal pain and his headaches and the results of the examination were negative. His family had put A in the sick role and felt unable to make any demands on him. His mother said "how can I encourage a sick person to get up and go to school".

Case 7. - A.F., a 12 year old girl who presented one year of intermittent episode of poor appetite, listlessness, temper tantrums, abdominal pains and more recently vomiting apparently related to telephone calls from A's separated father. History of main complaints: the father left the family suddenly to live with another woman (since then the father has continued to ring home irregularly and has sporadically seen the children). The telephone calls seem to be followed by a deterioration in A's condition. Family Situation: The father had been unfaithful to his wife since the beginning of the marriage, seeing other women in the family home. The mother was been left unsupported and isolated and facing grave financial difficulties with an inability to use social services. The children are now fatherless and this is felt most acutely by A who was the father's favourite, a fact, recognized by everyone in the family. In the face of her mother's anger and bitter resentment at her father's behaviour, difficulties arise in the mother-daughter relationship.

Case 8. - S.H., a 15 year old girl who had become increasingly miserable over the previous three or four months, crying frequently, being irritable and disobedient. She had sleep disturbance, having difficulty getting to sleep and

getting up in the middle of the night with leg cramps. She also complained of stomach pains, particularly associated with her periods, but also occurring between menstruation. These pains were colicky in nature and not associated with meal times. She was frequently constipated. There was no history of vomiting or diarrhoea. She had been particularly upset by her father's redundancy six months previously and the resultant lack of finances within the family. This restricted her social activities and her father suffered from depression and loss of self-respect. General Health: frequent absences from school with minor ailments, particularly eczema. Occasionally gets asthmatic attacks (not treated). Does not have many friends at school but has a fairly good relationship with her siblings, except the eldest sister. She is in the average range in school work and settled well. Family History: Father is a 48 years old Jamaican labourer. Unemployed for 6 months. No previous 108-112 psychiatric history. Since being made redundant he has become depressed and irritable, often gets very angry about S's moaning. Recently he has begun drinking heavily but there is no history of violence within the family. He refuses to see his G.P. Mother, 46 year old Jamaican domestic. She has become depressed by the family problems. They have 7 children. The two oldest sons live away from home (unemployed) and the youngest is 5 years old. S. seems to be responding to distress within the family due to the father's redundancy and has become the "patient" as she has a co-existing physical illness.

Case 9. - J.C., a 14 year old girl with a long history of previous emotional

problems, of being clinging and dependent on her mother (e.g. difficulty in getting ready on time for school, difficulty of separation from her mother on going to school), enuresis until the age of 7. Family History: mother 31 years old, no psychiatric history, is very close to both daughter and extended family. Works as a school cleaner and during the day attends a day college learning to be a confectioner. Father 37 years old, did not attend out-patient clinic.

Drinks 8 to 9 pints in a pub about 3 or 4 evenings a week. He was a ventilation engineer before becoming unemployed. He has frequent arguments with his wife. J.C. had three main problems: firstly, she was ashamed to ask friends home from school because of the housing conditions; secondly, she was anxious about the difficulties between mother and father and her own poor relationships with her father; and thirdly, she lacked self-confidence due to being overweight and living in poor housing.

The problems for A.A. (case 1), started when he changed school at 11 years. He presented different symptoms culminating in abdominal pain and headaches. It is clear that he assumed the sick role to avoid a stressful situation at school, which was reinforced by his parents.

A.F. (case 7), had a sad history of disruption of the family culminating in the father leaving home, leaving her and her mother in an unstable economic situation and facing grave financial difficulties. The current tension between mother and daughter and the stressful situation at home drive A.F. to present abdominal pain.

The other example of comorbidity of pain and emotional disorders (case 9) was associated with difficulties in peer relationships and problems at home. The family situation became stressful because of the father's unemployment which led to depression, irritability and heavy drinking. The father's behaviour led to arguments between the parents and depression in the mother. It seemed that S.H. took the sick role of the family.

The last vignette (case 9) shows a teenage girl (J.C.) with a long history of emotional problems (separation anxiety). At the same time she has a poor relationship with her father and has frequent arguments with both parents. She had no self-confidence, was overweight and presented headaches as a physical manifestation associated with emotional disorders that allowed her to stay at home.

These brief examples suggest the influences of a stressful situation, imbalance, over-protectiveness, or intra-familial over-involvement; and some showed disagreement and separation between parents. They suggested the association of non-organic pain with an emotional disorder or stressful situations and the mechanism of reinforcement utilized by the parents, in order to help and protect their children and also themselves.

CHAPTER 3.

RESULTS OF THE PRELIMINARY STUDY

The results that are shown first of all are the frequency of pains of mental origin. Subsequently, the subjects were broken down into: a) non-organic pain (without depressive disorder), depressive disorder (without pain) and a comorbid group (pain plus depressive disorder); b) non-organic pain (without emotional disorder), emotional disorder (without pain) and the comorbid group (pain plus emotional disorder), and the frequencies for these groups were shown.

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Following this, a comparison was made between children with pains of mental origin and control group (psychiatric referrals without pain); followed by a four-group comparison between a group of children with non-organic pain (without depressive disorder), a group of children with depressive disorder (without pain), children with both problems (mixed group) and psychiatrically referred children, and a prediction of pain (without depressive disorder), depressive disorder (without pain) for the dependent variables of psychological symptoms and the family factors.

Finally, after the depressive disorder was excluded from the analysis, the results of the comparisons between the group of children with non-organic pain(without emotional disorder), those with emotional disorder (without pain), children with both problems

(mixed group), and psychiatrically referred controls were shown and the predictions of pain and emotional disorder for the same dependent variables above were also presented.

3.1. The frequency of pain

In a sample of 2,689 children between the ages of 12 to 15 years, 9.1% of the children were experiencing pain of mental origin.

A - Pain and depressive disorder

The table 3.1 shows the frequencies of the groups of children with pain (without depressive disorder), depressive disorder (without pain), children with both problems, and psychiatrically referred controls.

Table 3.1

This table shows the frequency of non-organic pain, depressive disorder, children with both problems, and psychiatrically referred children.

MAIN GROUPS	N.	%
Pain (without depressive disorder)	150	5.6
Depressive disorder (without pain)	474	17.6
Mixed group (pain plus depressive disorder)	95	3.5
Psychiatric control group	1970	73.3
Total	2689	100.0

B - Pain and Emotional disorder

The table 3.1a shows the frequency of children with non-organic pain (without emotional disorder), emotional disorder (without pain), children with both problems (mixed group), and psychiatrically referred children.

Table 3.1a

This table shows the frequency of children with non-organic pain, emotional disorder, children with both problems (mixed group) and psychiatric referred children.

MAIN GROUPS	N.	%
Pain (without emotional disorder)	76	3.6
Emotional disorder (without pain)	288	13.6
Mixed group (pain plus emotional disorder)	74	3.5
Psychiatric control group	1682	79.3
Total	2120	100.0

All cases of children with depressive disorder were excluded from the analyses

3.2. The association of pain of mental origin with age, gender, IQ and sexual maturity.

Table 3.2 shows that pain of mental origin occurs significantly more often in younger children and in children with an IQ in the normal range. There is however, no association between pain and gender or degree of sexual maturity.

Table 3.2

This table shows the group characteristics and any differences between them in terms of age, sex, IQ and sexual maturity.

	Pain of mental origin		Psychiatric control Group		χ^2 df=1
	N.	%	N.	%	
<u>Age (years)</u>					
12-13	132	53.7	1006	44.6	6.9 **
14-15	114	46.3	1249	55.4	
<u>Sex</u>					
Male	131	53.3	1315	58.4	2.2*
Female	115	46.7	938	41.6	
<u>IQ</u>					
Normal	226	93.4	1834	83.7	14.9***
Retarded	16	6.6	356	16.3	
<u>Sexual maturity</u>					
Prepubertal	97	44.3	864	42.2	.3*
Pubertal	122	55.7	1183	55.7	

* $p > .05$ ** $p < .01 > .005$ *** $p < .001$. The total number of cases varies because of missing data on some variables.

The discrepancy between the total number of cases in table 3.2 and the total number

of cases in table 3.1. is due to information about depression being missing for some cases with otherwise satisfactory data; so that the cases are missing when the groups are broken down by the presence or absence of depressive symptoms, as in table 3.1.

3.3. The association between emotional symptoms and pain of mental origin - a comparison between the group of children with pain of mental origin and the psychiatric control group.

Children who were experiencing pain of mental origin were compared with the psychiatric control group. The children with pain were significantly more likely to be experiencing the following emotional symptoms : morbid anxiety, worrying or panic, morbid depression or sadness, situation specific phobias, suicidal ideas, attempts or threats, school refusal or phobia, depersonalization and derealization. These results are illustrated in Table 3.3. However, there is no association between psychogenic pain and ruminations, obsessions or rituals, irritability, screaming or tempers and abnormally elevated mood (including hypomania).

Table. 3.3

This table shows the frequencies of the emotional disorder symptoms in a group of children with pain of mental origin compared with the psychiatric control group.

Emotional disorders		Pain of mental origin		Psychiatric control group		χ^2 df=1
		N.	%	N.	%	
Morbid anxiety, worrying or panic	NP	131	53.5	1888	84.0	131.6***
	P	114	46.7	360	16.0	
Morbid depression, sadness	NP	138	56.3	1726	76.8	48.1***
	P	107	43.7	521	23.2	

(continued on next page)

Table 3.3 (cont.)

Emotional disorders		Pain of mental origin		Psychiatric control group		χ^2 df=1
		N.	%	N.	%	
Situations - specific phobias	NP	172	71.1	2057	91.6	97.0***
	P	70	28.9	188	8.4	
Ruminations, obsessions or rituals	NP	222	91.4	2085	93.0	4.6*
	P	21	8.6	157	7.0	
Suicidal ideas attempts or threats	NP	205	84.4	2005	89.2	4.6**
	P	38	15.6	243	10.8	
Irritability, screaming or tempers	NP	192	78.7	1831	81.6	1.0*
	P	52	21.3	414	18.4	
School refusal or phobia	NP	126	51.6	1799	79.9	97.5***
	P	118	48.4	453	20.1	
Abnormally elevated mood	NP	174	99.4	1542	99.2	.0*
	P	1	.6	12	.8	
Depersonalisation or derealization	NP	163	95.3	1528	98.8	10.5***
	P	8	4.7	18	1.2	

NP = Not Present P = Present * $p > .05$ ** $p < .05 > .01$ *** $p < .001$ **** $p < .005 > .001$ (two-tail Fisher's Test).
The total number of cases varies because of missing data on some variables.

3.4. The association between somatization disorders and pain of mental origin - a comparison between the group of children with pain of mental origin and the psychiatric control group.

2,494 children had non-missing data concerning hypochondriasis. 25.9% of those with pain of mental origin showed hypochondriasis; in the psychiatric control group this figure was significantly lower at only 1.6%. ($\chi^2 = 329.7$, $p < .001$). Out of 1,728 children with valid information concerning conversion hysteria symptoms (missing data equal 773), 12 (6.9%) showed both pain of mental origin and conversion hysterical symptoms. This figure was significantly reduced in the psychiatric control group with only 9 children (0.6%). ($\chi^2 = 46.9$, $p < .001$, two-tail Fisher's Test).

3.5. The association between somatic symptoms and pain of mental origin - a comparison between the group of children with pain of mental origin and the psychiatric control group.

The results in table 3.5 show that a disturbance of eating, a disturbance of sleeping and non-epileptic disturbances of consciousness occur significantly more often in children with pain of mental origin than in the psychiatric control group. There are no significant differences between the two groups with respect to encopresis, faecal soiling or enuresis.

Table. 3.5

This table shows the frequency of the somatic symptoms in a group of children with pain of mental origin when compared with the psychiatric control group.

Somatic symptoms		Pain of mental origin		Psychiatric control group		df=1
		N.	%	N.	%	
Disturbance of eating	NP	187	76.3	2090	92.8	72.0**
	P	58	23.7	163	7.2	
Disturbance of sleeping	NP	173	70.9	1980	88.1	54.2**
	P	71	29.1	267	11.9	
Encopresis or faecal soiling	NP	234	96.3	2181	96.8	.0*
	P	9	3.7	72	3.2	
Enuresis	NP	220	90.5	2040	90.6	.0*
	P	23	9.5	211	9.4	
Non-epileptic disturbance of consciousness	NP	233	95.5	2233	99.1	20.7**
	P	11	4.5	20	.9	

* $p > .05$ ** $p < .001$ NP = Not Present P = Present. The total number of cases rares because of missing data on some variables.

3.6. The association between conduct disorder symptoms and pain of mental origin
- a comparison between the group of children with pain of mental origin and
the psychiatric control group.

The results show that the following features of conduct disorder are less common in the group of children with pain of mental origin than in the psychiatric control group; disobedience or lying, stealing, destructiveness or malicious damage, truancy or staying out late, running or wandering away from home, sexual misbehaviour, fighting, bullying or aggression, and violent assault. Furthermore, fire setting, taking drugs, cruelty to animals and other anti-social behaviours are not associated with pain of mental origin at all.

Table. 3.6

This table shows the disorders of conduct in a group of children with pain of mental origin compared with the psychiatric control group.

Disorder of conduct		Pain of mental origin		Psychiatric control group		χ^2	df = 1
		N.	%	N.	%		
Disobedience or lying	NP	183	75.3	1426	63.3	13.2****	
	P	60	24.7	825	36.7		
Stealing	NP	218	89.3	1625	72.4	31.8****	
	P	26	10.7	618	27.6		
Destructiveness/ malicious damage	NP	232	95.8	2001	89.0	9.2***	
	P	11	4.5	247	11.0		
Fire setting	NP	241	98.4	2189	97.2	.7*	
	P	4	1.6	62	2.8		
Truancy or staying out late	NP	203	83.2	1630	72.4	12.5****	
	P	41	16.8	620	27.6		

(continued on next page)

Table. 3.6 (cont.)

Disorder of conduct		Pain of mental origin		Psychiatric control group		χ^2	df = 1
		N.	%	N.	%		
Running/wandering away from home	NP	228	93.1	1936	96.0		
	P	17	6.9	316	14.0	9.0***	
Sexual misbehaviour	NP	239	98.4	2101	93.7		
	P	4	1.6	142	6.3	7.9***	
Fighting, bullying or aggression	NP	214	87.7	1808	80.4		
	P	30	12.3	442	19.6	7.3**	
Violent assault	NP	243	99.6	2161	96.0		
	P	1	.4	89	4.0	6.9**	
Taking drugs	NP	239	98.0	2160	96.8		
	P	5	2.0	71	3.2	.6*	
Cruelty to animals	NP	7	100.0	33	97.1		
	P	-	-	1	2.9	.0*	
Other anti-social behaviour	NP	243	99.2	2181	97.3		
	P	2	.8	60	2.7	2.4*	

NP = Not Present

P = Present

* $p > .05$ ** $p < 0.001 > .005$ *** $p < .005 > .001$ **** $p < .001$.

The total number of cases varies because of missing data on some variables.

3.7. The association between abnormal intra-familial relationships and pain of mental origin - a comparison between the group of children with pain of mental origin and the psychiatric control group.

The results in table 3.7 show that children with pain of mental origin are significantly more likely than the psychiatric control group to have a disturbance of the child-mother relationship. There are no significant differences between the two groups for disturbance of child-father relationships, disturbance of other adult relationships, disturbance of patient-sibling relationships or a disturbance of other child relationships.

Table. 3.7

This table shows the frequency of the abnormal intra-familial relationships in a group of children with pain of mental origin compared with the psychiatric control group.

Abnormal intra-familial relationships	Pain of mental origin			Psychiatric control group			χ^2	df=1
		N.	%		N.	%		
Disturbance of child-mother relationships	NP	117	47.6		1370	60.8	15.5"	
	P	129	52.4		885	39.2		
Disturbance of child-father relationships	NP	168	68.3		1505	66.7	.2'	
	P	78	31.7		750	33.3		
Disturbance of other adult relationships	NP	197	80.1		1678	74.4	3.5'	
	P	49	19.9		577	25.6		
Disturbance of patient siblings relationships	NP	193	78.3		1832	81.2	.9'	
	P	53	21.5		423	18.8		
Disturbance of other children relationships	NP	163	66.3		1569	69.6	1.0'	
	P	83	33.7		686	30.4		

NP = Not present

P = Present

' $p > .05$ " $p < .001$

3.8. The association between abnormal psychosocial situations and pain of mental origin - a comparison between the group of children with pain of mental origin and the psychiatric control group.

Table 3.8 shows the comparison between the group of children with pain of mental origin and the psychiatric control group. The results show that familial over-involvement is significantly more frequent in the group of children with pain of mental origin; and these children are significantly less likely to be living in an anomalous family situation than the psychiatric control group. The following abnormal psychosocial situations are not significantly associated with the presence of

pain of mental origin; inadequate or distorted intra-familial communications, family psychosocial stress, discordant intra-familial relationships, lack of warmth in intra-familial relationships, mental disturbance in other family members, inadequate or inconsistent parental control and inadequate living conditions.

Table 3.8

This table shows the frequency of the abnormal psychosocial situations in a group of children with pain of mental origin compared with the psychiatric control group.

Abnormal psychosocial situations	Pain of mental origin		Psychiatric control group		χ^2 df=1
	N.	%	N.	%	
Familial over-involvement	NP 126 P 51	71.2 28.8	1287 247	83.9 16.1	16.9**
Inadequate or distorted intra-familial communications	NP 154 P 23	87.0 13.0	1340 194	87.4 12.6	.0*
Family psychosocial stress	NP 146 P 31	82.5 17.5	1330 204	86.7 13.3	2.0*
Discordant intra-familial relationships	NP 123 P 54	69.5 30.5	1001 533	65.3 34.7	1.1*
Lack of warmth in intra-familial relationships	NP 164 P 13	92.7 7.3	1383 150	90.2 9.8	.8*
Mental disturbance in other family	NP 140 P 37	79.1 20.9	1234 299	80.5 19.5	.1*
Inadequate or inconsistent parental control	NP 136 P 41	76.8 23.2	1188 345	77.5 22.5	.0*
Inadequate living conditions	NP 164 P 13	92.7 7.3	1469 65	95.8 4.2	2.8*
Anomalous family situations	NP 157 P 20	88.7 11.3	1178 355	76.8 23.2	12.3**

NP = Not present P = Present * $p > .05$ ** $p < .001$ The number of cases varies because of missing data on some variables.

- 3.9. The association between birth ordinal position and pain of mental origin - a comparison between the group of children with pain of mental origin and the psychiatric control group.

The birth ordinal position was not significantly associated with the presence of pain of mental origin when compared with the psychiatric control group.

AN ANALYSIS OF THE RELATIONSHIPS BETWEEN NON-ORGANIC PAIN AND DEPRESSIVE DISORDER

- 3.10. Comparisons between the group with non-organic pain (without depressive disorder), depressive disorder, the mixed group and a psychiatric control group.

- 3.10.1. *Do these four groups differ with respect to age, sex, IQ and sexual maturity?*

The data in table 3.10.1. show that there are, overall, differences between the groups on all these variables. The presence of depression is associated with female sex, greater age, normal IQ and post-pubertal status. Pain, by contrast, was associated with none of them: it was more likely to be found in the younger age group. These findings argue that pain is not simply an aspect of depression, but a rather different type of problem.

Table.3.10.1

The table shows any age, sex, IQ and sexual maturity differences in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

	Pain (no DD)		Depressive disorder		Mixed group (Pain + DD)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
	N.	%	N.	%	N.	%	N.	%		
Age (years)										
12-13	87	58.0	184	38.8	45	47.4	924	46.9	19.2	PN = 2.8** DD = 2.7*
14-15	63	42.0	290	61.2	50	52.6	1046	53.1	p<.001	INT = .3
Sex										
Male	90	60.0	214	45.1	40	42.1	1189	60.4	45.7	PN = .5 DD = 4.7***
Female	60	40.0	260	54.9	55	57.9	779	39.6	p<.001	INT = .3
IQ										
Normal	137	91.3	435	94.6	89	96.7	1569	81.8	63.1	PN = 1.8 DD = 3.4***
Retarded	13	8.7	25	5.4	3	3.3	348	18.2	p<.001	INT = .6
Sexual maturity										
Prepubertal	64	48.5	151	34.2	33	37.9	791	44.4	17.6	PN = 1.0 DD = 2.8**
Pubertal	68	51.5	290	65.8	54	62.1	990	55.6	p<.001	INT = .0

* p<.01>.005

** p<.005>.001

*** p<.001

NP = Not Present

P = Present

PN = Pain DD = Depressive Disorder. The analyses shown are a chi-square for overall between groups, and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them. INT = Interaction between pain and depressive disorder. The number of cases varies because of missing data on some variables.

3.10.2 Do the pain, depressive disorder and mixed groups have different patterns of emotional symptomatology?

There are, overall, differences between the groups on these variables. Depressive disorder is associated with morbid anxiety or panic, situation specific phobias, ruminations, obsession or rituals, suicidal ideas attempts or threats, irritability, screaming or tempers and school refusal. The presence of pain is associated with morbid anxiety or panic, situations-specific phobias, school refusal and depersonalization or derealization. Emotional symptoms are commoner in pain, but

this is not a very specific finding and for the most part the symptoms are the same as those encountered as depressive disorder. The exception - depersonalization or derealization - is present in to a few children for any secure conclusion. Therefore, these variables do not disentangle pain from depressive disorder.

Table.3.10.2

The table shows the comparison of emotional disorder symptoms in children with pain (without depressive disorder), depressive disorder, those with both (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Symptoms of emotional disorders		Pain (no dd)		Depressive disorder		Mixed group (Pain + DD)		Psychiatric control group		χ^2 df = 3	Logistic regression s-values
		N.	%	N.	%	N.	%	N.	%		
Morbid anxiety or panic	NP	86	57.7	280	59.2	44	46.3	1739	88.5	330.5	PN = 7.8'
	P	63	42.3	193	40.8	51	53.7	227	11.5	p<.001	DD = 7.3'
Morbid depression or sadness	NP	138	92.0	-	-	-	-	1847	93.8	2035.2	INT = 4.2'
	P	12	8.0	474	100.0	95	100.0	123	6.2	p<.001	PN = .6
Situation specific phobias	NP	106	71.1	387	82.0	65	70.7	1829	93.2	140.9	DD = 8.5'
	P	43	28.9	85	18.0	27	29.3	134	6.8	p<.001	INT = .9
Ruminations, obsessions, rituals	NP	141	94.0	412	88.0	81	87.1	1845	94.1	26.0	PN = 7.2'
	P	9	6.0	56	12.0	12	12.9	115	5.9	p<.001	DD = 3.4'
Suicidal, ideas, attempts or threats	NP	144	96.0	290	61.6	60	65.2	1878	95.6	494.7	INT = 3.3'
	P	6	4.0	181	38.4	32	34.8	86	4.4	p<.001	PN = .4
Irritability, screaming or tempers	NP	121	80.7	328	69.5	71	75.5	1653	84.3	56.2	DD = 3.3'
	P	29	19.3	144	30.5	23	24.5	309	15.7	p<.001	INT = 1.6
School refusal or phobias	NP	75	50.0	293	61.8	51	54.3	1633	83.0	186.7	PN = 6.6'
	P	75	50.0	181	38.2	43	45.7	335	17.0	p<.001	DD = 3.3'
Abnormally elevated mood	NP	103	100.0	348	98.0	71	98.6	1332	99.4	7.4	INT = 4.4'
	P	-	-	7	2.0	1	1.4	8	.6	p>.05	PN = .2
Depersonalization or derealization	NP	96	96.0	343	97.7	67	94.4	1324	99.3	20.1	DD = 1.8
	P	4	4.0	8	2.3	4	5.6	10	.7	p<.001	INT = .9

* p<.001 NP = Not Present P = Present PN = Pain DD = Depressive Disorder

The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them.

INT = Interaction between pain and depressive disorder. The number of cases varies because of missing data on some variables.

The table 3.10.2.1 shows the overall differences between groups. Even though the numbers are small, the statistical results are strong. Pain is associated with hypochondriasis and conversion hysterical symptoms. Hypochondriasis is slightly more likely in depressive disorder.

Table.3.10.2.1

The table shows the comparison of the somatisation disorder symptoms in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Somatisation symptoms		Pain (no DD)		Depressive Disorder		Mixed group (Pain + DD)		Psychiatric control group		χ^2 df = 3	Logistic regression z-values
		N.	%	N.	%	N.	%	N.	%		
Hypochondriasis	NP	119	79.3	448	95.1	61	65.6	1938	98.5	337.8	PM = 12.6*
	P	31	20.7	23	4.9	32	34.4	30	1.5	p<.001	DD = 4.7*
Conversion hysterical symptoms	NP	94	91.3	350	98.6	67	95.7	1331	99.3	49.8	PM = 4.5*
	P	9	8.7	5	1.4	3	4.3	9	.7	p<.001	DD = .1
											INT = 1.7

* p<.001 NP = Not Present P = Present PM = Pain DD = Depressive disorder. The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them.

INT = Interaction between pain and depressive disorder. The number of cases varies because of missing data.

3.10.3 Do the pain, depressive disorder and mixed groups have different patterns of somatic symptomatology?

The results show that there are, overall, differences between the groups on all these variables. The presence of pain is associated with eating and sleep disturbance and also with non-epileptic disturbance of consciousness. Depressive disorder is also a predictor of eating and sleep disturbance, but is less likely to be associated with enuresis. The interaction effect for sleeping disturbance reflects the higher score for

the mixed pure group than for those with single problems.

Table.3.10.3

The table shows the frequency of the somatic symptoms in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Somatic symptoms		Pain (no DD)		Depressive disorder		Mixed group (pain + DD)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
		N.	%	N.	%	N.	%	N.	%		
Disturbance of eating	NP	125	83.3	382	80.6	61	64.9	1868	94.9	182.7	PW = 6.2***
	P	25	16.7	92	19.4	33	35.1	100	5.1	p<.001	DD = 7.3*** INT = 1.5
Disturbance of sleeping	NP	122	81.9	285	60.1	50	53.2	1835	93.5	430.2	PW = 4.5***
	P	27	18.1	189	39.9	44	46.8	127	6.5	p<.001	DD = 11.2*** INT = 2.7**
Enoepresis or faecal soiling	NP	145	96.7	471	99.4	89	95.7	1894	96.2	12.4	PW = 2.2*
	P	5	3.3	3	.6	4	4.3	74	3.8	p<.01>.005	DD = 1.6 INT = 2.3*
Enuresis	NP	136	90.7	457	96.4	84	90.3	1762	89.6	21.8	PW = 1.9
	P	14	9.3	17	3.6	9	9.7	205	10.4	p>.001	DD = 2.1* INT = 2.3*
Non-epileptic disturbance of consciousness	NP	144	96.0	469	98.9	88	94.6	1945	98.8	18.4	PW = 3.9***
	P	6	4.0	5	1.1	5	5.4	23	1.2	p<.001	DD = .4 INT = .4

* p<.05>.01 ** p<.01>.005 *** p<.001 P = Not Present P = Present
PW = Pain DD = Depressive disorder The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effect of (a) pain and (b) depressive disorder and the interaction between them. INT = Interaction between pain and depressive disorder. The number of cases varies because of missing data on some variables.

3.10.4 Do the groups of pain, depressive disorder and the mixed group have a different pattern of conduct disorder symptomatology?

The table 3.10.4 shows that depressive disorder is not in general a predictor one way or the other of the variables of conduct disorder. Depressive disorder could be a predictor of drug misuse, but the numbers are too small for any confidence. Pain is negatively associated with all symptoms of conduct disorder except drug-taking. These

findings can help to make the distinction between pain and depressive disorder.

Table. 3.10.4

The table shows the frequency of the conduct disorder in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Conduct disorder		Pain (no DD)		Depressive disorder		Mixed group (Pain +DD)		Psychiatric control group		χ^2 df = 3	Logistic regression = values
		N.	%	N.	%	N.	%	N.	%		
Disobedience or Lying	NP	114	76.5	326	69.1	69	73.4	1235	62.8	19.1	PN = 2.6"
	P	35	23.5	146	30.9	25	26.6	731	37.2	p<.001	DD = .3 INT = 1.4
Stealing	NP	131	87.9	381	80.7	86	91.5	1385	70.7	52.5	PN = 4.3""
	P	18	12.1	91	19.3	8	8.5	575	29.3	p<.001	DD = 2.0' INT = .4
Destructiveness or malicious damage	NP	142	95.3	422	89.2	90	95.7	1750	89.1	9.6	PN = 2.7"
	P	7	4.7	51	10.8	4	4.3	214	10.9	p<.05>.01	DD = .1 INT = .1
Fire setting	NP	150	100.0	462	97.9	90	95.7	1909	97.1	6.1	PN = .9
	P	-	-	10	2.1	4	4.3	58	2.9	p>.05	DD = 1.5 INT = 1.9
Truancy or staying out late	NP	125	83.3	365	77.2	78	83.0	1404	71.5	19.1	PN = 2.8""
	P	25	16.7	108	22.8	16	17.0	560	28.5	p<.001	DD = .7 INT = .9
Running or wandering away from home	NP	140	93.3	400	84.4	88	92.6	1701	86.5	10.9	PN = 2.9""
	P	10	6.7	74	15.6	7	7.4	265	13.5	p<.05>.01	DD = .6 INT = .1
Sexual misbehaviour	NP	146	98.0	441	94.2	93	98.9	1845	93.9	8.1	PN = 2.3'
	P	3	2.0	27	5.8	1	1.1	119	6.1	p<.05>.01	DD = .4 INT = .3
Fighting bullying or aggression	NP	131	87.3	394	83.3	83	88.3	1575	80.2	9.6	PN = 2.1'
	P	19	12.7	79	16.7	11	11.7	390	19.8	p<.05>.01	DD = .6 INT = .3
Violent	NP	149	99.3	455	96.2	94	100.0	1889	96.1	7.8	PN = 2.0'
	P	1	.7	18	3.8	-	-	76	3.9	p=.05	DD = .4 INT = .4
Taking	NP	149	99.3	439	94.0	89	95.7	1905	97.6	20.7	PN = 1.1
	P	1	.7	28	6.0	4	4.3	46	2.4	p<.001	DD = 2.6" INT = .6

* p<.05>.01 ** p<.01>.005 *** p<.005>.001 **** p<.001 NP = Not Present
P = Present PN = Pain DD = Depressive Disorder. The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them. INT = Interaction between pain and depressive disorder. The number of cases varies because of missing data on some variables.

3.10.5 Do the pain, depressive disorder and mixed groups have a different pattern of abnormal intra-familial relationships?

The results in table 3.10.5 show that there are, overall, differences between the groups. Depressive disorder is a predictor of disturbance in child-mother, child-father and disturbance of patient siblings relationships. Pain, by contrast is associated only with disturbance of child-mother relationships.

Table.3.10.5

The table shows the frequency of the abnormal intra-familial relationships in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Abnormal Intra-familial relationships		Pain (no DD)		Depressive disorder		Mixed group (pain + DD)		Psychiatric control group		χ^2 df = 3	Logistic regression s-values
		N.	%	N.	%	N.	%	N.	%		
Disturbance of child-mother Relationships	NP	83	55.7	234	49.6	31	33.0	1205	62.1	51.8	PW = 3.2** DD = 4.9** INT = 1.4
	P	66	44.3	238	50.4	63	67.0	734	37.9	p<.001	
Disturbance of child-father Relationships	NP	109	73.6	262	56.2	54	58.1	1315	68.5	31.6	PW = 1.0 DD = 4.1** INT = .5
	P	39	26.4	204	43.8	39	41.9	605	31.5	p<.001	
Disturbance of other adults Relationships	NP	114	78.1	366	79.0	75	81.5	1432	73.5	9.2	PW = 1.0 DD = 1.4 INT = .3
	P	32	21.9	97	21.0	17	18.5	516	26.5	p<.05>.01	
Disturbance of Patient siblings Relationships	NP	122	81.3	356	76.1	68	73.1	1598	81.8	11.1	PW = .6 DD = 2.4* INT = .3
	P	28	18.7	112	23.9	25	26.9	356	18.2	p<.05>.01	
Disturbance of other children Relationships	NP	100	67.1	304	65.0	60	63.8	1385	70.8	8.0	PW = .8 DD = 1.4 INT = .4
	P	49	32.9	164	35.0	34	36.2	570	29.2	p<.05>.01	

* p<.05>.01 ** p<.001 NP = Not Present P = Present PW = Pain
DD = Depressive Disorder . The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them. INT = Interaction between pain and depressive disorder. The number of cases varies because of missing data on some variables.

3.10.6 Do the groups with pain, depressive disorder and the mixed group have a different pattern of abnormal psychosocial situations?

The table 3.10.6 shows that there are differences between groups on almost all variables. The presence of pain is associated with family over-involvement and inadequate living conditions and less likely to be found with an anomalous family situation. These are specific to pain, and are not found in depressive disorder.

Depressive disorder, by contrast, is a predictor of mental disturbance in other family members. These findings argue that the family over-involvement is a important key for children who experience pain and help to distinguish the group of pain from depressive disorder.

Table. 3.10.6

The table shows the frequency of the abnormal psychosocial situation in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Abnormal psychosocial situation		Pain (no DD)		Depressive disorder		Mixed group (pain + DD)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
		N.	%	N.	%	N.	%	N.	%		
Family	NP	71	68.9	272	77.5	54	74.0	1129	85.3	29.8	PM = 3.1'' DD = .7 INT = 2.0'
over-involvement	P	32	31.1	79	22.5	19	26.0	195	14.7	p<.001	
Inadequate	NP	90	87.4	301	85.5	63	86.3	1160	87.7	1.2	PM = .0 DD = .6 INT = .2
distorted intra-familial communication	P	13	12.6	51	14.5	10	13.7	163	12.3	p>.05	
Family psychosocial stress	NP	84	81.6	272	77.3	61	83.6	1180	89.2	36.0	PM = .6 DD = 1.8 INT = 2.4'
	P	19	18.4	80	22.7	12	16.4	143	10.9	p<.001	
Discordant intra-familial relationships	NP	73	70.9	208	59.1	49	67.1	867	65.5	7.1	PM = 1.6 DD = 1.3 INT = .3
	P	30	29.1	144	40.9	24	32.9	456	34.5	p>.05	

(continued on next page)

Table. 3.10.6 (cont.)

Abnormal psychosocial situation		Pain (no DD)	Depressive disorder	Mixed group (pain + DD)	Psychiatric control group	χ^2 df = 3	Logistic regression s - values
		N. %	N. %	N. %	N. %		
Lack of warmth in intra-familial relationships	NP	97 94.2	323 92.0	66 90.4	1188 89.8	3.3	PM = .5
	P	6 5.8	28 8.0	7 9.6	135 10.2	p>.05	DD = .4
							INT = 1.3
Mental disturbance in other family members	NP	89 86.4	273 77.8	50 68.5	1067 80.7	10.1	PM = .2
	P	14 13.6	78 22.2	23 31.5	256 19.3	p<.05>.01	DD = 3.0**
							INT = 2.1*
Inadequate parental control	NP	77 74.8	293 83.5	58 79.5	1019 77.0	7.6	PM = 1.0
	P	26 25.2	58 16.5	15 20.5	304 23.0	p>.05	DD = 1.6
							INT = .4
Inadequate living condition	NP	96 93.2	337 95.7	67 91.8	1265 95.6	3.5	PM = 2.0*
	P	7 6.8	15 4.3	6 8.2	58 4.4	p>.05	DD = .3
							INT = .3
Anomalous family situation	NP	91 88.3	266 75.8	65 89.0	1019 77.0	13.3	PM = 3.4***
	P	12 11.7	85 24.2	8 11.0	304 23.0	p<.005>.001	DD = .0
							INT = .2

* p<.05>.01

** p<.005>.001

*** p<.001

NP = Not Present

P = Present

PM = Pain

DD = Depressive Disorder.

The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them. INT = Interaction between pain and depressive disorder. The number of cases varies because of missing data on some variables.

3.10.7 Do the groups of pain, depressive disorder and the mixed group have more parents or siblings who were seen a psychiatrist at or before the age 16, at or after the age 17?

There are no differences between the groups and neither pain nor depressive disorder is a significant predictor of parents' or siblings' looking for psychiatric services at or before the age 16 or at or after the age 17.

Table. 3.10.7

The table shows the frequency of parents or siblings who saw a psychiatrist in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Parents or siblings had seen the psychiatrist		Pain (no DD)		Depressive disorder		Mixed group (Pain + DD)		Psychiatric control group		χ^2 df = 3	Logistic regression z-values
		N.	%	N.	%	N.	%	N.	%		
At or before	YES	122	91.0	368	91.1	78	90.7	1508	88.5	2.9	PW = .3 DD = .4 INT = .6
the age of 16	NO	12	9.0	36	8.9	8	9.3	195	11.5	p>0.5	
At or after	YES	100	73.0	293	70.8	61	70.1	1299	75.5	4.9	PW = .5 DD = 1.1 INT = .3
the age 17	NO	37	27.0	121	29.2	26	29.9	422	24.5	p>0.5	

NP = Not Present P = Present PW = Pain DD = Depressive disorder.

The analyses shown are a chi-square for overall differences between groups; and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them.

INT = Interaction between pain and emotional disorder. The number of cases varies because of missing data on some variables.

3.10.8 Do the groups with pain, depressive disorder and the mixed group have a different pattern of birth ordinal positions?

There are no different or specific associations between the groups on this variables.

Table.3.10.8

The table shows the frequency of the birth ordinal position in a group of children with pain (without depressive disorder), depressive disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor depressive disorder.

Birth ordinal position	Pain (no DD)		Depressive Disorder		Mixed group (Pain + DD)		Psychiatric control group		χ^2 df = 9	Logistic regression z - values
	N.	%	N.	%	N.	%	N.	%		
Only child	14	9.4	43	9.2	8	8.5	174	9.1		PW - z >1.96
Eldesst child	45	30.2	132	28.1	25	26.6	553	28.9	7.0	DD - z >1.96
Youngest child	55	36.9	140	29.9	32	34.0	565	29.5	p>.05	INT - z >1.96
Middle (other) child	35	23.5	154	32.8	29	30.9	622	32.5		

PW = Pain DD = Depressive disorder. The analyses are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) depressive disorder and the interaction between them. INT = Interaction between pain and depressive disorder.

AN ANALYSIS OF THE RELATIONSHIPS BETWEEN NON-ORGANIC PAIN AND EMOTIONAL DISORDER - EXCLUDING DEPRESSIVE DISORDER

3.11 The comparisons between the groups with pain, emotional disorder, mixed group and the psychiatric control group

3.11.1. *Do these four groups differ with respect to sex, age, IQ and sexual maturity?*

The raw data in table.3.11.1 show that there are , overall, differences between the groups on this variables. The presence of pain is associated with younger age groups and normal IQ. Emotional disorder, by contrast was associated with none of these variables. The findings suggest that pain is a distinct group from emotional disorder.

Table. 3.11.1

The table shows any age and IQ differences in a group of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor emotional disorder.

	Pain (no ED)		Emotional disorder		Mixed group (Pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
	N	%	N	%	N	%	N	%		
Age (years)										
12-13	43	56.6	147	51.0	44	59.5	777	46.2	9.3	PM = 2.1'
										ED = .9
14-15	33	43.4	141	49.0	30	40.5	905	53.8	p<.05>.01	INT = .2
Sex										
Male	48	63.2	164	56.9	42	56.8	1025	61.0	2.3	PM = .2
										ED = 1.2
Female	28	36.8	124	43.1	32	43.2	655	39.0	p>.05	INT = .2

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Table. 3.11.1 (cont.)

	Pain (no ED)		Emotional disorder		Mixed group (Pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
	N	%	N	%	N	%	N	%		
<u>IQ</u>										
Normal	71	93.4	238	84.1	66	89.2	1331	81.5	10.3	PN = 2.5'
Retarded	5	6.6	45	15.9	8	10.8	303	18.5	p<.05>.01	ED = .5 INT = 1.1
<u>Sexual Maturity</u>										
Prepubertal	30	44.1	128	48.5	34	53.1	663	43.7	4.0	PN = .8
Pubertal	38	55.9	136	51.5	30	46.9	854	56.3	p>.05	ED = 1.4 INT = .4

* p<.05>.01 NP = Not Present P = Present PN = Pain
ED = Emotional Disorder. The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional disorder and the interaction between them.
INT = Interaction between pain and depressive disorder. All cases with depressive disorder were excluded from this analysis. The number of cases varies because of missing data on some variables.

3.11.2 *Do the groups with pain, emotional disorder and the mixed group have a different pattern of somatization disorder?*

Table 3.11.2 shows that there are, overall, differences between the groups on both variables. Pain and emotional disorder predicted of hypochondriasis and conversion hysterical symptoms, but no interaction between them occurred.

Table. 3.11.2

The table shows the frequency of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor emotional disorder.

Somatization disorder		Pain (no ED)		Emotional disorder		Mixed group (pain + ED)		Psychiatric control group		χ ² df = 3	Logistic regression s - values
		N	%	N	%	N	%	N	%		
Hypochondriasis	NP	68	89.5	272	94.8	51	68.9	1666	99.1	255.7	PN = 8.1''
	P	8	10.5	15	5.2	23	31.1	15	.9	p<.001	ED = 5.4'' INT = .9

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Table. 3.11.2 (cont.)

Somatisation disorder		Pain (no ED) N. %	Emotional disorder N. %	Mixed group (pain + ED) N. %	Psychiatric control group N. %	χ^2 df = 3	Logistic regression s - values
Conversion	NP	56 96.6	200 98.5	38 84.4	1131 99.5	81.9	PM = 4.4"
hysterical symptoms	P	2 3.4	3 1.5	7 15.6	6 1.5	p<.001	ED = 2.5' INT = .3

* p<.05>.01

** p<.001

NP = Not Present

P = Present

PM = Pain

ED = Emotional disorder The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional disorder and the interaction between them.

INT = Interaction between pain and emotional disorder. All cases with depressive disorder were excluded from this analysis. The number of cases varies because of missing data on some variables.

3.11.3 Do the group with pain, emotional disorder and the mixed group have a different pattern of somatic symptomatology?

The results in table 3.11.3 show that there are, overall, differences between the groups on variables. Pain and emotional disorder are predictors of eating and sleep disturbance. Pain is also associated with non-epileptic disturbance of consciousness and emotional disorder is not. Enuresis was unlikely to be found in children with emotional disorder.

Table. 3.11.3

The table shows the frequency of somatic symptoms in a group of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor emotional disorder.

Somatic symptoms		Pain (no ED) N. %	Emotional disorder N. %	Mixed group (pain + ED) N. %	Psychiatric control group N. %	χ^2 df = 3	Logistic regression s - values
Disturbance of eating	NP	68 89.5	267 92.7	57 77.0	1601 95.3	47.1	PM = 4.3""
	P	8 10.5	21 7.3	17 23.0	79 4.7	p<.001	ED = 2.6"" INT = .8
Disturbance of sleeping	NP	68 90.7	241 84.6	54 73.0	1594 95.1	84.6	PM = 2.9""
	P	7 9.3	44 15.4	20 27.0	83 4.9	p<.001	ED = 4.9"" INT = .0

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Table. 3.11.3 (cont.)

Somatic symptoms		Pain (no ED)		Emotional disorder		Mixed group (pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression B - values
		N.	%	N.	%	N.	%	N.	%		
Encopresis or faecal soiling	NP	74	97.4	282	97.9	71	95.9	1612	96.0	2.9	PN = .5
	P	2	2.6	6	2.1	3	4.1	60	4.0	p>.05	ED = .2
											INT = 1.0
Enuresis	NP	69	90.8	279	96.9	67	90.5	1483	88.3	19.5	PN = 1.5
	P	7	9.2	9	3.1	7	9.5	196	11.7	p<.001	ED = 2.0*
											INT = 2.1*
Non-epileptic disturbance consciousness	NP	74	97.4	285	99.0	70	94.6	1660	98.8	10.4	PN = 2.6**
	P	2	2.6	3	1.0	4	5.4	20	1.2	p<.05>.01	ED = .6
											INT = .6

* p<.05>.01 ** p<.01>.005 *** p<.005>.001 **** p<.001 NP = Not Present P = Present
 PN = Pain ED = Emotional Disorder. The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional disorder and the interaction between them. INT = Interaction between pain and emotional disorder. All cases with depressive disorder were excluded from this analysis. The number of cases varies because of missing data on some variables.

3.11.4 Do the groups with pain, emotional disorder and the mixed group have a different pattern of conduct disorders?

The overall differences between groups on variables are shown in table 3.11.4. The group of children with emotional disorder are less likely to present disobedience or lying, stealing, destructiveness or malicious damage, truancy or staying out late, running or wandering away from home and fighting, bullying or aggression. Pain, on the other hand, was associated with none of these variables. In addition, pain was less likely to be found in children who steal than children in the psychiatric control group.

Table.3.11.4

The table shows the frequency of the conduct disorder in a group of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor emotional disorder.

Conduct Disorder		Pain (no ED)		Emotional Disorder		Mixed group (Pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
		N.	%	N.	%	N.	%	N.	%		
Disobedience or lying	NP	47	62.7	222	77.4	67	90.5	1013	60.3	54.5	PN = 2.2*
	P	28	37.3	65	22.6	7	9.5	666	39.7	P<.001	ED = 5.2**** INT = 1.8
Stealing	NP	60	80.0	256	89.2	71	95.9	1129	67.5	82.2	PN = 2.4*
	P	15	20.0	31	10.8	3	4.1	544	32.5	p<.001	ED = 4.6**** INT = .4
Destructiveness or malicious damage	NP	69	92.0	265	92.3	73	98.6	1485	88.6	11.2	PN = 1.8
	P	6	8.0	22	7.7	1	1.4	192	11.4	p<.05>.01	ED = 2.0* INT = 1.1
Fire setting	NP	76	100.0	280	97.6	74	100.0	1629	97.0	4.8	PN = 1.4
	P	-	-	7	2.4	-	-	51	3.0	p>.05	ED = .0 INT = .1
Truancy or staying out late	NP	57	75.0	249	86.8	68	91.9	1155	68.9	54.3	PN = 1.8
	P	19	25.0	38	13.2	6	8.1	522	31.1	p<.001	ED = 4.5**** INT = .4
Running or wandering away from home	NP	66	86.8	267	93.0	74	100.0	1434	85.4	24.0	PN = 1.7
	P	10	13.2	20	7.0	-	-	245	14.6	p<.001	ED = 2.7** INT = 1.6
Sexual misbehaviour	NP	73	97.3	283	98.6	73	98.6	1562	93.1	17.7	PN = .4
	P	2	2.7	4	1.4	1	1.4	115	6.9	p<.001	ED = 1.8 INT = .9
Fighting, bullying or aggression	NP	63	82.9	254	89.1	68	91.9	1321	78.6	23.7	PN = .9
	P	13	17.1	31	10.9	6	8.1	359	21.4	p<.001	ED = 2.9*** INT = .0
Violent assault	NP	75	98.7	279	97.9	74	100.0	1610	95.8	7.2	PN = 1.2
	P	1	1.3	6	2.1	-	-	70	4.2	p>.05	ED = 1.0 INT = .2
Taking drugs	NP	76	100.0	277	97.9	73	98.6	1628	97.6	2.2	PN = .8
	P	-	-	6	2.1	1	1.4	40	2.4	p>.05	ED = .6 INT = .7

* p<.05>.01 ** p<.01>.005 *** p<.005>.001 **** p<.001 NP = Not Present P = Present
 PN = Pain ED = Emotional disorder. The analyses shown are a chi-square for overall
 difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional
 disorder and the interaction between them. INT = Interaction between pain and emotional disorder. All cases
 with depressive disorder were excluded from this analysis. The number of cases varies because of missing data
 on some variables.

3.11.5 Do the groups with pain, emotional disorder and the mixed group have a different pattern of abnormal intra-familial relationships?

In the abnormal intra-familial relationships, in the table 3.11.5, the results show only one variable that presents, overall differences between the groups. Emotional disorder can be considered a predictor of children having a disturbance with other adults relationships. Pain, by contrast shows no association with this variable. These findings suggest that abnormal intra-familial relationships are not a good way of separating the disorders.

Table 3.11.5

The table shows the frequency of the abnormal intra-familial relationships in a group of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor emotional disorder.

Abnormal intra-familial Relationships	Pain (no ED)		Emotional Disorder		Mixed group (pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
	N.	%	N.	%	N.	%	N.	%		
Disturbance of WP child-mother relationships P	44 31	58.7 41.3	154 128	54.6 45.4	39 35	52.7 47.3	1051 606	63.4 36.6	10.9 p<.05>.01	PM = .8 ED = 1.7 INT = .3
Disturbance of WP child-father relationships P	52 23	69.3 30.7	198 85	70.0 30.0	57 16	78.1 21.9	1117 520	68.2 31.8	3.3 p>.05	PM = 1.1 ED = 1.3 INT = .9
Disturbance of WP other adults relationships P	53 20	72.6 27.4	227 59	79.4 20.6	61 12	81.6 16.4	1205 457	72.5 27.5	9.7 p<.05>.01	PM = .5 ED = 2.3* INT = .6
Disturbance of WP patient siblings relationships P	62 14	81.6 18.4	237 50	82.6 17.4	60 14	81.1 18.9	1361 306	81.6 18.4	.1 p>.05	PM = .3 ED = .0 INT = .2
Disturbance of WP other children relationships P	52 24	68.4 31.6	186 101	64.8 35.2	48 25	65.8 34.2	1199 469	71.9 28.1	6.9 p>.05	PM = .4 ED = 1.2 INT = .5

* p<.05>.01 WP = Not Present P = Present PM = Pain ED = Emotional Disorder
The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional disorder and the interaction between them. INT = Interaction between pain and emotional disorder. All cases with depressive disorder were excluded from this analysis. The number of cases varies because of missing data on some variables.

3.11.6 Do the groups with pain, emotional disorder and the mixed group have a different pattern of abnormal psychosocial situations?

Table 3.11.6 shows that there are, overall, differences between the groups. Pain is a predictor of family over-involvement and family psychosocial stress. Emotional disorder is a predictor only for family over-involvement. However, pain is not a predictor of the anomalous family situation. These findings argue for the association of pain and stress, which can be considered a factor that can help to differentiate these disorders, but the association with family over-involvement which was useful to distinguish pain from depressive disorder on the analyses above, is not a good key factor to separate pain from emotional disorder.

Table. 3.11.6

The table shows the frequency of the abnormal psychosocial situation in a group of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor emotional disorder.

Abnormal psychosocial situations		Pain (no ED)		Emotional disorder		Mixed group (Pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression z - values
		N.	%	N.	%	N.	%	N.	%		
Family	WF	43	74.1	146	72.3	28	62.2	983	87.6	51.8	FW = 3.0***
over-involvement	P	15	25.9	56	27.7	17	37.8	139	12.4	p<.001	ED = 3.3****
											INT = 1.0
Inadequate or distorted intra-familial communication	WF	81	87.9	176	87.1	39	86.7	984	87.8	.1	FW = .2
	P	7	12.1	26	12.9	6	13.3	137	12.2	p>.05	ED = .3
											INT = .1
Family psychosocial stress	WF	47	81.0	184	91.1	37	82.2	996	88.8	6.4	FW = 2.6**
	P	11	19.0	18	8.9	8	17.8	125	11.2	p>.05	ED = .5
											INT = .3
Discordant Intra-familial Relationships	WF	41	70.7	148	73.3	32	71.1	719	64.1	7.5	FW = .3
	P	17	29.3	54	26.7	13	28.9	402	35.9	p>.05	ED = .9
											INT = .9

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Table. 3.11.6 (cont.)

Abnormal psychosocial situations		Pain (no ED)		Emotional disorder		Mixed group (Pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
		N.	%	N.	%	N.	%	N.	%		
Lack of warmth in intra-familial relationships	NP	55	94.8	109	93.6	42	93.3	999	89.1	5.9	PM = .6
	P	3	5.2	13	6.4	3	6.7	122	10.9	p>.05	ED = .3
											INT = .9
Mental disturbance in other family members	NP	51	87.9	145	71.8	38	84.4	922	82.2	14.5	PM = 1.9
	P	7	12.1	57	28.2	7	15.6	199	17.8	p<.005>.001	ED = 1.5
											INT = .5
Inadequate parental control	NP	40	69.0	159	78.7	37	82.2	860	76.7	3.1	PM = .4
	P	18	31.0	43	21.3	8	17.8	261	23.3	p>.05	ED = 1.6
											INT = 1.1
Inadequate living conditions	NP	56	93.1	192	95.0	42	93.3	1073	95.7	1.4	PM = 1.2
	P	4	6.9	10	5.0	3	6.7	48	4.3	p>.05	ED = .2
											INT = .2
Anomalous family situation	NP	50	86.2	166	82.2	41	91.1	853	76.1	11.1	PM = 2.0
	P	8	13.8	36	17.8	4	8.9	268	23.9	p<.05>.01	ED = 1.2
											INT = .1

* p<.05>.01 ** p<.01>.005 *** p<.005>.001 **** p<.001 NP = Not Present P = Present

PM = Pain ED = Emotional Disorder. The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional disorder and the interaction between them. INT = Interaction between pain and emotional disorder.

All cases with depressive disorder were excluded from this analysis. The number of cases varies because of missing data on some variables.

3.11.7 Do the groups with pain, emotional disorder and the mixed group have parents or siblings who were seen by a psychiatrist at or before the age 16, at or after the age 17?

The overall differences between the groups is of borderline statistical significance but neither pain nor emotional disorder are significantly associated with these variables.

These variables are not helpful to identify these disorders.

Table.3.11.7

The table shows the frequency of parents or siblings who saw a psychiatrist in a group of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group), and psychiatrically referred controls with neither pain nor emotional disorder.

Parents or siblings had seen the psychiatrist		Pain (no ED)		Emotional Disorder		Mixed group (Pain + ED)		Psychiatric control group		χ^2 df = 3	Logistic regression s - values
		N.	%	N.	%	N.	%	N.	%		
At or before	YES	59	92.2	214	88.8	63	90.0	1294	88.5	.9	PW = .6 ED = .3 INT = .4
the age of 16	NO	5	7.8	27	11.2	7	10.0	168	11.5	p>.05	
At or after	YES	50	74.6	168	67.7	50	71.4	1131	76.8	9.9	PW = .0 ED = 1.5 INT = .7
the age of 17	NO	17	25.4	80	32.3	20	28.6	342	23.2	p<.05>.01	

NP = Not Present

P = Present

PW = Pain

ED = Emotional disorder.

The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional disorder and the interaction between them. INT = Interaction between pain and emotional disorder. All cases with depressive disorder were excluded from this analysis. The number of cases varies because of missing data on some variables.

3.11.8 Do the three groups of pain, emotional disorder and the mixed group have a different pattern of birth ordinal positions?

The overall difference between groups is of borderline statistical significance but neither pain nor emotional disorder significantly predicted ordinal position. This does not seem to be a key factor for these disorders.

Table.3.11.8

The table show the frequency of the birth ordinal position in a group of children with pain (without emotional disorder), emotional disorder, those with both problems (mixed group, and psychiatrically referred controls with neither pain nor emotional disorder.

Birth ordinal position	Pain (no ED)		Emotional disorder		Mixed group (Pain + ED)		Psychiatric control group		χ^2 df = 9	Logistic regression
	N.	%	N.	%	N.	%	N.	%		s - value
Only child	8	10.5	34	11.9	6	8.2	140	8.6		PW-s <1.96
Eldest child	22	28.9	88	30.9	23	31.5	465	28.5		ED-s <1.96
										INT-s <1.96
Youngest child	24	31.6	89	31.2	31	42.5	476	29.2	17.6	
									p<.05>.01	
Middle (other) child	22	28.9	74	26.0	13	17.8	548	33.6		

$\chi^2 = <.05> .01$ PW = Pain ED = Emotional Disorder The analyses shown are a chi-square for overall difference between groups; and logistic regression analyses for the main effects of (a) pain and (b) emotional disorder and the interaction between them. INT = Interaction between pain and emotional disorder. All cases with depressive disorder were excluded from this analysis.

CHAPTER 4.

SUMMARY AND DISCUSSION OF THE RESULTS OF THE PRELIMINARY STUDY

4.1. Introduction

The combinations of pain with depression, and pain with emotional disorders are frequent in psychiatrically referred children. The overlap is much greater than would be expected by chance alone.

It is important to understand the reason for the comorbidity - is psychogenic pain part of depression, part of emotional disorders, part of both, or is the combination of pain and depression, or pain and emotional disorders a diagnostic entity? Do depression or emotional disorders cause pain? Or, are they independent problems that appear together in the same children only because of referral or ascertainment biases?

Distinguishing between these possibilities requires the identification and comparison of groups who show depression with pain and those showing pain without depression. The same procedure must be undertaken in groups showing pain and emotional disorders and pain without emotional disorders. Several comparisons between groups are needed, so the results are quite complex.

Accordingly, I will present a summary of the results of the third chapter, in order to simplify the complex pattern of findings. Secondly, I will present the strengths and weaknesses of the study, and finally will try to answer the questions that were raised in chapter 2.

4.2. Summary of the findings

The significant association with pains of mental origin compared with psychiatrically referred children were: younger age group and normal IQ, morbid anxiety or panic, morbid depression or sadness, situation - specific phobias, suicidal ideas attempt or threats, school refusal, hypochondriasis, conversion hysterical symptoms; eating disturbance, sleeping disturbance, non-epileptic disturbance of consciousness within the variables or somatic symptoms; and disturbance of child-mother relationships and family over-involvement within the variables of the family factors.

A) - Non-organic pain and Depressive disorder

Non-organic pain and depressive disorder were analysed as separate predictive factors. Pain was predicting of younger age group, symptoms of emotional disorder (morbid anxiety or panic, situation - specific phobias, school refusal and depersonalization or derealization), somatization disorder (hypochondriasis and conversion hysterical symptoms), somatic symptoms (eating and sleeping disturbance and non-epileptic disturbance of consciousness). Regarding the family factors, pain was a predictor of

disturbance of child-mother and family over-involvement.

Depressive disorder was a predictor of older age group, females, normal IQ and pubertal signs. Within the variables of symptoms of emotional disorder (morbid anxiety of panic, morbid depression or sadness, situation - specific phobias, ruminations, obsession or rituals, suicidal ideas, attempts or threats, irritability, screaming or tempers and school refusal), somatization disorder (hypochondriasis) and somatic symptoms (eating and sleeping disturbance). Disturbance of child-mother and child-father relationships, disturbance of patient siblings relationships and mental disturbance in other family members were also predicted by depressive disorder.

B) - Non-organic pain and Emotional disorder

When non-organic pain and emotional disorder were analysed excluding depressive disorder, pain was predictive of the following dependent variables: younger age group, normal IQ, hypochondriasis, conversion hysterical symptoms, disturbance of eating and sleeping, family over-involvement and family psychosocial stress.

Emotional disorder predicted hypochondriasis, conversion hysterical symptoms, eating and sleeping disturbance and family over-involvement.

The association of non-organic pain with the younger age group and family psychosocial stress suggested that the pain is not just a symptom of emotional disorder but has different associations.

4.3. Methodological considerations

4.3.1. *Strength of the study*

A number of factors in the study strengthened the findings. The use of a large data set made it possible to identify and select a larger number of children with pain of mental origin than would have been possible in a prospective study. The inclusion of groups of children with emotional disorders and a control of children with other forms of disorder enabled the analysis to control for the fact of psychiatric referral.

The fact that the data were collected by clinicians who were not testing a specific hypothesis made it less likely that the data were contaminated by particular ideas. Individual clinicians may have held theories about development of pain that could introduce bias into the results; but so many clinicians were involved in the department that no single bias is at all likely to have affected the group results. In general, the clinical cases notes are impressive. Ratings were based on a comprehensive psychiatric assessment. The presence of a standardized rating sheet meant that the absence of problems was recorded as well as their presence.

4.3.2. *Weaknesses of the study*

First of all, these data were collected in routine clinical work and must have some limitations of accuracy. As considered above, the inaccuracy is likely to be a random pattern of error rather than a systematic bias. The second problem is possible referral bias: since the data were collected from a psychiatric clinic, the overlap with emotional symptoms could have been exaggerated. Thirdly, the "pure" groups may not be "pure" - even if depression was coded as "0", still some might in principle have been present, thus reducing the difference between groups. However, this is not likely to be a severe limitation: the coding of depression was valid because it predicted differential associations. Fourthly, by using cases from a psychiatric hospital, it is possible that the children were referred because of emotional disorders or behaviour problems rather than pain. It is possible that pain was reported during the interview as a secondary complaint that the parents did not give much importance to. Certainly, they may not have been representative of non-organic pain generally: most children with pain are not referred. These findings must be replicated in a different sample before accepting validity. There is also, the possibility of contamination of the group of pain with different symptoms of emotional disorders. The children with pain may have been different from other groups in other, unrecorded symptoms: and if so this could confound the comparisons. As the data come from a specialized clinic, no children with organic pain could be used to compare with children with non-organic pain, emotional disorders and both. Furthermore, all data were based on a clinical source and no standardized measures for depression, anxiety and stress were used. The data were rated by various clinicians with different skills and experience (e.g.

behavioural, psychodynamic or organic background), without the use of proven criteria. Only cross-sectional data were available, so no longitudinal dimension of study could be included.

The biggest conceptual problem is that it is not certain that the "non-organic" cases really were non-organic. Physical investigation had obviously not been exhaustive. Some may well have been "cryptogenic". This would have worked against finding specific psychosocial factors.

4.4. Conclusions

In the aims of this study some questions were raised to be answered:

1 - First question: "Is depression more common in children with pains of mental origin than children without pain?"

Pain is associated with depression even within a psychiatrically referred group. This provides evidence for a confirmation of the first hypothesis of this study "depression is common in children with pain". It is not by any means an invariant association; and some children with pain have no evidence of other depressive features.

2 - The second question of the study: "Are other emotional disorders, especially anxiety, more common in children with pain than in children without pain?" could also be answered in the affirmative. First of all, several symptoms of emotional disorder,

particularly, morbid anxiety, worrying or panic, situation - specific phobias, school refusal, and suicidal thoughts or threats were more common in children with pain than controls. Secondly, morbid anxiety, worrying, panic, situation - specific phobias and school refusal were commoner in those with pain than controls, even when depression was excluded. Depersonalization was more frequent in the pain group (without depression) but there were too few cases to allow a clear conclusion. Conversion hysterical symptoms also emerged as a specific factor for children with pain, because it was associated with the pain group and not with the depressive disorder group. The association, however, was not strong or specific enough to indicate that non-organic pain is simply a symptom of hysteria. The link may rather reflect a general somatizing tendency in a few children. One might speculate that, through the body, children can express their emotions as a means of saying that they exist and need to be seen and loved.

3 - Third question - "Is the association between pain and depression likely to be due to a causal relationship? if so, the mixed group of pain associated with depression is likely to resemble the depressive group".

Causality is hard to infer from a cross-sectional study. However, if I had found that the comorbid group (with pain and depression) was identical to the depressive disorder group in its associations, this could have supported the aetiological role of depressive disorder. In fact, however, the associations of the comorbid group were not identical to those of either "pure" group, so do not help very much in deciding what comes first.

4 - With regards to the fourth question - "are intra-familial relationships an aetiological factor for children who experience pain?" - There are two relevant ways of considering this. Firstly, the only abnormal family relationship to be associated with the group of children with pains of mental origin (when it was compared with the psychiatric control group) and the pure pain group (when it was compared with the depressive disorder group), was disturbance of child-mother relationships. Secondly, family over-involvement was associated with non-organic pain, but this association was not greater than in the emotional disorder group. Some children with non-organic pain without depressive disorder present in an enmeshed family that might be the cause of pain. This association calls attention to the families behaviour before and after the children had experienced pain that could be thought to help the treatment of these children.

The association between abnormal family relationships with children with non-organic pain is in accordance with earlier findings in the studies of Green (1967), Stone et al. (1970), Apley (1975), Minuchin et al. (1975), Hugh et al. (1978) and Liebman (1978). Nevertheless, these studies above did not have the strength of being able to separate a group of children who had experienced only non-organic pain from a group of children with depressive disorder and to compare both groups with a group of children without pain. Therefore, those children with non-organic pain with abnormal intra-familial relationships in previous studies, seem to be the same as the comorbid group (pain and depression disorder) in my study. So, my study can show more clearly the link between family relationships and non-organic pain than the previous studies above.

In contrast, disturbance of child-father relationships and disturbance of patient-siblings relationships emerged as a possible etiological factor for depressive disorder. It is possible that this finding indicates a lack of fathers' participation in the children's day-to-day life or a lack of awareness by them of the amount of attention that their children need. It also is possible that the child could interfere in the parents' arguments or fighting at home by taking the mother's side against his/her father. Secondly, children with depressive disorder can be quiet, or irritable or have difficulty in communication, so will have particular difficulty in talking, playing and interacting with siblings.

Regarding abnormal psychosocial situations, family over-involvement was more common in pain. Family psychosocial stress and inadequate living conditions were associated with the non-organic pain group. The association of family over-involvement with non-organic pain may or may not represent an etiological factor. If it is aetiologically related, it is not pathognomonic because it is also found in non-depressive emotional disorder. On the other hand, inadequate living conditions are present in too few children with pain to allow a secure conclusion.

5 - The fifth question of the study - "Is non-organic pain always a symptom of emotional disorder?" - It is very unlikely that non-organic pain is nothing else than a symptom of emotional disorder. Children with non-organic pain presented different symptoms from children with emotional disorder. Nevertheless, children with non-organic pain had some symptoms of somatization disorder (hypochondriasis and conversion hysterical symptoms) and somatic symptoms (eating and sleeping

disturbance) in common with children who had emotional disorder.

The implication of results will be discussed further in chapter 7. They call for a prospective study in a different sample with improvements in design and outcome measures. It is still necessary to make exploratory studies of the possible causes of non-organic pain to help clinicians improve their treatments.

PART III - THE MAIN STUDY

CHAPTER 5.

COMPARISON BETWEEN CHILDREN WITH PAIN AND WITHOUT PAIN AMONG PAEDIATRIC REFERRALS

5.1. Introduction

The study was carried out, using a paediatric sample rather than one from an epidemiological source, because I needed a thoroughly investigated group, in which organic disease was excluded, whereas with epidemiological psychiatric data I could not be sure about the absence of physical disease or dysfunction.

The finding that non-organic pain was not a non-specific symptom of disturbance but could have a specific association and pathogenesis called for further study. However, it was also evident that a psychiatrically referred group had its weaknesses for this purpose. Firstly, the majority of children with pain had not been referred for that reason. The case notes (pages 114-123) illustrate that most children had been sent to a psychiatrist for other reasons. The result may well inflate the true association in the population of somatic and psychological symptoms and decrease the specificity of the associations of pain.

Secondly, the grounds for deciding that pain was psychogenic could not be controlled. Physical investigations were very variable prior to referral; and after psychiatric

referral, were often thought by the clinicians to be contra-indicated.

Thirdly, the number of children referred were too few for a prospective study to be mounted. This in itself is of interest, given the apparently very high prevalence in the population.

Fourthly, the association of affective disorder and pain could not be studied in a group where affective symptoms were an important part of the decision to refer. Because of these reasons I chose to proceed with the research in a paediatric population. I was looking for a group previously investigated (if time had passed, a cryptic disease could appear and I needed a definitely non-organic group).

The findings from the preliminary study encouraged the pursuit of my main objective which was the study of non-organic pain, its characteristics and its associations with emotional disorders (particularly with depression and anxiety) in an attempt to establish differences from organic pain.

5.2. Aims of the study

The purpose of this study is to investigate children with definite non-organic pain and to ask whether:

- 1 - Is depression more common in children with non-organic pain than in controls?

- 2 - Are other emotional disorders, especially anxiety, more common in children with non-organic pain than in controls?
- 3 - When depression is present, is it the cause of pain? if this is the case, we shall find that children presenting non-organic pain will show higher rates of depressive or emotional disorder than children whose pain is associated with an organic disease. It is very difficult to consider the causes in any non experimental design.
- 4 - Will children with non-organic pain and organic pain have different characteristics?

Non-organic pain will by definition be characterized by an absence of known physical illness. Furthermore there will be a characteristic clinical presentation that could help in the diagnosis. Pains will be more diffuse and associated in time with the onset of stressful life events and emotional symptomatology. These factors (of acute and chronic stress and subjective distress) will be strong enough to clearly discriminate between non-organic and organic groups.

- 5 - Will children with non-organic pain and organic pain have a different family environment? In particular, children with non-organic pain will be more likely to live with a single parent, present enmeshed families and show more conflicts in the family than children with organic pain.

5.3. Methodology

5.3.1. *Study design*

The non-organic pain study was conducted in 8 to 16 year old children of both sexes, excluding moderate to severe mental handicap. All subjects needed to be able to read and understand the questions. The criteria for inclusion in the study were:

Subject Group: Children who presented to the paediatric outpatient clinic with one of the following:

- 1) - At least three bouts of pain severe enough to affect their activities.
- 2) - Pain of a duration of more than three months.
- 3) - Absence of known physical disease that could account for the pain.
- 4) - Each child with pain was investigated by paediatricians, before participation in the study to eliminate organic pain.

Children were excluded if they showed evidence of:

- 1) - Organic disease.
- 2) - Drug dependence or abuse.
- 3) - Pain which appeared just before or during the menstrual period
- 4) - Mittel-schmerz mid cycle pain.

Control Group

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The control groups were divided into two groups:

A - Organic Pain Group

A consecutive sample of children from paediatric units who presented pain with organic cause (Ulcerative colitis, Crohn's disease, Sickle cell anaemia, nephrolithiasis, or rheumatoid arthritis). The following children were excluded:

- 1) - Children who had pain just before or during the menstrual cycle.
- 2) - Children with mittel-schmerz mid cycle pain.
- 3) - Children who were drug dependent or drug abusers.
- 4) - No psychiatric complaints

B - Non-pain Children

Children consecutively attending a paediatric unit who had not experienced pain of any origin for more than 6 months previously and had come for other problems (e.g. parents worry about weight and height, general health, because their children are eating less or more than usual, but all of them didn't complain about pain). Children were excluded if they had any of the following:

- 1) - Pain; or physical complaints due to an organic disease, over the last three months.

- 2) - Mittel-schmerz mid cycle pain.
- 3) - Drug dependence or abuse.
- 4) - No psychiatric complaints

5.3.2. *Procedures to collect data*

5.3.2.1 - Choosing the clinic for data collection

To start the data collection all paediatric clinic services in South-East London were contacted and many doctors agreed that non-organic pain was a common referral problem. The first goal in starting the collection of data was to find a group of children with definitive non-organic pain.

The Department of Community Paediatrics at Kings College Hospital and St. Giles Hospital were also contacted and agreed to cooperate.

Ethical approval was obtained from the appropriate committees of the Special Health Authority and Camberwell Health Authority. I obtained information from secretaries and paediatricians from the clinics and read the case notes of children in the selected age range.

In the annual public health report the South East London Commissioning Agency (which includes Camberwell Health Authority, Kings College Hospital and St. Giles Hospital), said that they were offered all paediatric and Community Services for a

population of 26.232 children from 5 to 14 year old. Epidemiological data reviewed in chapter (1) suggest that they should contain 2.623 (10%) children with an unexplained pain. In practise, referrals are uncommon for this reason. Most of the clinics, though they believed children were being referred to them, had no such problems when I reviewed their case notes. In fact, all children with problems were being seen at one general paediatric clinic at Kings College Hospital. There was no special interest; rather, other clinics appeared to be refusing the cases. From that clinic I obtained all 16 subjects, 14 children with organic pain (control group A) and 14 children without pain (control group B) who were referred for other problems (mother worrying about weight, height or puberty development, etc). To complete control group B, 9 children (without pain or somatic complaints) were obtained from school.

5.3.2.2 - Criteria to choose the subjects.

These numbers are smaller than those originally planned for the study. Strenuous efforts were made to identify children referred because of pain, by contacting paediatric services over a wider area of south London. In spite of the willing co-operation of paediatricians, no further cases were identified. It seems that the vast majority of cases are being dealt in primary care. A shift to a general practice sample was considered, but would have had the problem of uncertainty of identification: the cases would have been cryptogenic rather than definitively non-organic.

To find a group without organic pain the following procedures were taken:

- 1) - All of the children who came to the paediatric outpatient clinic had a full

assessment and physical examination carried out by a paediatrician. Depending on the case, a laboratory investigation was carried out as well. In patients with multiple pains, the following examinations were also carried out: middle stream urinalysis (MSU), blood count cells, erythrocyte sediment rate, and biochemistry (sodium, calcium, potassium, creatinine, urea, amylase, phosphate, alkaline phosphate, albumin, protein, bilirubin, aspartate amino-transferase (AST) and gammaglutaryl transferase (GGT)] and antibody for systemic lupus erythematosus (SLE). No abnormalities were found. Having had the full assessment and physical examination, if children with headaches had a clear diagnosis, e.g. migraine, they went entered a trial of pizotifen and laboratory investigations were only carried out at follow-up if there was no improvement. In some children with headaches, an EEG, skull X-ray and CAT-scan were carried out to help in the diagnosis. In one patient who presented abdominal pain, soiling and diarrhoea, the laboratory investigations were exhaustive and MSU, erythrocyte sediment rate, faeces (including faeces cultures), test for malabsorption, T3, T4, cell folate assay and red cell folate were all carried out but the results showed no abnormality. After laboratory investigations the procedure was usually to follow-up the children. I followed-up all the patients who participated in the study for more than six months. The follow-up was important to exclude any "cryptogenic" illness.

5.3.2.3 - Case findings.

To find the cases I needed I went to the files of the patients in the day clinic who had been seen by the paediatrician. If the patient filled the criteria for the study, the parent and child were approached and invited to participate in the research and the consent

form was signed.

If the patient did not come to the clinic, I sent them a letter explaining the content of the study and invited them to collaborate in it. When the parents did not answer the letter I tried to contact them by telephone or went to their homes to introduce myself and explain about the study.

The other way I reached the patients was from the files of the medical records. 440 files were studied in order to find children to fit the criteria for the study. 20 children who had pain with lack of organic cause were found and invited to participate in the study. They were contacted by letter, phone or were visited at home 16 agreed to collaborate.

All parents and children who participated in the study gave permission to be interviewed. They were interviewed and completed the questionnaire and scales in the hospital or at home.

5.4. Measures

Pain Questionnaire for Children and Adolescents

This questionnaire was developed and piloted for the purpose of this study (appendices - A.2) and was based on the studies of Bille (1962), Apley et al. (1958,

1975), Stone et al. (1970), Oster (1972), Liebman (1978), Egermark-Eriksson (1982), Pantel et al. (1983), Bowyer et al. (1984), Coleman (1984), Gascon (1984), Brown et al. (1989) and Osborne et al (1989). It is divided into three parts: the first consists of the identification of the child, parents and the sort of pain.

The second part related to the pain itself and is divided into five different sites of pain: abdominal pain, headaches, chest pain, limb pains, and other pains. The following questions were addressed to each type of pain: the time of day that pain appeared, the duration, frequency, and the day of the week that the pain appeared. The intensity of pain was weighted by asking the children to put a point on a line that started on the left side with no pain and the right with the pain as bad as it could be. This line was divided in three parts: mild, moderate and severe. The intensity of pain was estimated by measuring in 'cms' the distance from the left hand side (no pain) to the position rated by the children. The minimum intensity was zero and the maximum was 112. The other questions related to the time (in months) when the pain appeared, how the child felt the pain, the region where it started, associated physical troubles (e.g. vomiting, feeling sick, etc), what started it off and what made it better or worse.

The third part of the questionnaire consisted of subjective questions about his/her life (e.g. is there anything wrong with your life?).

To test the reliability of the Pain Questionnaire, I consulted 19 out of 30 case notes from children who participated in the study. In 15 out of 19 (79%) case notes, in

children assessed by paediatricians, the questions they were asked were also in accordance with the pain questionnaire. In 4 out of 19 (21%) case notes the questions addressed in the pain questionnaire were not fully reported in the case notes. If the questions about pain were completely reported in the case notes, total agreement was found between the questions made by the paediatricians and the pain questionnaire.

Prior to the analysis of the questionnaire data, a description of the modifications to the questionnaire is described.

To answer the question: "Are you living with": the answers mother and father were given a code of 0, whilst living with any one else was given a code 1, i.e. parent (mother or father), step parents, foster parents, adoptee parents and others.

In answer to the question: "How many brothers and sisters have you?": none and one were given the code 0, whilst if the number of siblings was two, three, four or more than four the code was 1.

In the second part of the questionnaire the questions:

1) "When does it come on?" - the answer was coded as 'fixed' if it was in the morning before school, during school-time, in the afternoon after school or in the evening; and described as a fixed point in the time of day.

2) "How long does it last?" - The answers were recoded to 'less than 60 minutes', and 'one hour or more'.

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3) "How often do you get it?" - More than 2 times per week was taken as frequent; less than that as infrequent.

4) Question 5 : " How long have you had this pain?" - The recoded distinction was between those with 2 years' history or less, and those with more than 2 years.

Spielberger State-Trait Anxiety Inventory for Children

The State-Trait Anxiety Inventory for Children (STAIC) consists of two different parts; a) the STAIC A-STATE Scale consists of 20 statements that ask children how they feel at a particular moment in time; b) the STAIC A-TRAIT Scale also consists of 20 item statements that indicate how they generally feel.

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The STAIC A-STATE is designed to measure transitory anxiety states, that is, subjective, consciously perceived feelings of apprehension, tension and worry that vary in intensity and fluctuate over time. The STAIC A-TRAIT Scale measures relatively stable individual differences in anxiety proneness, that is, differences between children in the tendency to experience anxiety states.

Administration: the STAIC was designed to be self-administered and has no time limits. It may be given either individually or in groups (for our proposal it was completed on an individual basis). The questions are multiple-choice and easy to understand and it takes less than 20 minutes to complete both forms.

Scoring: the stem of all 20 STAIC A-State items is "I feel". The child can respond by circling one of the three alternatives that describe him/her best. Half of the key items are indicative of anxiety (e.g. nervous, worried), while the other half reflect the absence of anxiety (e.g. calm, pleasant). For items in which the key term indicates the presence of anxiety, very and not are assigned values of 3 and 1, respectively. The order of weighting is reversed for items in which the key terms indicate the absence of anxiety, i.e., very = 1 and not = 3. A value of 2 is assigned to all responses where the child circles only the adjective. For example, very nervous = 3; nervous = 2; and not nervous = 1; and very calm = 1, calm = 2 and not calm = 3. Items indicative of the absence of anxiety, which are scored 1, 2 and 3 are: 1, 3, 6, 8, 10, 12, 13, 14, 17 and 20. For the remaining items, very is scored 3 and not, 1. In the STAIC A-TRAIT the child responds to each item by indicating the frequency of occurrence of the behaviour described by the item. Weights assigned to hardly ever, sometimes, and often are 1, 2 and 3, respectively.

Children normally fill in all questions of the STAIC. If a child omits one or two items on either STAIC A-STATE or A-TRAIT scales the full scores can be obtained by the following procedure: a) determine the mean score for the items that the child responded to; b) multiply this value by 20; c) round the product to the next higher whole number. If three or more items are omitted, the validity of the scale must be questioned.

The STAIC A-STATE (appendices - A.3) is useful for determining the actual level of anxiety and as an indicator of the level of transitory anxiety experienced by children.

The A-TRAIT (appendices - A.4) is useful for selecting children who vary in anxiety proneness. It was used to detect the presence of anxiety in children with pain and to compare them with those children in the control groups.

The authors report that test-retest reliability coefficients for fourth, fifth and sixth grade school children over a six-week interval were: A-Trait - males 0.65, females 0.71; A-State - males 0.31, females 0.47. The median item remainder correlation for the items in the A-State scale was 0.38 for males and 0.48 for females. For the A-Trait scale, the median correlation was 0.35 for males and 0.40 for female (Bucky et al., 1972; Spielberger et al., 1973).

Question 19: "I get a funny feeling in my stomach" - was excluded from the scores of State-A State in children with pain. This exclusion was made so that it did not interfere with the total scores, because children with pain might obviously have more worries or anxieties about somatic symptoms than children without pain.

Mood and Feelings Questionnaire (MFQ)

This questionnaire consists of 33 items adapted from Costello and Angold (1988) and was designed for the age range 8 to 18. The MFQ covers all the DSM-III-R symptoms of depression. Each MFQ item consists of a set of statements that ask children how they have felt in the past three months and each response is rated on a three point scale not true, sometimes, true, weighting 0, 1 and 2. The cut-off point

for children is 9 and for adolescents is 12 or over.

When the 12 or over cut-off point was used, the authors obtained a sensitivity of 88%, a specificity of 70% and screening efficiency of 82%. The MFQ has the virtue of being specifically designed to "net" DSM-III-R depression, and to provide parallel information from parent and child. It will be useful to detect the presence of depression.

Question 25: "I worried about aches and pain" - will be excluded from the scores in children with pain. This exclusion was made so that this question did not interfere with the total scores, because children with pain can have more worries or anxieties about pain than children without pain (appendices - A.5).

Fear Survey Schedule for Children-Revised (FSSC-R)

The questionnaire is a simplified version (39 items) of the FSSC-R (adapted from Ollendick, 1989). The children indicate their level of fear in response to the various stimuli on a three point scale (not at all, a little, a lot). These are scored 1, 2 and 3 respectively and are then calculated over the 39 items to yield a total score in the range of 39 to 117. The FSSC-R contains five primary factors: fear of failure and criticism, fear of the unknown, fear of injury and small animals, fear of danger or death and medical fears. The reliability of the FSSC-R was originally determined in three ways: internal consistency, test-retest reliability and stability of scores over 1

week and 3-month intervals. The internal consistencies for the British sample were 0.94, very similar to that of the American sample of 0.95. One week test-retest reliability for the American sample for total fear score was 0.82, and at a three month interval it was .55 (Ollendick, 1983; King et al. 1989; Ollendick et al. 1989; Ollendick et al. 1990).

The FSSC-R internal consistencies were high, as well as the reliability. It is useful in identifying specific fears in children and to determine which fear scores are associated with higher levels of anxiety. It will be used to detect fear in subjects and control groups and to compare these with the STAIC measures (appendices - A.6).

Modified Version of Johnson and McCutcheon Life Events Checklist

It contains 33 items adapted from Johnson and McCutcheon, 1980 (plus a space indicating significant events experienced and not listed). The type of events experienced before the pain started are indicated in a column headed "Did this happen before your pain started?" The effect that each event had on the subjects' lives is rated a five point scale: very nasty = -2; nasty = -1; no effect = 0; nice = 1 and very nice = 2.

Positive and negative life change scores were obtained by adding the impact ratings of experienced events that were rated desirable and undesirable respectively (impact rating procedure) by simply adding the number of positive and negative events

experienced, and giving each a weight of a unit rating. In the originators' reliability studies, the test-retest correlations for positive and negative life change scores were 0.69 ($p < .001$) and 0.72 ($p < .001$) respectively. When scores were derived using the standard impact rating procedure, test-retest correlations were 0.71 ($p < .001$) for positive and 0.66 ($p < .001$) for negative change scores. Gilbert in his doctoral dissertation (mentioned in Johnson, 1986), compared the answers from mothers and children and the correlations of the test-retest reliability of the weighted indices of positive and negative change considered separately were 0.45 and 0.60 respectively. Negative change has been found to be correlated with measures of anxiety, depression and poor control over environmental events. In males it was also found that negative change scores were correlated with poor health. It will be used to score stressful life events that can be important in triggering the non-organic pain and to compare these with the STAIC (Johnson, 1986, appendices - A.7).

Family Environment Scale (FES)

This self-rating scale consists of 90 statements about families. These statements are subdivided into ten subscales that measure the social-environmental characteristics of families. It is constructed in three forms: Real form (Form R) which measures perceptions of the nuclear environments: Ideal form (Form I) which measures conceptions of ideal family environments, and the Expectations form (Form E) which measures peoples' expectations about family settings.

The FES has 3 sets of dimensions: 1) relationships, that measures cohesion, expressiveness and conflict in family members; 2) Personal growth, that measures independence, achievement orientations, intellectual cultural orientations, achievement-recreational orientation and moral-religious emphasis of the family; 3) system maintenance, that measures: a) organization and structure in planning family activities and responsibilities and b) control - rules and procedures in family life. The authors reported that internal consistencies for the 10 subscales ranged from 0.61 to 0.78. The test-retest reliability for the 10 subscales over a period of two months ranged from 0.68 to 0.86. Form R was used to detect the children's and parent's perceptions of the family on the three sets of dimensions, and to determine which family type the children with "non-organic" pain pertain (Moos et al., 1986, appendices - A.8).

The FES was used to describe and compare family social environments and to contrast parent and child perceptions of it. The child and the parent simply put an 'X' against each of the 90 statements either under the word "TRUE" or "FALSE". The answers were transferred to a template. The items are arranged so that each column constitutes one of the subscales. The final score is calculated by adding the number of Xs showing through the template in each column which is then entered in the R/S (raw score) box at the bottom (appendices - A.9). To derive a score for the whole family on each subscale, the total score for the parent and the total score for the child on each subscale were added and the total divided to calculate the family score. An analysis of variance was carried out on the three groups using these scores. Following this, the family scores for the whole sample, on each subscale, were then added and a mean for the total sample was calculated for each subscale. Within the three groups,

these mean values were then used to divide the whole sample into high scoring (above the mean) and low scoring (below the mean) families on each subscale. Families scoring above the sample mean on each subscale were given a value of zero and families scoring below the sample mean were given a value of 1. A chi-squared analysis was carried out on these values.

5.5. Analysis

5.5.1. *Analysis of the questions*

A - Question 1: *"Depression will be more common in children with non-organic pain than in controls"*, was answered by comparing children from the subject group and control group B (children without pain). To answer this question the Mood and Feelings Questionnaire and Pain Questionnaire for Children and Adolescents was used.

B - Question 2: *"Other emotional disorders, especially anxiety, will be more common in children with non-organic pain"*, was answered by two different comparisons:

1 - Children from subject group with control group A (children with organic pain).

2 - Children from the subject group with control group B (children without pain). The comparison was made on the basis of the anxiety and other

psychiatric symptoms in the two groups.

To answer these questions the following were used: Spielberger State-Trait Anxiety Inventory for Children, Fear Survey Schedule for Children-Revised and Pain Questionnaire for Children and Adolescents.

C - Question 3: *"When depression is present, is it the cause of the pain? if this is the case, we shall find that children presenting non-organic pain will show higher rates of depressive or emotional disorder than children whose pain is associated with an organic disease"* - Here I needed to compare the subject group with the control group A (children with organic pain). The following measures were used: Mood and Feelings Questionnaire, Spielberger State-Trait Anxiety Inventory for Children and Pain Questionnaire for Children and Adolescents.

D - Question 4: *"Children with non-organic pain and organic pain will have different characteristics: non-organic pain will, by definition, be characterized by an absence of known physical illness. Furthermore, however, there will be a characteristic clinical presentation that could help in the diagnosis. The pains will be more diffuse and associated in time with the onset of stressful life events and emotional symptomatology. These factors (of acute and chronic stress and subjective distress), will be strong enough to clearly discriminate between "non-organic" and "organic groups".* The subject group was compared with the control group A ("organic" pain) and a discriminant

function analysis used to suggest the best diagnostic combination of factors for future use. Oneway analysis of variance was used to see the associations of each group.

The following measures were used to address this questions: Mood and Feelings Questionnaire, Spielberger State-Trait Anxiety Inventory for Children, The Modified version of Johnson and McCutcheon Life Events Checklist, Pain Questionnaire for Children and Adolescents and Family Environment Scale.

- E - Question 5: *"Children with non-organic pain and organic pain will have a different family environment. In particular, children with non-organic pain are living with a single parent, will present enmeshed families and more conflicts in the family than children with organic pain".*

The following measures were used to answer this question: Mood and Feelings Questionnaire, Spielberger State-Trait Anxiety Inventory for Children, the Modified version of Johnson and McCutcheon Life Events Checklist and Family Environment Scale.

5.5.2. Statistical analysis

To analyse the data the SPSS-PC Statistical package was used. To compare groups the nonparametric tests (chi-square) with the significance level at $p \leq 0.05$ were used. When

the number of subjects or controls in each cell was less than 5 the Fisher's Test was used and the 0.05 level of significance was utilised.

To compare the mean scores in the questionnaire and scales between the groups, parametric tests (oneway analysis of variance) was employed. Scheffe tests were used to compare groups within the one way analysis of variance, and the 0.05 level of significance was used. To compare the groups with non-organic pain with organic pain, and the group with non-organic pain with the group without pain.

A measure of agreement between the parent and child questionnaires was calculated using the Spearman correlation co-efficient and a 0.05 level of significance.

A discriminant analysis was employed to find a group of predicting characteristics of non-organic pain. After the discriminant analysis was carried out, a group of predicted variables and the groups with non-organic and organic pain were cross-tabulated (the 0.05 level of significance was used).

Chi-square was employed to compare children with non-organic pain and children without pain on the subscales conflict of the family environment scale; and the same procedure was used to compare children with non-organic pain with children with organic pain on the subscales organization. In both analyses the 0.05 level of significance was considered.

CHAPTER 6.

RESULTS OF THE MAIN STUDY

6.1. Introduction

The children who took part in this research were referred by General Practitioners to the Paediatric Outpatient Clinic at King's College Hospital to investigate the pain that they were presenting. In 20 children, the investigation did not find any organic cause for the pain and these children and parents were contacted directly at the hospital or by letter or phone inviting them to participate in the study. I went to their homes to explain the format of the study to parents who did not answer the letter. 16 (80%) of them agreed to take part in the study and they made up the subject group or non-organic pain group. They were all from the same paediatric outpatient clinic. 13 parents and children completed the questionnaires at home and 3 at the hospital.

To form the control group with organic pain, 17 parents and children were invited to participate in the study in the same way as above, 14 (82.3%) agreed to participate. 12 of these children were from the same paediatric outpatient clinic and 2 from another.

The control group of children without pain were made up of 23 children. 14 (60.9%)

of them came to the hospital for a check up for reasons other than pain and 9 (39.1%) were from school. None of the children were taking any drugs and all had been pain free for at least 6 months before the research was started.

The sex distribution in the three groups was 9 boys (56.3%) and 7 girls (43.8%) in the group of children with non-organic pain; 7 boys and 7 girls (50% each) in the group of children with organic pain and 12 boys (52.2%) and 11 Girls (47.8%) in the group of children without pain.

The age range of the non-organic group was 103 to 199 months and the mean was 151.7 with a standard deviation of 28.2; in the organic group it was 111 to 180 months and the mean was 142.7 months with a standard deviation of 22.9; and in the group of children without pain 100 to 199 months the mean was 149.5 and the standard deviation was 25.7.

In the group of children with organic pain and the children without pain, parents and children completed the questionnaires at home. All parents and children who agreed to participate in the study signed the consent form giving permission for interview.

6.2. Prevalence of pain

All subjects were from the same Paediatric Outpatient Clinic where 440 children were seen from April 1992 to April 1993. 42 patients participated in the study, 28 of them

with pain. 16 of the 28 had non-organic pain and they made up the subject group. 12 of the 28 and two more children from the other clinic, who had an organic pain, made up the control group with organic pain. 14 out of the total 42 were children without pain, and they plus nine more children from school made up the control group without pain. In the non-organic pain group 43.8% had headaches, 37.5% abdominal pain, 6.3% limb pains, and 12.5% presented with more than one type of pain (one child had multiple pains associated with abdominal pain and another had headaches and back pain). In the organic pain group 50% had headaches (migraines and post-head injury), 35.7% abdominal pain and 14.3% limb pains (1 with Osgood Schlater and one with rheumatoid arthritis). In a period of one year at the outpatient clinic the prevalence of non-organic pain was 3.6%. If all the patients invited to participate in the study, whether they accepted or not, were included, then the prevalence of non-organic pain would increase to 4.5%.

6.3. Is the familial constitutions different in non-organic pain and organic pain?

6.3.1. *Number of parents living with the family*

The results showed that 56.3% of the children with non-organic pain, 50% of the children with organic pain and 69.3% of the children without pain were living with both their father and mother and no significant differences were found between the groups.

6.3.2. *Number of children in the families.*

In the data that follows the statistics include the children who participated in the study. The results showed that 50% of the families of children with non-organic pain had one or two other children and 50% three or more; the child with organic pain was never an only child, 43% included two children and 57% included three or more. 52.2% of the families of the children without pain had one or two other children and 47.8% three or more. There were no differences between any of the three groups regarding the number of children within the family.

6.3.3. *The birth ordinal position*

In the group of children with non-organic pain, 25% were either the oldest or youngest child, 31% were the middle child and 19% were the only child. In the group of children with organic pain, 29% were the oldest child, 14% the middle child and 57% the youngest. In the group of children without pain, 39.1% were the oldest child, 17.4% the middle child, 30.4% the youngest and 13% the only child. The chi-square comparison did not show any significant differences between the groups.

6.4. Could the time, frequency, duration, intensity and localization of pain be useful in the differentiation of non-organic pain from organic pain?

6.4.1. *The time the pain appears*

According to the child, the results showed that in the group of children with non-organic pain, pain appeared at a fixed time of the day for the same child and in children with organic pain, it occurred at different times of the day. On the basis of the parent questionnaires, there were no between group differences for the time of day that the pain appeared (table 6.4.1.). The correlations between children's and parents' answers in the group of children with non-organic pain was high (.51) and significant ($p=.01$). No significant correlations was found between the child and parent questionnaires in the group of children with organic pain.

Table 6.4.1

This table shows the frequency of a fixed time of day when the pain appeared

Sort of pain	Fixed point in	Variable
	Time of the day	
Non-organic	7*	9
Organic	1	13*

df = 1 * $p<.05$

the fixed point of day = morning, school-time and evenings

6.4.2. *Duration of the pain*

The results did not show any significant difference between the organic pain group and the non-organic pain group for both child and parent questionnaires. In 50% of the children with non-organic pain and 60% of the children with organic pain, the duration of pain was more than one hour. The correlation between child and parent questionnaires was high (.88) and significant ($p=.001$) for the organic pain group and low, negative and not significant for the non-organic pain group.

6.4.3. *How often do the children experience pain?*

On the basis of the children's and parents' questionnaires, there were no between group differences for the frequency that pain appeared. The correlations between children's and parents' questionnaires was high (.76) and significant ($p=.001$) in the group of children with organic pain and negative, very low and not significant in the group of children with non-organic pain.

6.4.4. *Which day of the week does the pain appear?*

On the basis of the children's and parents' questionnaires, there were no between group differences for the day of week that the pain appeared. In the children with non-organic pain parents reported that 12% of the children never had pain and the children reported that only 6% of them had never had pain at the weekend.

The correlations between children's and parents' questionnaires was high (.69) and significant ($p=.001$) for the group of children with non-organic pain. They were not correlated for the group of children with organic pain.

6.4.5. *The Onset of Pain*

The results did not show any significant differences between both the pain groups for either the parents' or the children's questionnaires for the time of onset of the pain. In the group of children with non-organic pain, 69% of the parents reported that the pain started 2 years or more before the interview, 37% of the children reported the same and 37% of the children did not know. The correlation between child and parent questionnaires for the children with organic pain was high (.79) and significant ($p=.001$) and negative, very low and not significant for children with non-organic pain.

6.4.6. *Intensity of Pain*

The children in the two groups with pain, reported their pain as being of the following intensities: in the group of children with non-organic pain 19% reported the pain as being mild to moderate, 50% moderate to severe and 31% severe; in the group of children with organic pain 36% reported the pain as being mild to moderate, 43% moderate to severe and 21% severe. The oneway analysis of variance did not show any significance between group differences for the intensity of pain. The correlations between the intensity of pain and the mean scores on the Mood and Feelings

Questionnaire, State-Trait Anxiety Inventory for Children, Fear Survey Schedule for Children-revised and Life Events checklist respectively were all low or very low and not significantly different between the groups for any single comparison.

The discriminant function analysis showed that the following variables predicted the presence of non-organic pain: when does the pain come on? How long does it last? How long have you had this pain? vomiting, feeling sick and pallor. For the single discriminant function, the Eigenvalue was .9309, Wilks lambda was .5179 and the chi-square was 16.450 with 6 degrees of freedom ($p=.0115$). When the variables were compared between the children with non-organic pain and the children with organic pain, the chi-square analysis showed a significant association with non-organic pain ($p<.001$), a sensitivity of 93.8% for the group of children with non-organic pain and a specificity of 78.6% (group of children with organic pain). This level of prediction would not necessary be found in another group, as the discriminant function is being tested in the same population as that from which it was derived.

6.4.7. *Localization of Pain*

The results showed that 18.7% of children with non-organic pain reported their pain as diffuse and 81.7% of pain was localized (53.8% of those in several different sites). However, 100% of children with organic pain reported their pain as localized and 42.8% in several different sites.

6.5. The presence of migraine in the organic group

It could be objected that the distinction between migraine and non-organic pain is not valid. Accordingly, a reanalysis was done excluding the cases of migraine.

The reanalyses of the children and parents questionnaire excluding the migraine cases from the organic group, showed the same pattern of findings. In particular, depression (parents questionnaire), anxiety state, fears (both children and parents questionnaires), the subscales intellectual cultural orientation and active recreational orientation still showed more deviant in both groups in non-organic pain than children without pain. There are chance that the tendency for families of children with organic pain to be more organized than families with children with non-organic pain was no longer significant. However, the direction and size of the difference between groups was very similar. The conclusions are that the results are not dependent on whether migraine cases are included as organic.

6.6. Are depressive symptoms more common in children with non-organic pain than in children with organic pain and children without pain?

The group of children with non-organic pain did not differ from the group of children with organic pain for scores of depressive symptoms in either the child or parent questionnaires despite the fact that children and parents in the group of children with

non-organic pain rated the number of depressive symptoms higher than parents and children in the group of children with organic pain. The correlations between children and parents on the Mood and Feelings questionnaire were high (0.65) and significant ($p=.01$) in the group of children with non-organic pain, in the group of children with organic pain, the correlations were very low (.02) and not significant.

The group of children with non-organic pain rated themselves as experiencing more depressive symptoms than the group of children without pain in the children's questionnaire, however this difference was not significant. Parents of children with non-organic pain rated their children as showing significantly ($t = -2.1$ and $p< 0.05$) more depressive symptoms than those parents of children without pain. The correlation between child and parent ratings in the group of children without pain was high (.76) and significant ($p=.001$).

The mean scores for the Mood and Feelings Questionnaire and Fear Survey Schedule for Children-Revised and the correlations between the child and parent questionnaires are shown in table 6.6.

Table. 6.6.

This table shows the mean, standard deviations and the correlations between child and parent questionnaires.

Questionnaire	Children		Parents		Correlation
	Mean	Std	Mean	Std	
MQQ	a = 19.3	a = 12.4	a = 18.4	a = 13.3	a = .65*
	b = 15.8	b = 12.8	b = 12.3	b = 8.1	b = .02
	c = 13.8	c = 12.8	c = 11.4	c = 10.8	c = .76**
FSSC-R	a = 64.1	a = 13.2	a = 63.7	a = 14.9	a = .53
	b = 59.4	b = 10.6	b = 59.3	b = 14.1	b = .00
	c = 54.6	c = 7.1	c = 53.8	c = 8.6	c = .53**

MQQ = Mood and Feelings Questionnaire; FSSC-R = Fear Survey Schedule for Children - Revised.
a = non-organic pain b = organic pain c = children without pain * $p<.01$ ** $p<.001$

6.7. Are emotional disorders, specifically, anxiety, more common in children with pain?

A oneway analysis of variance showed that the mean scores for anxiety state were significantly different between the group of children with non-organic pain, children with organic pain and the group of children without pain ($F = 3.9$, and $p < .05$). The group of children with non-organic pain did not differ from the group of children with organic pain at the 0.05 level. However, a significant difference occurred between the group of children with non-organic pain and the group of children without pain ($t = -2.0$ and $p = .05$) the children with non-organic pain had higher scores for state anxiety than children without pain.

The results showed that the group of children with non-organic pain, the group of children with organic pain and the group of children without pain did not differ from each other on the anxiety trait mean scores.

The oneway analysis of variance showed that the mean score for fears was significantly different between the group of children with non-organic pain, the group of children with organic pain and the group of children without pain ($F = 4.5$ $p < .05$). The children with non-organic pain had higher scores than the children without pain ($t = -2.9$ and $p < .05$). In the parent questionnaires the same significant difference also appeared between the same two groups ($t = -2.4$ and $p < .05$). The group of children with non-organic pain and the group of children with organic pain did not differ significantly from each other at the 0.05 level in either the child or parent questionnaires. Correlations between child and parent questionnaires in children with non-organic pain were low (.34) and not significant, in children with organic pain

they were negative, very low (.009) and not significant and in children without pain they were high (.51) and significant ($=.01$). However, when correlations were transformed into z scores the difference between non-organic and organic (.345) was less than the standard error of the difference (.41); and so was not significant.

6.8. Could children with non-organic pain be under more stress than children with organic pain?

There were no significant differences between the organic and non-organic pain groups in the mean scores for negative life event ratings or positive life event ratings. The correlations between child and parent questionnaires for negative life events for children with non-organic pain were low (-.13) and negative, for children with organic pain they were very low (-.004) and in neither case were they significant. The correlations between child and parent questionnaires for positive life events were low (.03) and not significant in children with non-organic pain, and organic pain (.26).

6.9. Are anxiety and stress correlated with depressive symptoms in children with pain and without pain?

Anxiety state is high and is significantly correlated with depressive symptoms in children with non-organic pain. The correlations are low and not significant in both children with organic pain and children without pain (table 6.9). This high correlation between parent and child reports of anxiety state and depressive symptoms in non-

organic pain might suggest that different aetiological pathways are present in non-organic and organic groups. For example, a parental expectation that the child should be anxious might have led, in the non-organic group, to the child experiencing anxiety.

Table. 6.9

CORRELATIONS CHILDREN QUESTIONNAIRE				
Questionnaire	MFQ	STATE	TRAIT	FSSC-R
MFQ	-	a = .71* b = .45 c = -.07	a = .79** b = .76** c = .58*	-
TRAIT	-	a = .74* b = .49 c = .32	-	-
FSSC-R	a = .26 b = .41 c = .41	a = .20 b = .22 c = .35	a = .23 b = .66* c = .57*	-
LEC NEGATIVE	a = -.68* b = -.29	a = -.70* b = -.61*	a = -.68* b = .10	a = -.18 b = .12
LEC POSITIVE	a = -.33 b = .29	a = -.10 b = .31	a = -.15 b = .32	a = -.09 b = -.01
a = Non-organic pain b = Organic pain c = children without pain *p = 0.01 **p = .001 MFQ = Mood and Feelings Questionnaire STATE and TRAIT = State and Trait Anxiety Inventory for Children FSSC-R = Fear Survey Schedule for Children-Revised LEC NEGATIVE = Negative Life Events (they were rated with negative numbers) LEC POSITIVE = Positive Life Events				

The correlation between anxiety traits and depressive symptoms was high and significant in both pain groups and significant in the group of children without pain (table 6.9).

The correlation between anxiety state and anxiety traits in children with non-organic pain was high and significant but it was not significant in children with organic pain or in children without pain (table 6.9).

The correlation between depressive symptoms and negative life events (stress) was high and significant in children with non-organic pain but it was not significant in children with organic pain.

The results showed that in the parent questionnaires, the correlation between the mean score for depressive symptoms and mean scores for fear were not significant for either children with non-organic, organic or no pain.

6.10. Is stress correlated with anxiety symptoms in children with and without pain?

The results showed that the correlation between anxiety (state and trait) and negative life events was high and significant in children with non-organic pain. The correlation between anxiety state and negative life events was high and significant in the group of children with organic pain. However, the correlation between anxiety traits and negative life events in children with organic pain was not significant (table 6.9).

The positive events were not significantly correlated with anxiety state or traits in either the non-organic or organic pain groups.

6.11. Are negative life events correlated with fears in children with pain ?

Considering the children's questionnaires, there were no within group correlations for fear and negative life events for either the organic or non-organic pain group (table 6.8). However, in the parent questionnaires the correlation between fear and negative life events was high and significant for children with non-organic pain and not significant for children with organic pain (table 6.11). The difference between the correlations was not, however, significant by the z test.

Table 6.11

CORRELATIONS PARENT'S QUESTIONNAIRE		
QUESTIONNAIRES	MFQ	FSSC-R
FSSC-R	a = .53 b = .32 c = .46	-
LEC NEGATIVE	a = -.68* b = -.51	a = -.61* b = -.54
LEC POSITIVE	a = -.13 b = -.21	a = -.10 b = -.15
a = Non-organic pain group b = Organic pain group c = Children without pain MFQ = Mood and Feelings Questionnaire FSSC-R = Fear Survey Schedule for Children-revised LEC NEGATIVE = Negative Life Events (they were rated with negative numbers) LEC POSITIVE = Positive Life Events		

The correlation between positive life events and fear in both the child and parent questionnaires was very low and not significant in either group of children with pain (table 6.9 and table 6.11).

6.12. Are anxiety symptoms in children with pain and without pain correlated with fear?

The correlation between anxiety state and fear was low and not significant in children with non-organic pain, children with organic pain and children without pain. The correlation between anxiety traits and fear was high and significant in children with organic pain and in children without pain and low and not significant in children with non-organic pain (table 6.9).

The following two sections will deal with family scores on the FES as described in (chapter 5 page 184).

6.13. Is the family environment different for children with pain and without pain?

An analysis of variance was used to compare the children with non-organic pain and the group of children with organic pain on each subscale, using the mean family scores. These two groups did not differ from each other on the following subscales: cohesion, expressiveness, conflict, independence, achievement-orientation, intellectual-cultural orientation, active-recreational orientation, moral-religious emphasis and control.

Using the same mean family scores, the group of children with non-organic pain did not differ significantly from the group of children without pain on the following subscales of the Family Environment Scale: cohesion, expressiveness, conflict, independence, achievement-orientation, moral-religious emphasis, organization and control.

However, the same analysis showed that the families of children with non-organic pain, children with organic pain and the group of children without pain were significantly different from each other ($F = 4.2$, $p < .05$) in their intellectual-cultural orientated mean scores. The children without pain were part of families with greater intellectual-cultural orientation compared to children with non-organic pain ($t = 2.9$ and $p < .05$). The group of children with non-organic pain and the group of children with organic pain were not significantly different from each other at the .05 level.

In addition, families of children with non-organic pain and the group of children without pain differed significantly in the mean scores on the active-recreational orientation subscale ($t = 2.3$ and $p < .05$). The families of children without pain scored higher on the active-recreational orientation subscale than children with non-organic pain. The families of children with non-organic pain and the families of children with organic pain did not differ significantly from each other at the .05 level on this subscale.

The families of children with non-organic pain were significantly less organized than the families with children experiencing organic pain ($t = 2.0$ and $p < .05$). In contrast no significant differences were shown between the group of children with non-organic

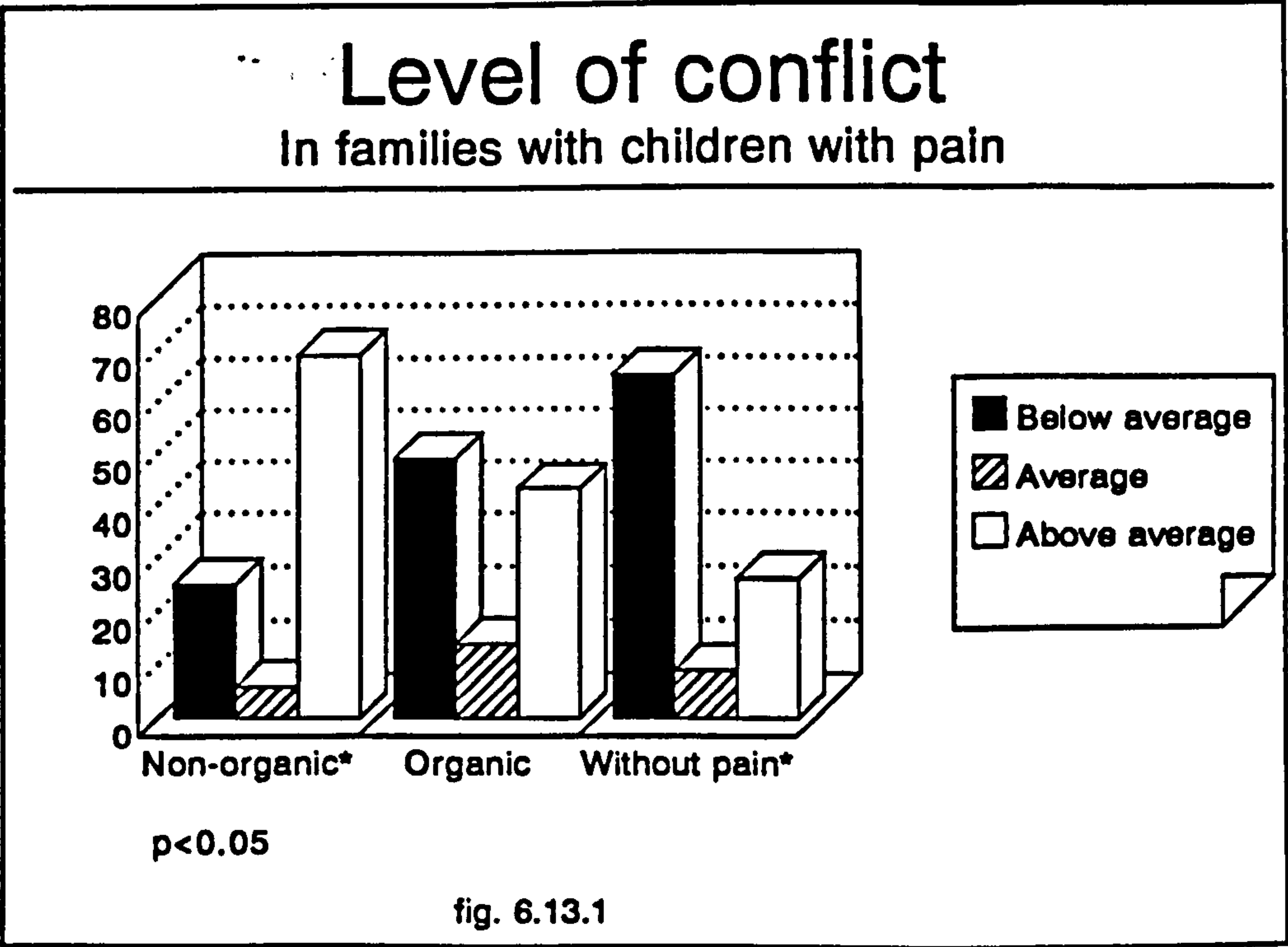
pain and the group of children without pain at the .05 level.

The number of families in each group scoring above and below the sample mean was calculated for the conflict and organisation subscales as described in the methodology section (page 184). For the conflict subscale a chi-squared test was used to compare the number of families with high and low levels of conflict in the non-organic pain group and the group without pain. There were significantly more families of children with non-organic pain who had a high level of conflict than the families of children without pain (table 6.13 and fig.6.13.1).

Table. 6.13
This table shows the number of families with high and low levels of conflict in the non-organic pain group and the group without pain.

Family environment	Non-organic pain	No pain group
<u>Conflict</u>		
Low level	5	17
High level	11*	6
df = 1*	p<0.05	

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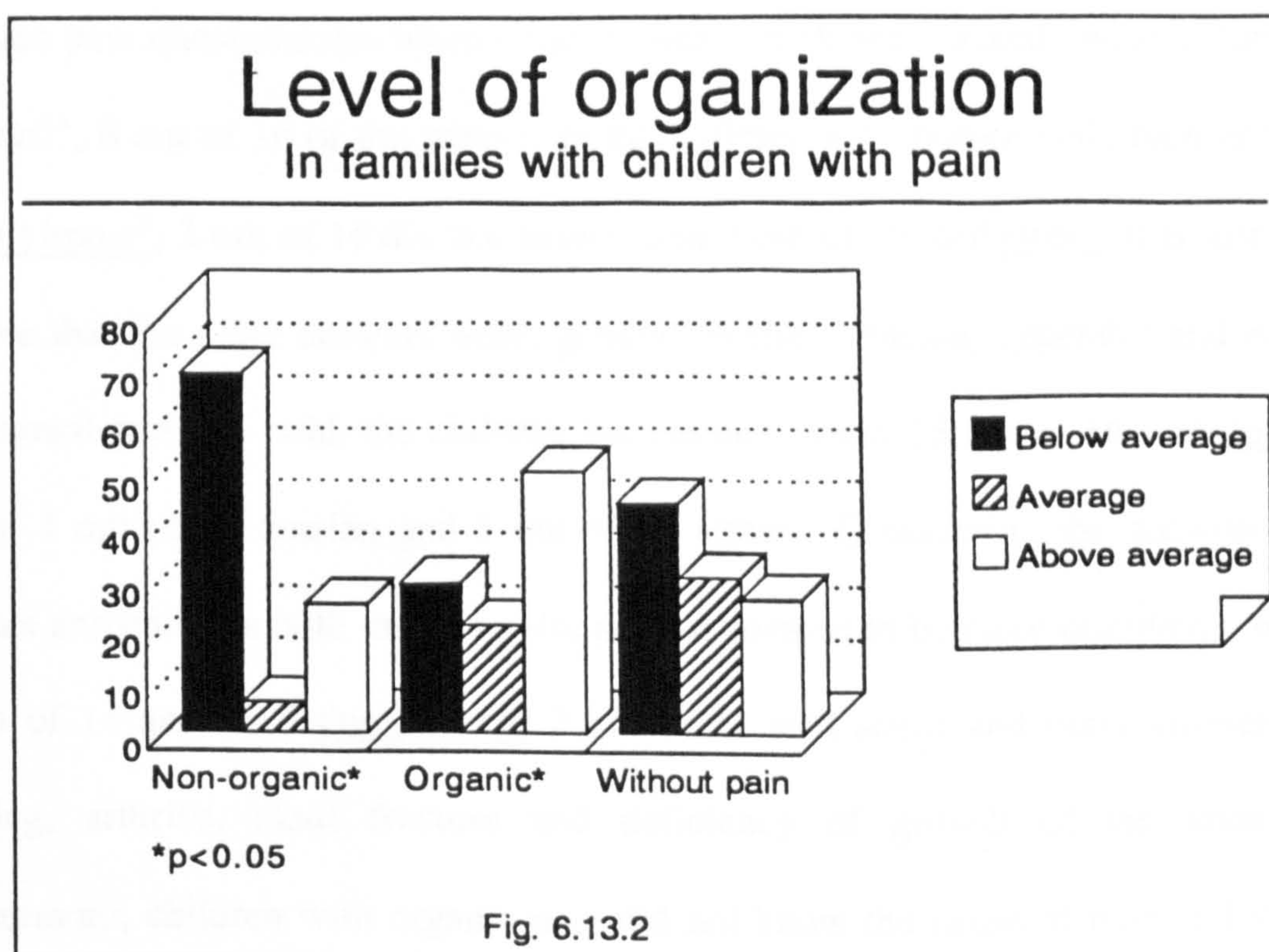
e a chi-squared test was used to compare the number of families with high and low levels of organisation in the non-organic pain group and the organic pain group. There were significantly more highly organised families in the organic pain group than there were in the non-organic pain group (table 6.13a and fig. 6.13.2).

6.13a

This table shows the level of organization in families of children with non-organic pain compared to families of children with organic pain

Family environment	Non-organic pain	Organic pain
<u>Organization</u>		
Low level	9	1
High level	7	13*

df = 1 two-tail Fischer's test p<0.01>0.005



6.1

4. Are the negative life events correlated with family environment in children with pain?

The only correlation between negative life events and family environment was on the intellectual-cultural oriented subscale in the parent questionnaires. It was negative (-.60) and significant ($p=.01$) in children with non-organic pain. However, no correlations were found between negative life events and family environment in both child and parent questionnaires for children with organic pain.

6.15. What do children and parents think about the cause of pain?

Our study did not focus much on the concepts that families have about pain. In part

F of the pain questionnaire when children and parents were asked "what is the cause of Pain?", 8 out of 16 of the parents of the children with non-organic pain answered "Don't know", 3 out of 16 did not answer and 2 out of 16 said stress. It is interesting to note that the other answers were: general worries, tension, appendix and period (menstrual period); with the children the answers were: 13 out of 16 said don't know, 1 out of 16 tension and 1 out of 16 stress. Considering the answers of the parents and children with organic pain, parents seemed to be more orientated, because 4 out of 14 answered don't know, 2 out of 14 said stress and other answers were reading, arthritis, skull fracture and deficiency of growth of the knee bone. furthermore, children with organic pain did not know the cause of pain and 9 out of 14 answered don't know. Some also reported the cause as tiredness, excess of sport, worries and skull fracture. The other question which was correlated with pain was: "are there any other feelings or worries that could be associated with pain?" 6 out of 16 of the parents of the group of children with non-organic pain answered none, 3 out of 16 said don't know, 4 out of 16 did not answer; amongst the children, 12 out 16 answered none, 1 out of 16 said scared of school, 1 out of 16 replied don't know and 1 out of 16 did not answer. 7 out of 14 of the parents of the group of children with organic pain answered none, 2 out of 14 said stress, and 1 out of 14 said don't know; 11 out of 14 of the children with organic pain answered none and 2 out of 14 answered stress.

6.16. Conclusions

6.16.1 *Should family constitution be considered in the diagnosis of non-organic pain?*

There was no significant difference between the number of children in the organic pain and non-organic pain groups who were living with both parents. The size of the family did not differentiate the two groups of children with pain, even though all the families of children with organic pain had two or more children. In the same way birth ordinal position did not differentiate the two groups with pain.

6.16.2. *Is the time, frequency, duration and intensity of pain a characteristic of non-organic pain?*

The child who experienced non-organic pain, experienced the pain when it occurred at the same time of day, for example in one child the pain always occurred in the morning. The children with organic pain complained of pain at varying times of the day. There was a significant difference between the two groups. This is the first characteristic difference between the children with organic pain and the children with non-organic pain. Nevertheless, this significance must be taken with caution, because of the size of the sample.

6.16.3. *Do depressive symptoms differentiate children with non-organic pain from children with organic pain and without pain?*

No differences were found between the groups of pain for their mean scores of depressive symptoms, however, the children with non-organic pain had a significant association with depressive symptoms when compared with children without pain (according to the parent's point of view). When children rated themselves, these difference fell short of statistical significance. Therefore, this statistical difference no appear due to the size of the sample. In addition, they also said they were more depressed than their parents did. This finding was in accordance with the studies of Walker et al.(1989), who found that children who had pain without cause and children with organic pain had more depressive symptoms than in children without pain. Nevertheless, they did not find any significant difference between the two groups with pain. However, my findings are not in agreement with the study of Kowal et al. (1990) who did not find differences between children with pain and children without pain.

6.16.4. *Do children with pain present more anxiety symptoms than children without pain?*

Both the children with organic pain and the children with non-organic pain have higher mean scores of anxiety symptoms than the children without pain but they do not differ from each other. These findings are in accordance with early studies that are reviewed in the literature by different authors (Hodges et al, 1984, 1985; Larsson 1988; Garber et al, 1990).

6.16.5. *Is anxiety correlated with depressive symptoms in children with pain and children without pain?*

The anxiety state and trait are correlated with depressive symptoms in children with non-organic pain. This correlation does not allow one to think specifically of non-organic pain as an emotional disorder because anxiety traits and depressive symptoms are also correlated in the organic pain group. It is possible that children with chronic organic pain were more anxious and had depressive symptoms related to the lack of a solution to their pain and this differed from non-organic pain when anxiety was present in an unusual situation (e.g. meeting a strange person for the first time). This result is similar to the results found by Walker et al., 1989 and Garber et al., 1990, in which they suggested that there were correlations between anxiety and depression in children with non-organic pain and children with organic pain.

6.16.6. *Are anxiety and negative life events correlated with non-organic and organic pain?*

In children with non-organic pain, anxiety state and traits are correlated with negative life events. Anxiety state also correlated with negative life events in children with organic pain. Not too much can be made of the difference between organic and non-organic pain groups. Although the correlation was significant in one group and not in the other, the difference between the correlations was not significant. It is possible that the children with non-organic pain were more susceptible to anxiety under stress while children with organic pain were distressed by the various medical procedures

and investigations; however, no clear evidence was found for differences of mechanisms operating in these two groups.

6.16.7. *Why don't children with non-organic pain have fear correlated with anxiety state and trait?*

This finding is the opposite of what was expected because anxiety and fear usually occur together. However, this correlation was found in children with organic pain and children without pain. It is possible that when the children with non-organic pain experienced pain, their level of anxiety or fear decreased. It is not possible to infer from the results that they felt only fear or only anxiety. These correlations should be investigated further in a large sample with different types of pain to see if these results can be replicated.

6.16.8. *What is the role of the family environment in children with pain and without pain?*

Children from the group with non-organic pain come from families with a higher level of conflict than children without pain. This raises the following questions:

a) - Are conflicts between the family members one of the factors that cause children to experience pain which appears as an emotional symptom?

b) - Or is it that families with children who complain of pain are under more stress due to the anxiety about the child's health and as a result of the stress there is more conflict within the family.

c) - It is possible that in families where particularly the mother and father are in conflict, the child complains of pain to draw attention away from the conflict and to themselves in order to reduce the number of arguments or fights.

The families of children with organic pain have a higher level of organization than the families of children with non-organic pain. Such a difference could occur because the families of children with organic pain have had to learn to work around the child's pain, organising activities that the whole family was able to take part in, organising trips to the hospital and so on. Such organisation was a coping strategy a product of the pain. In the non-organic pain group however, in a disorganized family the child may want more attention and then the pain may make the family less organized by drawing attention to the child's demands. Alternatively the inability of to give the parents an organic reason for the pain may cause them to be more anxious, stressed and emotionally unstable which in turn would lead to a disorganised family environment.

6.16.9. What are the childrens' and parents' concepts about the cause of pain?

Among the parents of the group of children with non-organic pain, only one parent attributed the cause of the abdominal pain to appendicitis, 2 out 16 thought it was due to stress and *half of the parents* did not know the cause. It is possible that they really

did not know because no organic cause had been found, or perhaps because they were scared to ask the doctors about the cause. It is possible that the unknown cause may increase the level of anxiety and fear creating instability inside the family. If this is true, it helps to consolidate the answer to the questions related to family conflict and environment. It is also possible that parents who have a child with organic pain and know the diagnosis, can deal more easily with the child's pain. In children with non-organic pain, the anxiety and stress could be caused by the uncertainty about the cause of the pain and an unclear prognosis. Some support for this speculation came from interviewing the families, many families who had children with non-organic pain did not like to express their feelings about the pain. This was possibly because they were worried that a psychological or social problem could be the cause of their child's pain and tried to deny it.

The importance of this finding is that the parents did not attribute the pain to an organic cause and two of them thought that stress was the trigger for their children's pain. This kind of attitude could help in the improvement of the child's non-organic pain.

PART IV - DISCUSSION

CHAPTER 7.

GENERAL DISCUSSION

7.1. STRENGTHS AND WEAKNESSES OF THE MAIN STUDY

7.1.1. *Strengths*

It is the first time that a study of pain and emotional disorders has been done using appropriate control groups and standard questionnaires in a paediatric sample that has been thoroughly investigated by a paediatrician. The sample of children had chronic pain and in the majority of cases, these children had had pain for more than a year. All the cases diagnosed as non-organic pain had been thoroughly assessed, and followed for long enough to allow undiagnosed physical disorder to show itself. The other strength is that most of the organic pain group were from the same clinic as the children with non-organic pain which means that all the children went through the same procedures which were carried out by the same paediatrician. In addition, all the cases included in the study were interviewed by the same person and the same person helped the children to complete the questionnaires. The study included 2 groups of children with pain (a subject group and one control group) and a group without pain, using standardized measures in both children and parents. The size of the sample was smaller than intended, with a consequent reduction in power; but a number of findings were nevertheless statistically significant.

The study of pain, depression and emotional disorders in children, was firstly based

on a large data set from a psychiatric clinic and afterwards on a small sample which was gathered from a paediatric outpatient clinic. There were, accordingly two different types of data: clinicians' ratings for psychiatrically referred patients (preliminary study) and research self- and parent -ratings for patients referred to a general paediatric clinic (main study). The strengths and weaknesses of these studies are complementary. When -as in the case of comorbidity of pain and depression - the same conclusion emerges from both, this strengthens the confidence in findings.

7.1.2. Weaknesses

The small sample size was the first weakness of the study. The study was originally planned to include more children. The expected number of the total sample was not reached because the number of patients with non-organic pain referred to the paediatrician were small and some parents did not wish their child to be interviewed, or refused to cooperate thoroughly with the researcher. Nevertheless, the small numbers are still valuable because of the evidential value of the group and because of the large size of differences expected. I was seeking major aetiological factors that, if important, would discriminate strongly between groups. The power of the study was reasonable from this aspect. If the true difference between subject and controls was one standard deviation on the measure of depression, then the power of the study to reject the null hypothesis at the .05 level would have been 80%. I considered expanding the study base to a general practice or epidemiological population, but this would have destroyed the strength that the non-organic cases really were non-organic. The researcher was not blind to the diagnosis of non-organic pain versus organic pain

and this could in principle have led to a bias. This was a major reason for the utilization of standardized self-report measures.

The measures were chosen for their wide cover of the relevant areas. However, some topics could not be satisfactorily included within the limitations of the study. For example, the study did not address the question of whether there was a family history of pain. It is possible that in some cases, a child with non-organic pain may have learnt from other members of their family that experiencing pain brought advantages and allowed identification with mother, father or somebody else. By looking at other family members who were experiencing pain, it should be possible to establish whether these members were acting as models. It would also be interesting to know when modelling occurs, if it is associated with anxiety, fear or stressful events occurring in everyday life.

The life events checklist was designed to measure the child's experiences in the previous 3 months. The questions are general, they do not explore the feelings of the child deeply, they do not allow one to find out more about the child's personality or about how the family handles stressful situations. Contextual measures of life events might have given a more valid account of acute stress; but they would have been too time-consuming for this study and could have been misleading in that they would have depended on the investigator's judgement and the investigator was not blind.

A similar weakness of the study is that family relationships were measured only by self-report. Family over-involvement in the preliminary study, was significantly more

common in the children with non-organic pain than in a psychiatric control group, but it was also common in children with emotional disorders. However, in this study there was no control group with organic pain and it is possible that a family with a high level of over-involvement would be a contributing factor in the experience of pain, however it was caused. In the main study the family relationships were measured using the Family Environment Scale (FES). This scale measured the activities, hopes and aspirations of the families and how families function and work together. The wide range of the measures gave a global vision of family life and was able to supply measures of family over-involvement. Nevertheless, they may well be less sensitive to altered relationships than detailed interview or observational measures would have been.

Although the children with non-organic pain had been thoroughly investigated for organic disease, the query could be raised that some children might have had organic disease which neither the investigation nor the follow-up could detect. If this is true, then real differences in the comparison of non-organic and organic pain might fail to appear. It is not very likely - indeed, the design of the main study was based on the identification of definite cases of non-organic pain. Nevertheless, the possibility cannot be dismissed - though it should not have led falsely positive conclusions.

Issues also arise about the range of ages (8-16 years) that was selected for the study. This was wider than in the preliminary study, in which the age of the children was between 12 and 15 years. I had chosen this, rather narrow range to aid in the study of comorbidity of pain and depressive disorder, because it is more common to find

children with depression at this age than in younger children, and a wide age range would have meant that depression and age were confounded. In the main study I initially sought for children between the ages of 12 and 15 years, but found only a small number who were referred to the paediatric clinic by the General Practitioner. The age range had to be increased, for practical reasons, to include children who could read and understand the questions and who were able to participate in the interview - those under 8 years old were excluded. The weakness, that could arise from this extension of the subjects, is that children under 12 years old present fewer depressive symptoms than pre-adolescents and adolescents. This is probably not a serious weakness, for age differences were not responsible for the differences between groups. If, however, organic and non-organic pain groups had been of different ages then artefactual results could have resulted. It was encouraging for this extension of the age range that the preliminary study had not found large differences attributable to age.

This study did not take into account the difference between sexes. It would be more complete if a comparison between males and females was done; but this would require a large series.

Similarly, the study did not address questions about social class. However, all the sample was collected in the same hospital, same clinic, same borough with a rather homogeneous class structure (mostly III M and III NM). It is unlikely to have confounded the comparisons.

The line between organic and non-organic disorders was sometimes hard to draw. The main problem arose over headache, which raised particular queries over the classification of organicity - especially with regard to migraine.

Diagnostic status of migraine

This study showed that 50% of the children that had headaches (migraines and post-head injury) pertained to the group of organic pain. 43.8% of the children who had headaches (non-migraine and without physical causes) were in the non-organic group. These findings deserve some considerations about the diagnosis of migraine.

According to the International Association for Study of Pain migraine is considered a vascular disorder (Merskey, 1986). Researchers are studying and proposing other theories for the pathogenesis of migraine (e.g neurological, vascular, immunological, platelet, etc), but all of them assume an organic basis (McGrath, et al 1987). The precise basis - as with many physical diseases - is still being debated. However, the organic basis is widely accepted, even if stress can be a trigger.

If this does not hold, and migraine should be classified with the non-organic group, then the lack of difference between the organic and non-organic groups might result directly from this misclassification. However, exclusion of the migraine group did not affect the overall conclusions.

Vascular theory: Accordingly to Dalessio (1974), the sudden vasoconstriction of the

great arteries of one internal carotid that occurs in migraine would lead to a temporary reduction in the cerebral flow. The local metabolic demands of brain would rapidly produce an intracranial vasodilation, which might be reflected in the extracranial subsurface scalp tissues, and thereby produce the typical hemicranial headaches.

The neurological theories suggest that neurological dysfunction is a more important defect in migraine than the vascular changes. These theories referred to a) the spreading cortical depression studied in adults by Olesen and colleagues (see McGrath et al 1987): - an alteration of neuronal function, the blood-brain barrier or other brain process triggers a reaction that is related to the spreading cortical depression described earlier by Leão, and this event triggers a vascular reaction via vasoactive neurotransmitters; b) serotonin: its metabolites are present at high level in the urine of patient with migraine attacks; c) focal cerebral hypoxia: migraine attacks could be a particular reaction, in susceptible individuals, to a localized imbalance between energy supply and energy use in specific areas of the brain. The hypoxia theory suggests that common and chronic migraine are basically the same phenomena.

A unified theory of migraine emerges, a neurogenic concept of migraine. The preheadache vasoconstrictor phenomena represent neurogenic vasospasms of the base of the brain and the arteries. The vascular activity represents the initial vector of vascular reaction in migraine. The intra cerebral vasoconstriction produces a relative reduction in local cerebral flow, with consequent metabolic tissue abnormality, including acidoses and anoxia. The inter parenchymal arteries, responsive to local metabolic demands, then dilate, and if the vasodilation is sufficiently great, the cranial

arteries on the outside of the head expand. The alteration in tone of the extracranial arteries provokes the liberation of multiple local chemical and vasoactive substances producing edema, a lowering of pain threshold and eventually, pounding headaches. Since the initial vasoconstrictor phase may be focal or unilateral, so also may the subsequent headache be hemicranial.

Rose (1984) showed another point of view from in his study of platelet in migraine patients. He found a significant difference between the 5 - hydroxytryptamine release (5-HT) in the three days after an attack and halfway between attacks.

It seems that an attack of migraine results when certain factors reach a critical level at the same time. These factors include changes in the plasma vasoactive amine levels produced by precipitants of migraine and the ability of platelets to release pharmacologically active amounts of 5-HT. When this significant increase in 5-HT release takes place, it appears to trigger the complex chain of vascular responses that characterise the migraine attack. Since Rose carried out these studies in migraine patients outside attacks, he suggests that the platelets of migraine patients differ significantly from normal both in their behaviour and in their content. These differences can explain the onset and recurrence of attacks. Rose also suggested that migraine should, therefore, be included among the most common disorders of blood.

According to Sacks (1991), the migraine reaction is characterised by protracted parasympathetic or trophotropic tonus, preceded and succeeded by physiologically opposite status. He also said that migraine is considered as a form of centrencephalic

paroxysm in slow-motion, in the case of the aura 20 to 200 times slower than its epileptic counter parts.

All theories presented are complex and the results of the studies still controversial. Authorities agree that there is a connection between the neurological, vascular and immunological systems and all are involved in migraine attacks. Nevertheless, it is not possible to say, from these studies, which system is the one that starts the process. There are interactions between central and peripheral autonomic nervous systems, and the extra- and intracranial blood vessels. Migraine involves both central and peripheral vasomotor mechanisms, combined with a sterile inflammatory reaction, neurogenically induced. So, based on all these considerations, I decided to include in the organic control group those children who were presenting typical migraines.

It is also possible that the organic pain of migraine could be triggered by psychosocial mechanisms. In other words, it could be in the "mixed" group of organic with psychological factors. However, it will be remembered that the purpose of the thesis was to ask if non-organic pain was psychogenic; and for this purpose it would clearly have been unsafe to regard migraine as non-organic. The question of whether an organic syndrome such as this can have psychological antecedents will be one for future investigation.

7.2. DEFINITIONS OF PSYCHOGENIC PAIN

The only ICD-9 diagnosis of psychogenic pain which could be recorded on the item sheets is code 307.8 entitled Psychalgia. Only a single diagnosis of "Psychalgia" was found on the Item sheets in the age range 12 to 15. The diagnosis of this case was changed in a second formulation to disturbance of emotions, anxiety and fearfulness. As Regards the ICD-9 code 307.8 - Psychalgia - it is a very vague diagnosis which is only used in the absence of "a more precise medical or psychiatric diagnosis". In other words, it suggests that if pain is due to a psychiatric cause, the diagnosis should be changed in the direction of a psychiatric diagnosis. This could be one of the reasons for the rarity of diagnoses of psychogenic pain. Other reasons could include referral bias - the child is referred because of family conflicts, disturbance of intra-familial relationships, or because of social environment problems; and during the interview the pain is seen as an additional problem and appears on the item sheet but not as a diagnosis. Another reason could be because the general practitioners or paediatricians who look after these children usually do not refer them to psychiatrists. The likeliest reason, however, is that pain is usually a symptom of disorder rather than a disorder in itself.

The preliminary study showed that "pain of mental origin" could be accompanied by depression, anxiety, situation specific phobias or school refusal. However, it appeared as a group and had its own significant associations with several variables which were different from the depression or emotional disorder group. If non-organic pain was simply a symptom of depression or emotional disorder it would have the same associations. Reformulation of the code 307.8 in the ICD-9 is therefore justified, and would help in the categorization of affected children.

Defining a category of psychogenic pain is not simple several clinical aspects need to enter in the definition. Differentiating between non-organic versus organic pain, structural versus functional pain, known versus unknown or cryptogenic pain, and psychologically causes versus non-psychologically caused pain is a useful first step, as was mentioned in the literature review. Many somatic symptoms (e.g., nausea, vomiting, loss of weight, pallor) appear to be associated with both non-organic and organic pain and they are therefore of little help in the discrimination. Although psychogenic pain is described as a more diffuse pain than organic pain and is more likely to occur at specific times of day, the distinction is not absolute. It will eventually be important to take into account accessory symptoms such as anxiety, fear, school refusal, disagreement between child and mother, over involved family, psychosocial stress, inadequate living conditions and conflicts in family in the diagnosis; but their specificity is not yet established.

To take the instance of types of pain, one will need to distinguish at least three types: organic(structural or functional), non-organic (psychogenic or cryptogenic) and those with organic and non-organic factors both present. *Organic pain* is described as more localized than psychogenic pain and this fact is in itself important in the diagnosis of an organic illness (e.g. hepatitis, appendicitis , peptic ulcer). General symptoms such as nausea, vomiting and pallor can occur more or less intensively depending on the intensity and sensitivity of the child to the sensation of pain; and do not indicate the cause of the symptoms. *Non-organic* is described as due to the absence of known physical causes, either in structure or function. When *organic and non-organic factors* both present, they can be a) structural - based in a organic lesion with a pain

expressed greater than it could be expected; b) functional due to a physiological dysfunction (e.g. constipation, irritable bowel disease) and triggered or exacerbated by psychological factors. When types of pain (organic and non-organic) are present together, they make diagnosis harder, drive children into unnecessary investigation and delay the start of treatment.

I do not mean to argue that organic and psychogenic pain have nothing in common. On the contrary, there may be mechanisms that operate in both. The release of neuro-hormones during a situation of stress, anxiety and/or depression may produce functional changes similar to those that appear in organic disease. During a stress situation (anxiety, fear and apprehension) the amygdaloid nuclei respond with a marked increase of ACTH secretion, which activates the sympatho-adrenal medullary system. Part of the function of circulating glucocorticoids may be to maintain the vascular reactivity to catecholamine. The catecholamines act in the vascular system producing vasoconstriction which can be one of the mechanisms that produce pain. The general symptoms that appear associated (pallor, rapid heart beat, sweating, nausea and vomiting) with organic or non-organic pain can be stimulated by the mechanism that helps the body to fight an emergency or a threat situation, releasing the neuro-hormones to alert the defense mechanism. The bodily reactions that cause pain could, in short, be initiated by either psychological or physical mechanisms, and should not be part of the definition of psychiatric category of pain disorder.

While there are many difficulties in defining the idea of psychogenic pain, this study leads to some provisional recommendations: that diagnostic schemes should include

it as a category and that the definition should be along the following lines:

" A disorder in which the dominating symptoms is a persistent pattern of pain in the absence of an organic illness that could explain it. It is often related in time to psychological stressors (e.g. going to a feared school) and may be triggered by them. Anxiety symptoms, and family conflicts are frequent, but not necessary for the diagnosis and their causal importance is unclear."

This is still a less than satisfactory definition, but it has some empirical support. Better understanding of the aetiology will be needed to improve it.

7.3. DIAGNOSIS OF NON-ORGANIC PAIN

7.3.1. *How did the group of children with non-organic pain differ from the children with organic pain?*

Some characteristics differentiated the group of children with non-organic pain from the group of children with organic pain. First of all, some evidence comes from the paediatric investigation which showed that pain syndromes in the absence of an organic cause or disease, could persist for more than a year, without the appearance of organic factors.

An interesting characteristic was that non-organic pain more often occurred at a fixed time of day for any given child. The most common time for complaints of non-

organic pain was in the morning before school, during school time and in the evenings. They did not complain about pain during the period of time immediately after school. Complaints at these periods of time could be related to the necessity to get attention from parents or teachers, or because they had some difficulty in coping with the school work. It could in theory be related to the stress they felt when difficulties in dealing with their peers at school or with siblings at home appeared. However, no peer problems were reported by children or parents, and negative life events related to school problems did not show any significant correlation with non-organic pain.

The discriminant function analysis gave an 86.3% correct classification rate (when does the pain come on? How long does the pain last? How long have you had this pain? Has there been any vomiting, nausea or pallor?) for the diagnosis of non-organic pain, with a sensitivity of 93.8% and specificity of 78.6%. The sensitivity of the questionnaire is an indicator that it is a good tool in screening non-organic pain, and should be tested in an independent sample. However, as a clinical instrument designed to help in diagnosis its specificity is not yet good enough. This identification of a "psychogenic" pattern of pain may be helpful for clinical researches in the future; but its presence should not be taken to rule out the possibility of an organic cause.

The intensity of pain does not help in diagnosis, because the group of children with organic pain had approximately the same intensity of pain as the group of children with non-organic pain. This may not be a universal finding: the measure was subjective and dependent on the ability of the child to describe it in a point on a scale

of intensity when he/she was no longer in pain. I observed that many times children with non-organic pain found it more difficult to mark the intensity on the scale than children with organic pain. Interestingly, although children with organic pain were also no longer in pain and also had to recall the intensity of the pain to be able to describe it, they seemed to do it faster than children with non-organic pain.

7.3.2. Differences between non-organic pain in children referred to the psychiatrist and children referred to the paediatrician

Similar rates of children with non-organic pain associated with depression were found in the psychiatric and paediatric referrals. However, different rates were found for children with non-organic pain associated with anxiety in both samples.

Children who experienced pain were referred to the psychiatrist (preliminary study's sample), *because they also presented emotional disorders* (e.g. depression, anxiety, school refusal, etc). During the assessment these children mentioned that they were having stomach-aches, abdominal pain, headaches, etc. Only one child was referred because *he was experiencing pain*. This pain appeared in different sites of the body and sometimes was abdominal pain, headache or stomach-ache.

Those children with pain who were referred to the paediatrician, were referred because *they were experiencing pain* and during the assessment and investigation non-organic pain was discovered. Some of those children with non-organic pain presented in

association with emotional disorders and were referred to the psychiatrist as well.

In fact, I cannot say that the quality of the pain in children who were referred straight to the psychiatrist or to the paediatrician was different. What is possible is that perhaps the emotional disorders in the children who were referred to the psychiatrist were more evident or more enhanced (46.7% associated with morbid anxiety worrying or panic) for the parents than the pain and, therefore called the attention of the General Practitioner. On the other hand, in those children with pain who were referred to the paediatrician, maybe the pain was more exacerbated or more important than the emotional disorders. It is interesting to note that, of those children with non-organic pain, 37.5% presented anxiety state and another 12.5% had an anxiety trait score above the mean of the Spielberger sample (Spielberger et al. 1973). Therefore, it is possible that parents were not attentive to the fact that their children who were experiencing pain, were also presenting emotional disorders (e.g. anxiety or depression, etc).

In fact, children with non-organic pain referred to the psychiatrist or to the paediatrician might complain either of the pain or of emotional disorders and may be the referrals went in one or another direction depending on the importance that the adults gave to their complaint.

The sample referred to the psychiatrist showed that emotional disorders such as anxiety, fears, depression, etc., were the first and most important complaints. It also showed that family over-involvement was associated with children with pain.

The paediatric sample showed that children with non-organic pain also showed high levels of anxiety and fear and that they presented a high correlation between negative life events and depression and therefore, a high correlation between negative life events and anxiety state and trait. The other factor was that these children were from families with high levels of conflict and low levels of interest in developing an intellectual-cultural background.

These findings can help to alert professionals to the signs of emotional disorders in children with pain and therefore not forget the disturbance of family relationships and the familial cultural background. In further studies in children with non-organic pain, paediatricians need to be attentive to the following factors: anxiety and fears, negative life events correlated with depression, high conflict levels and low intellectual and cultural backgrounds in families.

It is clear, from all these mechanisms and factors that it is not possible completely to separate non-organic pain from organic pain by using only the basic organic symptoms. For these reasons psychological factors need to be added to the definition of non-organic pain.

7.4. COMORBIDITY OF PAIN AND EMOTIONAL DISORDERS

In the preliminary study when the children with pain of mental origin were compared with the psychiatric control group there were more children with pain of mental origin

who were depressed. However, the same was not true when the children with non-organic pain, the children with emotional disorder and children with both problems (non-organic pain plus emotional disorder, i.e. mixed group) and the psychiatric control group were compared.

In the main study, in the three months stipulated in the parents Mood and Feelings Questionnaires (MFQ), depressive symptoms were associated with the group of children with non-organic pain by comparison with children without pain. However, the differences, between the children with non-organic pain, and without pain, on scores of depression as rated by the children, fell short of statistical significance. This fact did not invalidate the parent's answers, because children with non-organic pain did show a tendency to rate themselves somewhat higher than children without pain. Perhaps there was an association between non-organic pain and depression which not appear statistically significant because of the small size of the sample.

Association with depressive symptoms agrees with the findings of other studies (Walker et al., 1989 and Garber et al., 1990). Both studies of Walker and Garber had different methodologies, which differ from my main study in several aspects, such as duration of pain (Garber et al., included pain of only one month's duration and Walker et al. did not specify the length of pain), the measures of depression (Walker et al, used CDI for children and Child Behaviour Checklist for parents and Garber used K-SADS) and the assessment of pain. The other differences in the study of Walker et al. were the report of a perfect agreement between parents and children without pain in rating depression symptoms on the CDI, but only a moderate correlation between

parents and children with non-organic pain. In my study the correlation between children and parents was high in both groups (non-organic and children without pain).

Other authors (McGrath et al., 1983 and Kowal et al. 1990) did not find significant differences between children with non-organic pain and children without pain on depressive symptoms. However, Kowal studied children with non-migraine headaches between the ages of 9 and 12 years old, which differed considerably from the group of ages used in my study. Furthermore, Kowal screened depression by the Children's Depression Scales and I by the Mood Feelings Questionnaire which has a close overlap with the DSM-III-R symptomatology.

The methodology of my main study is more consistent and objective than the studies above. The non-organic pain and organic pain are clearly defined. The Mood and Feelings Questionnaire was used for scoring depression which is very appropriate for children and adolescents. However, it was not possible to establish whether depression preceded pain, because it was very difficult for parents and children to remember if depression appeared before the pain had started or not, due to the time lapse (more than two years before, see methods section (pages 181-182)).

In both my preliminary and main studies, comorbidity between pains of mental origin and depression was found, even though the data collection or methodology was different in each case. In the case of the preliminary study, the data was gathered by different clinicians and was transferred afterwards to the item sheets. In this study,

no organic group was present for the comparison with the pains of mental origin group and also no standardized measures were used. However, the comorbidity of pain and depression was strong in the data gathered.

In an attempt to find out more about the differences between the group of children in the main study, symptoms of depression were correlated with anxiety state and trait. Children in the non-organic pain group showed symptoms of depression which were highly correlated with anxiety state (this anxiety state questionnaire indicates anxiety in an unexpected situation). The same was not true for the children from the organic pain group and children without pain. However, the three groups (non-organic pain, organic pain and children without pain) showed high correlation between the Mood and Feelings Questionnaire and Anxiety Trait, which is a measure of anxiety experienced in usual situations in life.

Both measures (anxiety state and anxiety trait) were associated with depression only in children with non-organic pain. This findings are in accordance with the preliminary findings in the study of the comorbidity of pains of mental origin and emotional disorders (depression and anxiety).

The group of children with non-organic pain showed more anxiety than the group of children without pain. These children experiencing pain, would be more anxious because they had pain with no clear physical explanation, such as a diagnosis (i.e. kidney stone, an infection - pneumonia or parasitic diseases), which they could deal with. It is not surprising that anxiety is present to a certain level in the group of

children with organic pain, but not significantly different from children without pain. Children with organic pain can be anxious for different reasons, such as not being able to engage in the same activities as other children without pain (e.g. practising sports, going out with friends), or because they need to take medication, or because they need to go to the doctor or hospital for all sorts of unpleasant medical procedures and investigations.

This study did not include the anxiety of the parents. It would be important to know whether these children come from anxious families or anxious parents. Such a comparison between both groups of pain could indicate whether the "model" of an anxious parent or parents could act upon their children.

Anxiety and fear often appear together and they had similar implications. Fear was associated with the group of children with non-organic pain when this was compared with the group of children without pain, but not when compared with a group of children with organic pain. This occurred because the group of children with organic pain showed intermediate levels of fear when compared with the other two groups.

Both of these symptoms of emotional disorders (anxiety and fear) could have different meanings in different groups of pain. In the group of children with non-organic pain the uncertainty of the diagnosis could lead to anxiety and fear in children and in their parents. It is possible that these children were more susceptible to these emotions and reacted with more anxiety and more fear than children without pain. Maybe they were more prone to react rapidly producing pain when facing a difficult

situation. Alternatively, if their level of anxiety and fear was higher as a primary pathology, it could drive them to pain. In the group of children with organic pain, their intermediate level of fear and anxiety could be due to the fact that they know that they have a physical illness and may worry about it and the prognosis. Anxiety and fears might be correlated in the group with features of the pain such as its chronicity.

It is also possible that the anxiety and fear in the group of children with non-organic pain could be relieved by the presence of pain. Children learn from early life about pain and its consequences and advantages. When an unpleasant situation appears and children need to confront it but cannot cope, anxiety and fear could produce pain as a mechanism of defence. If they are allowed to avoid the situation, anxiety and fears could disappear or stay at a low and tolerable level. This "developing" pain behaviour could be reinforced by parents through direct reward and also by allowing them to avoid the unpleasant situation. If this behavioural theory were true, there should be observable association of the parents and children's behaviour. The results of this study seem to be against the defence mechanism theory, because children with non-organic pain showed more symptoms of depression, anxiety and fear not less.

The other findings showed that in the children with non-organic pain the negative life events were correlated with depression symptoms, anxiety state and trait. In the group of children with organic pain, negative life events were correlated with an anxiety state. It is plausible that in the children with non-organic pain stress situations were correlated with depression and anxiety, either because of the children's temperaments

or because they did not know the diagnosis of pain and nor did their parents. They could be more susceptible to depression and anxieties in facing negative life events. The stresses in the group of children with non-organic pain were correlated with anxiety in an unexpected situation and in a situation of ordinary life. In the group of children with organic pain the negative life events were correlated with an anxiety state. The importance of these findings is that children with non-organic pain seem to react with higher levels of anxiety in every day life situations than children with organic pain.

7.5. FAMILIES, CHILDREN AND PAIN

Is it possible that conflict in families drives children to experience pain?

This question can be looked at in two different ways. First of all, the preliminary study did not show an association between non-organic pain and abnormality in family relationships. It showed that disturbance of child and mother relationships was strongly associated with pain of mental origin. However, the group with pain of mental origin had a very high probability of showing depression as well. When depression was excluded from the group with pain of mental origin (non-organic pain) this association disappeared. Therefore, it is depression rather than pain which appears to be strongly associated with the disturbance of child and mother relationships.

Family conflict was associated with pain, but no differences were found when the

families of children with non-organic pain were compared with the families of children with organic pain. This makes it doubtful that conflict in families is a direct cause. Indeed, family conflicts in the group of children with pain of any origin could be due to the control that parents might try to exert to restrain the children who are in pain from doing things that could bring prejudice them, or result in worse pain.

The other group of variables studied in the preliminary study related to the Axis 5 measures of abnormal psychosocial situations. Some of these variables, had a corresponding variable on the Family Environmental Scale (FES) in the main study.

The FES has two subscales, organization and control, that could be compared with inadequate or inconsistent parental control and inadequate living conditions (from the abnormal psychosocial situation variables). The first subscale - organization - measures the ability of the families to plan their activities and responsibilities for everyday life; and the second subscale - control - measures how the family is prepared to set rules and how they run family life.

The preliminary study showed that family over-involvement was strongly associated with pains of mental origin. Maybe these children learned from their parents and other family members the advantages in experiencing pain, such as staying at home and watching TV, playing with favourite toys, and getting special attention from parents. However, it is clear that over-involvement is not the unique to those with pain. Both pain without emotional disorder and emotional disorder group (table 3.11.6) are associated significantly with family over-involvement, such as pain of mental origin and pain without depression (p.144 table 3.10.6).

The main study showed that children with non-organic pain had more family conflicts than children without pain. Did the children present pain to avoid the conflict or to try to stop it? If the conflict is gone, the unconscious target is reached. If this sort of "developing" behaviour repeats itself many times, and every time the objective is obtained, the children get their reward and reinforcement is established. This difference occurred only between children with non-organic pain and children without pain and it happened at the extreme score (above and below mean) of conflict.

The main study did not show many different associations between the groups with pain or the group of children without pain in the various subscales of the Family Environment Scales. However, the level of organization is higher in the families of children with organic pain than in families of children with non-organic pain. This may reflect the need for organisation that families of children with organic pain have had to develop to cope with the stresses of illness; such as time-tables for medication, regular attendance to the hospital outpatient clinic and the monitoring of improvements. In the families of children with non-organic pain, the demands of children might be different, in order to get attention, or help to cope with their anxieties and fears. Possibly the parents are anxious as well, but cannot manage the situations or their children's pain as well.

The other interesting finding is that the families of children with non-organic pain are less intellectually-orientated than families of children without pain. For the lay public, the concepts of pain and illness are linked to organic lesions or infections. An uncomfortable sensation in the body creates an expectation for a physical explanation

that doctors can label as appendicitis, pneumonia, migraine, etc. Mental disturbances, distress, or somatization of symptoms produced by anxiety or stress cannot be accepted in some cultures as a disease. The concept of disease in Thai people is strongly linked with their culture (Kleinman, 1980, 1986). It is common for them to attribute their disease to bad winds or evil spirits which possessed their souls and can disgrace their families. When they have a psychological or psychiatric disorder, because of cultural or even political reasons (e.g., during the socialist regime, Thais could not be out of work or school if they were depressed or anxious), the patients had to have a physical explanation for their psychological problems. It is easy for families to accept an organic disease in their family members, but difficult to accept someone expressing psychological disturbances. For many families psychological disturbances are non-existent, and if somebody in the family has a pain, an organic cause has to be found, because they cannot accept that pain could be a manifestation of a psychological disturbance and a psychological problem would be a disgrace to the family pride.

The families of children with non-organic pain are less actively orientated in recreation than families of children without pain. Is that because children presenting pain are not allowed to go out or practise sports, or go camping or play? Or is it because the families do not go out or practise any kind of sport, that their children are more prone to feel pain? Are these facts real or are there some biases interfering with the results? Maybe if children had more attention from their parents when they had no pain, for example, if the boy/girl engaged in sport with his/her father/mother, or went to the cinema, or a concert, or even if the family spent more time doing things

together at home, they would be happier. If the relationship with their parents was good they would not feel the need to get attention in any other way. This study does not allow for conclusions, but suggests a subject for further investigations.

In the third part of the pain questionnaire it is possible to infer what parents of children with non-organic pain thought about the cause of pain, and infer indirectly about their relationship and how close they were to their children. The figures suggest that they were poorly informed about the cause of pain. This could be due to the doctor not wanting to give the pain a psychological or psychiatric connotation, and thus not revealing the nature of pain: or it is also possible that the parents were afraid of the possible seriousness of a pain of unknown cause.

Parents of children with organic pain have more knowledge about the cause of pain, but their children usually do not. For the families of children from this group it is important to know the cause of pain, because sometimes it is possible to prevent it by avoiding the causal factor.

The communication and relationship between parents and children appeared indirectly in the questions "what is your expectation about his/her future?" or "what does he/she think is the cause of this pain?" Many parents did not know how to answer the first question and then asked their children to answer for them. Many times children did not know and other times the answer was "I have not decided on a future career yet". Similarly in the second question the same thing occurred, and in the majority of the cases neither the parents nor the children had any idea about the cause of pain, and

parents did not know what their children thought about it.

The other suggestion about poor communication and poor relationship appeared in the question about the worries that parents and children have associated with pain. Both parents and children were frequently evasive or gave a simple answer like do not know or none without thinking about the question properly. Maybe they were avoiding the question or lacked confidence in the interviewer. The point could be the parents know the pain is non-organic but they don't want to face it.

7.6. THEORIES OF NON-ORGANIC PAIN

Considering the variety of factors that could be associated with non-organic pain it is possible to see that the family environment can play a great part in the mechanism of pain. Behaviour theory can explain the psychological mechanisms that leads children to experience a non-organic pain. Children learn from early life that pain is important as a means of getting attention from adults. Conflict in families could generate anxiety and stress in children, and if they have pain, the situation can be avoided. It is also true that in families where parents cannot control their children adequately, children who have pain can probably stop a situation of conflict. Parents can also benefit when the conflict stops, for them it is sometimes convenient to avoid a confrontation. Parents can, therefore reinforce a child's behaviour through a rewarding system at any time when the child presents pain, perpetuating the behaviour

and establishing a vicious circle: conflict leading to pain that stops the conflict, that stops pain and leads again to conflict and so on.

A behaviour theory explanation can include the operant factors, through the reinforcement of the pain behaviour; the stressor factors that come from the family environment; and modelling factors if family members who presented pain in the past can work as a model for the child to complain of pain.

Psychodynamic theory is less consistent than behaviour theory in explaining the mechanisms of pain, and is harder to test. Children who have conflicts in their families, can unconsciously produce pain in an attempt to minimize the anguish and to punish the adults who are creating the uncomfortable situation, or children punish themselves because they carry an unconscious guilt and blame themselves for the problems in the family.

7.7. IMPLICATIONS FOR CLINICAL WORK

This study shows the relevance and existence of non-organic pain, and the correlations between non-organic pain and emotional disorders and the differences between non-organic pain and organic pain. The conclusions that we can draw from the study are the basic importance of a full assessment of pain, the need to carry out further investigations on very obscure cases and particularly to listen when children complain about pain, about their feelings and worries, even when what they say does not agree

with what the parents say. Never forget that pain for a child is real and hurts, although the intensity is different for each child. Many times, parents instruct their children on how to proceed in the interview and how to answer the questions before they reach the doctor, especially with regards to questions about family relationships. They also try to influence their children's answers during the assessment, sometimes, even obstructing a good and accurate evaluation. For these reasons a separate interview, if feasible, should be done. The interviewer should also spend some time with the child to allow them to talk freely about their own points of view. It might also be important, without, however, diminishing the child's point of view to balance the child's point of view with their parents'.

It is important to investigate the familial relationships in an attempt to understand their involvement and the quality of bonding existing between their members. When looking inside familial relationships the aim should be to detect the quality of involvement between parents and children with pain, and possible reinforcements that could perpetuate the pain and to help parents to learn how to manage children who experience pain adequately. To look at the history of a family's pain could be useful in forming an evaluation of the child's pain and also as a guide to treatment.

The evaluation of life events could be useful in helping to reach a diagnosis of non-organic pain and correlating it with pain. It would be important for each child as an individual, for their feelings, sensibility and personality. It would also be useful to evaluate the characteristics of parents, their needs and their competence in giving help to their children. Sometimes it would be very important to go to their homes for an

interview and see "in loco" how they live, behave and how the parents cope with the children in a family situation: going to their homes would also help to evaluate accommodation and see how dangerous the neighbourhood was.

7.8. CONCLUSIONS

Preliminary Study

The first question that was raised from the preliminary study (see page 106): *"Is depression more common in children with non-organic pain than in children without pain?"* The preliminary study showed the existence of the comorbidity of non-organic pain and depression.

The second question: *"Are other emotional disorders, specifically anxiety, more common in children with pain" than in children without pain?* Anxiety and fear were common in children with non-organic pain when they were compared with the control group without pain.

The third question: *"In the association between pain and depression, likely to be due to a causal relationship? if so, the mixed group of pain associated with depression is likely to resemble the depressive group".* It was not possible to answer this. The pattern of comorbidity did not help in making conclusions about cause, and there was no contrast group of organic pain.

The fourth question: "*Are intra-familial relationships an aetiological factor for children who experience pain?*" The preliminary study suggested that psychosocial stress in family could be considered as a possible aetiological factor. Over involvement in family members, and problems in the mother-child relationship, emerged as particular factors for pain that should be tested further.

The fifth question: "*Is non-organic pain always a symptom of emotional disorders?*"

The preliminary study did not show that to be the case. Pain and emotional disorders have several different associations. I cannot therefore say that non-organic pain is simply a symptom of an emotional disorder.

The following questions were raised in the main study (see page 169-170). Some of them were the same as questions that were raised in the preliminary study but could not be answered there, because of lack of a group of children with organic pain.

Main study

The First question: "*Is depression more common in children with non-organic pain than in controls?*" A significant association with depression and non-organic pain was found comparing children with non-organic pain with children without pain (in the parent's questionnaire). In the children's point of view the statistical significance did not appear -possibly because of the size of sample, possibly children need to be brave in expressing their own feelings when they rated the questionnaire. When children present pain, they are unable to have a normal life and normal activities. They may

be in bed, or they have to go to the hospital to monitor the pain and in some instances they are prescribed medicines. It could also be true that if the children with depression in the non-organic pain group were found in pain, their activities would be limited and they would feel guilty and sad. These could be reason enough for parents of children with non-organic pain to have rated them higher than the parents of children without pain. However, children without pain answering the Mood and Feelings Questionnaire rated themselves higher than the their parents did; so it is possible that parents of children without pain are less alert to perceive the feelings of their children. The suggestion is that depressive symptomatology may be present for different reasons in different groups: it is common in organic pain, but possibly for a different reason from that which determines its frequency in non-organic pain.

The second question: *"Are other emotional disorders, especially anxiety, more common in children with non-organic pain than in controls?"* Anxiety and emotional disorder are more common in non-organic pain than in children without pain. This strong link between anxiety and non-organic pain has been shown before by other authors (Pantell et al., 1983; Hodges et al., 1985; Cooper et al., 1987; Wasserman et al., 1988; Burker et al., 1989; Reynolds., 1989; Walker et al., 1989; Garber et al., 1990; Beidel et al., 1991). However, no differences were found in the levels of anxiety and emotional disorders between the non-organic pain and organic pain groups.

It was not possible to conclude that anxiety could be the cause of non-organic pain; it could be the consequence of non-organic and organic pain. This conclusion, that

anxiety could be caused by non-organic or organic pain, is due to not finding any difference between both groups of pain. So it seems that the presence of pain either non-organic or organic, is enough to raise anxiety. It could also be argued that the association of anxiety with both groups of pain could happen for different reasons.

The third question: *"When depression is present, is it the cause of the pain? If this is the case, we shall find that children presenting non-organic pain will have higher rates of depression or emotional disorders than children whose pain is associated with an organic disease."* It is very difficult from both studies to infer that non-organic pain is a symptom of depression. In the preliminary study, the comorbid group was not unequivocally the same as the depressed group in its associations. In the main study it was not possible to state that depression was the cause of pain, because to prove that assumption, it would be necessary to show that depression appeared before the non-organic pain started. However children and parents could not recall precisely the time when the pain had started, although they remembered that in the presence of pain there had been problems with eating and/or sleeping, or they were less active, or more reclusive. Furthermore, organic and non-organic pain groups were similar in the frequency of depression. Pain could be the cause of depression.

The fourth question: *"Will children with non-organic and organic pain have different characteristics?"* The physical symptoms of the two groups were sufficiently different to support the idea that there is a different pathogenesis. They allowed the construction of a diagnostic index that could be useful for future research.

The fifth question: *"Will children with non-organic and organic pain have a different family environment?"* Family over-involvement was found in children with non-organic pain, but also was found associated with the other groups (preliminary study). Therefore, family over-involvement may be a contributory aetiological factor, but is not a complete explanation.

In the main study, an attempt was made to look at family over-involvement using two other variables: high levels of cohesion and low levels of independence (both variables are subscales of family Environmental Scale) in family members. However, familial over-involvement was not confirmed as an aetiological factor for non-organic pain as suggested by previous studies (Oster, 1972; Christodoulou et al., 1977; Minuchin, 1975; Hughes, 1984). Another finding of this study, was that families of children with organic pain are more organized than families of children with non-organic pain, perhaps because parents need to keep time-tables to cope better with the child's pain.

Finally, there is a relationship between pain and culture. Families of children with non-organic pain are less interested in promoting an adequate intellectual and cultural orientation (e.g. to stimulate activities like going to the library, reading, learning about other cultures, etc) than families of children without pain. This lack of concern might reflect that parents are not very attentive to the factors which could be causing the pain, or might point to cultural factors determining whether distress is expressed in physical terms.

This study raises many issues which need to be taken into account in future research.

The first is that it is useful to use the item sheet records to trace cases, problems and diagnoses at a preliminary stage of research. The second is that cases of pain in which organic causes have been firmly excluded are uncommon, and they also need a long time to be diagnosed which might demand a long-term study. The third is that, when intra-familial relationships are involved as a possible cause for children experiencing pain, new measures need to be developed and carried out to assess the family relationships. The fourth is that the pain questionnaire for children and adolescents can be improved for future use by the addition of questions about pain in parents and close relatives. The fifth is that stress in children should be investigated using measures that would allow a wide coverage of various aspects of children and family lives.

This study showed the possibility and importance of doing research in children coming from a paediatric clinic with possible psychological problems. It is also important that studies such as these can help in distinguishing between pain of non-organic and organic origin and making the diagnosis and treatment of a child with pain more efficient.

7.9. RECOMMENDATIONS FOR FUTURE RESEARCH

Some questions were not answered in this research and should be studied and answered in future researches. The main question, of the psychological origins of non-organic pain, was not conclusively answered because of problems in methodology; but there were strong indications that non-organic pain can be psychogenic. Further

questions arise, especially about the mechanisms involved in the associations with family factors and the clinical recognition of psychogenicity.

A - Is non-organic pain Psychogenic?

- 1) - Is non-organic pain related to specific stressor or non-specific adverse situations?
- 2) - Are the stresses the cause or consequence of pain?
- 3) - If identified stressors are removed, does psychogenic pain reduce or disappear?

The importance of recognizing non-organic pain as psychogenic is its utility for clinical work allowing clinicians to simplify investigations on children with non-organic pain and also to refer those children and their families to a specific treatment.

Non-organic pain cannot yet be considered unquestionably psychogenic, because of the difficulties in finding a specific aetiological factor that is linked to pain but not to other types of psychological abnormality associated with emotional symptoms. On the other hand, non-organic pain could be psychogenic even without associated emotional symptoms. Further research should continue the search for family factors that are specifically associated with the diagnosis, such as, over-involved families, disagreement between child-mother and conflict in families. A start has been made here, but much needs to be done and better measures will be needed. If specific family patterns can indeed be found, then they could help in the diagnosis and contribute to understanding the difficult cases in which physical and psychological factors co-exist.

Such a study would preferably, be based on a more representative and, less highly selected series. It could be, for instance, be based on general practice series of children with undiagnosed pain. Such children would be screened for associated anxiety and stress and go on to a full assessment, by comparison with controls from the same general practice. Other family members should also be investigated for anxiety and fear and especially how parents and other members handle stress situations. The measures that could be useful for this purpose are those of patterns of adversity in family relationships and stressful life events. Identifying stress situations would help to characterize psychogenic pain and indicate which types of treatment the children need.

Neither study could show definitely if stresses were the cause or consequence of pain. If they are the cause of pain, they can suggest the type of treatment to be offered to children and their families. Thus, sometimes psychogenic pain can be reduced when stressors are avoided. When these threats or causes cannot be removed then children and their families may be supported by psychotherapy or family counselling to handle the situation better. A controlled, random-allocation trial of psychological therapy could - if it reduced pain - add to the evidence that pain results from psychological stress.

B - What is the mechanism that accounts for relationships between family factors and non-organic pain?

4) - Is psychogenic pain in children learned from adults' pain?

- 5) - Do family belief systems account for the association, e.g. do families in conflict believe that non-organic pain is inherited?
- 6) - Is "psychogenic" pain a symptom of depression or are depressed children more vulnerable to the experience of pain?
- 7) - Do different cultures have different expression of non-organic pain?

My study suggested that family factors were important to children's experience of pain. Nevertheless, it was not possible to say that children learned from adults the gain and benefits of pain. We could speculate that, when children observe adults' pain, they learn the advantage of presenting pain, such as avoiding stress situations, getting more attention, and obtaining privileges at home. The association of stressful situations with reinforcement from parents can perpetuate the pain behaviour.

Another possible mechanism arises if a family in conflict believes that the pain is inherited. Some families have pain for generations. So, it is simple and safe to believe that they inherited their pain from their ancestors, because they could be afraid of or not accept that the pain could be associated with psychological factors. Psychogenic factors could be a taboo for many families. However, it is also possible that pain could have a familial predisposition which is associated with stressors and psychological factors that could induce pain (Christodoulou et al., 1977).

It is important to know if psychogenic pain is a symptom of depression because of the implications for the type of treatment that would be done. So, the treatment of depression could lead to pain resolution. A controlled trial of treatment (e.g. cognitive

therapy) with pain as an outcome variable would contribute to our understanding. The association of depression with deficiency of the immune system has been considered by the authors Andreoli et al (1993). The depletion of the immune system could be the door to infections and pain. Consequently stress can also decrease the immune system which could be more vulnerable and indirectly produce pain.

In animals, for example, it is known that acute physical stress can lead to structural and functional changes in neuroendocrine systems. In humans, psychological stressors, have been shown to lead to altered patterns of hormonal activity such that the response to stress situations, which have been encountered repeatedly in the past, is different from that evident on the first occasion (Rutter, 1985). However, stress can also be associated with decreased lymphocyte functioning and Hodel et al (1993), mentioned that immunological changes may be associated with particular personality traits, such as anxiety, depression, or loneliness. Consequently, stress can indirectly produce pain. Future research should study these physiological indications in children with the combination of depression and pain.

Different cultures can express feelings and pain more or less vividly than others. Escobar et al (1983), suggested that mentally ill Hispanics are more likely to have psychomotor retardation (withdrawal) than agitation or hyperactivity, which are more common features of Anglo-americans. This can occur, because the stoical acceptance of what happens in life, and the fatalistic view of the world attributed to the Hispanic culture, may also influence the phenomenology of mental disorders. So, the concept of showing feelings can be associated with being weak, and could also be thought of

as more appropriate to the female sex than the male. It is possible that during an interview, or answering questionnaires, parents and children try to avoid these "weak feelings". The comparison of groups of pain in different types of culture could be useful for understanding the origins of pain.

For all these studies, the basic design would still be the comparison of groups of children with non-organic pain, children with organic pain and children without pain. Improvement in family measures will be required for instance, rating families with adequate measures for family over-involvement. For instance, in the Family Environment Scale, measures should be taken in two different forms: R and I. The form R measures people's perceptions of their nuclear family environments, and it consists of three sets of dimensions: *Relationships*, are measured by the Cohesion, Expressiveness and Conflict subscales which assess the degree of commitment, help and support family members for one another. *Personal Growth* is measured by Independence, Achievement Orientation, Intellectual Cultural Orientation, Active-recreational orientation and Moral-religious emphasis subscales. They assess the extent to which family members are assertive, self-sufficient and make their own decisions; and also measure their aspirations, the degree of interest in political, social, intellectual and cultural activities and the values in ethical and religious issues. *System maintenance* is measured by the Organization and Control subscales, which assess the degree of importance of clear organization and structure in planning family activities.

The form I may be used to identify areas in which parents and children feel that change should occur. The content is the same of the Form R, but the items were

reworded to allow family members to answer them in terms of the type of family they would ideally like (Moos et al, 1986). Both measures Form R and I, could be compared with other measure of family over-involvement, such as counts of statements implying overconcern, restrictiveness and mind-reading taken from recorded interviews.

Advances in technology allow the use of video tape as the best instrument to compare the families of groups of children with different types of pain. Observation during treatment trials will be useful to study the family relationships, such as over-involvement, conflicts, alliances and dyads between their members. Video taped interactions can also help in the follow up of these children and families.

Improved measures of depression, e.g. from structured psychiatric interviews, would allow for a more satisfactory examination of the relationships between depression and pain.

C - How can psychogenic pain be recognized in practice?

8) - Is psychogenic pain more intense and florid than organic pain?

9) - Is cryptogenic pain psychogenic?

Such a study should be started from the comparison of children with non-organic pain, children with organic pain, and children with both factors (psychogenic and organic pain).

The comparison of these groups should show if organic and non-organic pain have different kinds of stressors. Knowing the stressors would help to differentiate psychogenic pain from organic pain which has the psychological factors as the consequence of pain.

One crucial question that could not be addressed in this thesis is the status of cryptogenic pain. Given that many-perhaps most- cases of pain without a clear physical diagnosis are considered as of unknown aetiology, is it possible to be clear about their cause? Several research designs could help here: a) when factors separating definitely non-organic from definitely organic pain are clarified, a cryptogenic group can be compared with both of them to see if such cases can be classified with either pure group. b) Follow-up of cryptogenic cases over a period of years would determine whether physical disease related to the pain symptom appeared later. c) Controlled trial of therapy, when it is developed for psychogenic pain, could be applied to a cryptogenic group to see if the same approaches are effective.

Although start has been made on this area of research, psychogenic pain is still an open field. Further researches need to be done to clarify causes and mechanisms of pain. The liaison of psychiatrists and paediatricians would be an advantage to answer these questions and to give better definitions and concepts for psychogenic pain. When these questions are solved clinicians will be able to make the diagnosis of pain without traumatizing children through many investigations, or delaying the beginning of treatment that can ameliorate the pain prevent its development into chronic disorder.

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APPENDICES

A.1

MAUDSLEY HOSPITAL CHILDREN'S AND ADOLESCENTS' DEPARTMENT

ITEM SHEET — PART ONE

(This section to be filled in by Registry Clerk)	
Child's Name	_____
Registration No.	_____
Address	_____ _____
Parents' Occupation	_____
Physician in charge of case	_____
Names of person completing Item Sheet	_____
Child's N.H.S. Number	_____

INSTRUCTIONS ON USE OF THE ITEM SHEET

The item sheet must be completed for all patients seen in the Children's Department (including emergency referrals and all re-referrals i.e. cases previously registered and closed). It aims to provide a summary of some of the chief aspects of diagnosis, symptomatology and treatment in order to select cases for research purposes and to review the work of the department.

The diagnostic scheme with which the item sheet should be used is based on the 9th Revision of the International Classification of Diseases but it differs in being placed within the structure of a multiaxial framework. The principles of the scheme and the methods of coding are outlined in the Classification Glossary which has been distributed to all registrars, and to all permanent staff in the Children's Department.

PART ONE — Should be completed **WITHIN TWO WEEKS** of child's first attendance.

PART TWO — Should be completed at the time of **CLOSURE** OR during the **SEPTEMBER** or **MARCH** following Registration, whichever is earlier.

PART THREE — Should be completed at the time of **CLOSURE**.

The Senior Registrar or Consultant will be responsible for checking the item sheets. Any difficulties should be referred to Dr Taylor.

PART ONE: Please complete within 2 weeks of registration and return to Registry.

CARD 1

HOSPITAL NUMBER

1-6

CARD NUMBER

7

AGE (In years according to child's last birthday)

8-9

SEX

Male	1	
Female	2	

10

(Ring one only)

DIAGNOSIS (Use Glossary to make Diagnostic Classification)

AXIS ONE

Clinical Psychiatric Syndrome
(see pages 7-55 of Glossary)

11-14

AXIS TWO

Developmental Disorder
(see pages 37-38 of Glossary)

15

AXIS THREE

Intellectual Level
(see page 39 of Glossary)

16

AXIS FOUR

Medical Conditions
(write in, do not code)

17-20

1.

21-24

2.

AXIS FIVE

Abnormal Psychosocial Situations
(Code up to three factors which you regard
as being the most important in this case)
(see pages 41-44 of Glossary)

25-26

27-28

29-30

PLEASE NOTE ANY DIFFICULTIES IN CODING DIAGNOSIS -
(record these on Card 2)

SYMPTOMS OR SIGNS IN THE LAST YEAR

(For this purpose assess on the basis of both the history from child or parent and
observed abnormalities).

In each case code:	Not present	0
	Dubious or minimal	1
	Definitely present	2
	Not known	9

Emotional Symptoms

Abnormal suspiciousness or 'sensitivity'		31
Morbid anxiety, worrying or panic		32
Morbid depression, sadness, unhappiness, tearfulness		33
Situation or object specific fears or phobias		34
Ruminations, obsessions, rituals or compulsions (do not include faddiness, rigidity or other obsessive traits)		35
Suicidal ideas, attempt or threat		36
Hypochondriasis		37
Morbid irritability, screaming, tempers, breath- holding attacks		38
School refusal, or phobia or crying on arrival at school		39
Abnormally elevated mood (including hypomania)		40
Depersonalisation or derealisation		41
'Conversion' hysterical symptoms (do not include histrionic behaviour)		42

Somatic:

Disturbance of eating (pica, refusal, abnormal faddiness etc.)		4
Disturbance of sleeping (insomnia, nightmares, sleepwalking etc.)		4
Pains of mental origin (headache, backache, abdominal pains, nausea, leg pains)		4
Encopresis or faecal soiling		4
Enuresis		4
Any non-epileptic disturbance of consciousness (fainting etc.)		4

Disturbance of Relationships

(For these codings the disorder must involve the child as an active agent,
not just as a recipient. Thus, either a disorder of relationships stemming
from the child or an abnormal dyad would be included but abnormal
parental behaviour would not if the child's response were appropriate.
Code '8' if not applicable because child has no such relationship, eg. no sib)

Overt disturbance of child-mother relationship (including hostility, dependency, etc.)		45
Overt disturbance of child-father relationship		50
Overt disturbance of relationship with other adults (e.g. school teacher)		51
Overt disturbance of patient-sib relationship (including morbid rivalry or jealousy)		52
Overt disturbance of relationships with other children (including isolation; failure to make friends etc.)		53
Autism, social withdrawal, aloofness or detachment (not necessarily psychotic)		54
Socially disinhibited		55

Speech and Language

Disorder of rhythm (e.g. stuttering)		56
Disorder of articulation		57
Disorder of comprehension of spoken language		58
Disorder of production of spoken language (including simple retardation of language development)		59
Elective Mutism		60

Motor

Tics		61
Other abnormal repetitive movement (whirling, flapping, twisting of hands, etc.)		62
Clumsiness or poor co-ordination		63
Restlessness or fidgetiness		64
Gross overactivity		65
Hypoactivity		66

Habitual Manipulations

Thumb sucking, tongue sucking, rocking, masturbation, nail-biting, scratching, head banging, etc.		67

Antisocial behaviour or Disorders of Conduct

Disobedience (active or passive) or lying		68
Stealing		69
Destructiveness or malicious damage		70

Antisocial behaviour or Disorders of Conduct (cont)

- Fire-setting ☐ 71
- Truancy or staying out late ☐ 72
- Running or wandering away from home ☐ 73
- Sexual misbehaviour (assault, exposure, etc) ☐ 74
- Fighting, bullying, aggression, etc. ☐ 75
- Violent assault (stabbing or use of other weapon or corrosives, severe physical attack, etc). ☐ 76
- Taking drugs ☐ 77
- Cruelty to animals ☐ 78
- Other antisocial behaviour (raising fire alarms, etc.) ☐ 79

CARD 2

Items in this box should be filled in by the Records Department, NOT by the Doctor. (Transfer from Card 1)

HOSPITAL NUMBER 1-6

CARD NUMBER 2 7

Other symptoms in last year

- Disorder of sex role, sex object or gender identity (cross dressing, abnormal feminine behaviour in boys, homosexual orientation, etc.) ☐ 8
- Impaired concentration (including short attention span, marked distractibility) ☐ 9
- Hallucinations, delusions, ideas of reference, or morbid persecutory ideas ☐ 10

ABUSE OF CHILD

- Physical abuse in the last year ☐ 11
- Physical abuse previously ☐ 12
- Sexual abuse in the last year ☐ 13
- Sexual abuse previously ☐ 14

WHERE SEEN FOR INITIAL ASSESSMENT

- Maudsley ☐ 1
 - Bethlem ☐ 2
 - Camberwell CGU ☐ 3
 - Kings/Belgrave ☐ 4
 - Elsewhere ☐ 5
- (ring one only) 15

DIFFICULTIES IN CODING DIAGNOSIS:

- None ☐ 0
 - Yes ☐ 1
- (ring one only) 31

Specify difficulties:

MAIN REFERRAL AGENCY

- General Practitioner
- Probation Service, Remand Home, Court (or any source for Court report)
- Local Educ. Author., School, School Med. Off.
- Education and Welfare Office
- Parent or Guardian (Directly)
- Psychiatrist on Bethlem-Maudsley Staff
- Psychiatrist not on Bethlem-Maudsley Staff
- Paediatrician
- Local Authority Social Services Dept.
- Other — including voluntary organisations

(ring one only)

DURATION OF CHILD'S PSYCHIATRIC DISORDER

(For this purpose measure duration according to the presence of clinically significant disorder. DO NOT include personality traits without significant disorder in this connection. When there is intellectual or educational retardation, code on the duration of the psychiatric disturbance and not the retardation as such. The time of first parental concern is irrelevant).

- Six months or less
- More than six months but less than one year
- One year or more but less than two years
- Two years or more but less than three years
- Three years or more
- No psychiatric disorder
- Not known

(ring one only)

PATIENT STATUS (at time of initial assessment)

- Routine Out-patient (Case conference)
- Routine Out-patient (non-Case Conference, Reg/Snr. Reg./Psychol./SW.)
- Routine Out-patient (non-case Conference, Consultant)
- Emergency O.P. (i.e. case seen within 24 hours regardless of whether psychiatrist regards case as psychiatric emergency).
- Day Patient
- In-patient

(ring one only)

SCHOOL (at which child registered at time of 1st attendance)

- Not at school.
- Ordinary day nursery, play group or nursery school.
- Day nursery etc., for handicapped children of any type.
- Ordinary school.
- Special School for physical handicap (including schools for epileptic, spastic, deaf or blind children).
- Special school for 'delicate' children (include 'open air' schools).
- Special school for educationally sub-normal children.
- Special school for E.S.N. (severe) children (training centres)
- Special school for children with emotional or behavioural problems. (include schools for maladjusted or delinquent)
- Other

(ring one only)

SCHOOL — DAY or RESIDENTIAL

- Not at school (any type)
- Day school (any type)
- Weekly boarding (any type)
- Full boarding (any type)

(ring one only)

ADOPTED

- No ☐ 0
 - Yes ☐ 1
- (ring one only) 37

CURRENT PARENTAL SITUATION

Child living with two natural or adoptive parents
 With mother alone
 With father alone
 With mother and other (e.g. step-father)
 With father and other (e.g. step-mother)
 With neither parent but with relatives
 With foster parents or other non-relative
 In Children's Home or any other type of institution.
 Not known.

0
1
2
3
4
5
6
7
9

PLACE OF RESIDENCE (to be coded by Records Officer)

'Camberwell'
 Southwark (non 'Camberwell')
 Lambeth, Lewisham
 Greater London
 Home Counties
 England, Wales, Scotland
 N. Ireland, Eire
 Elsewhere
 Not known

0
1
2
3
4
5
6
7
9

(ring one only)

NO. OF CHILDREN UNDER 17 YEARS IN HOUSEHOLD
(irrespective of relationships but including patient).

(N.B. Code 8 for 8 or more
 Code 9 for Not Known or child in institution)

0
1
2
3

FAMILY HISTORY
COUNTRY OF BIRTH OF MOTHER

England, Scotland, Wales
 Northern Ireland or Eire
 West Indies (including Guyana)
 Africa (excluding South Africa)
 Cyprus, Turkey, Greece
 New Zealand, Australia, Canada, U.S.A., South Africa.
 Asia
 Other European Country
 Other
 Not known

0
1
2
3
4
5
6
7
8
9

(ring one only)

ORDINAL POSITION

Only child
 Eldest child
 Youngest child
 Middle or other position
 (include one of a set of multiple births)

0
1
2
3

(ring one only)

SEXUAL MATURITY

Pre-pubertal
 Any sign of beginning adult sexual development (breast development, pubic, axillary or facial hair development; enlargement of genitalia; or breaking of the voice).
 Pubertal:
 Girls — menstruation has occurred
 Boys — either emission has occurred or equivalent maturity judged on basis of development of sexual hair and genitalia
 Not known

0
1
2
9

(ring one only)

COUNTRY OF BIRTH OF FATHER (code as for Mother)

OCCUPATION OF FATHER OR MAIN BREADWINNER
 (If father dead or separated code occupation of person who is the main source of family income)
 Write in, but do not code

0
1
2
3
4
5
6
7
8
9

48

0
1
2
3
4
5
6
7
8
9

49

COUNTRY OF BIRTH OF CHILD (code as for Mother)

(For the purpose of coding the following items a 'parent' refers to the person who is acting as a parent to the child irrespective of whether there is any 'blood relationship').

Has a parent or a sib committed suicide or attended a psychiatrist (O.P. or I.P.) at or before the age of 16 years

No
Yes
Not known

0
1
9

51

(ring one only)

Has a parent or sib committed suicide or attended a psychiatrist at or after the age of 17 years

No
Yes
Not known

0
1
9

52

(ring one only)

TWIN

No
 Yes: twin dead
 Yes not known if twin alive
 Yes: Monozygotic
 Yes: Dizygotic, same sex
 Yes: Dizygotic, opposite sex
 Yes: Zygoty not known
 Not known if twin

0
1
2
3
4
5
6
9

(ring one only)

PAST HISTORY

Attended psychiatrist, psychologist or PSW on previous occasion.

No
Yes
Not known

0
1
9

(ring one only)

ADMINISTRATION

Month in which child first seen

01 — January; 02 — February; 03 — March etc.
 12 — December

0
1
2
3
4
5
6
7
8
9

53

Attended paediatrician for enuresis, encopresis or any disorder of behaviour or emotions.

No
 Yes, for dubious psychiatric disorder
 (code here isolated developmental disorder)
 Yes, for definite psychiatric disorder
 Not known

0
1
2
9

(ring one only)

Clinical Responsibility for the case:
 (ring one only)

Briscoe
 Connell
 Corbett
 Cox
 Dare
 Hersov
 Rutter
 Sheldrick
 Steinberg
 Taylor
 other consultant psychiatrist
 other staff member (e.g. psychologist)
 Not assigned

0
1
2
3
4
5
6
7
8
9
10
11
12

54

Brought before Juvenile Court at any time.

No
 No, but has had police caution
 Yes, only once
 Yes, two or more times
 Not known

0
1
2
3
9

(ring one only)

Is this a Re-attendance (i.e. has case been previously registered and closed)

No
Yes

0
1

57

(ring one only)

ASSOCIATED ABNORMAL PSYCHOSOCIAL SITUATIONS

(see pages 41-44 of glossary for description)

Code: Not present : 0
Dubious or minimal : 1
Definitely present : 2
Not known : 9

1. Mental disturbance in other family members ☐ 58
2. Discordant intra-familial relationships ☐ 59
3. Lack of warmth in intra-familial relationships ☐ 60
4. Familial over-involvement ☐ 61
5. Inadequate or inconsistent parental control ☐ 62
6. Inadequate social, linguistic or perceptual stimulation ☐ 63
7. Inadequate living conditions ☐ 64
8. Inadequate or distorted intra-familial communications ☐ 65
9. Anomalous family situations ☐ 66
10. Stresses or disturbances in school or work environment ☐ 67
11. Migration or social transplantation ☐ 68
12. Natural disaster ☐ 69
3. Other intra-familial psychosocial stress ☐ 70
4. Other extra-familial psychosocial stress ☐ 71
5. Persecution or adverse discrimination ☐ 72
6. Other psychological disturbance in society in general ☐ 73
7. Other (specify) ☐ 74
0. Absence of any significant distortion or inadequacy of psychological environment (ie. code '2' where there is no abnormality.) ☐ 75

NOW

Please HAND PART 1
to Registry Staff

**MAUDSLEY HOSPITAL CHILDREN'S
AND ADOLESCENT'S DEPARTMENT**

ITEM SHEET - PART TWO

(This section to be filled in by Registry Clerk)

Child's Name _____
Registration No. _____
Physician in charge of case: _____
Names of Person completing Item Sheet: _____
Child's N.H.S. Number _____

The item sheet must be completed for all patients seen in the Children's Department (including emergency referrals and all re-referrals i.e. cases previously registered and closed). It aims to provide a summary of some chief aspects of diagnosis, symptomatology and treatment in order to select cases for research purposes and to review the work of the Department.

The diagnostic scheme with which this item sheet should be used is based on the 9th Revision of the International Classification of Diseases but it differs in being placed within the structure of a multi-axial framework. The principles of the scheme and the methods of coding are outlined in the Classification Glossary which has been distributed to all registrars, and to all permanent staff in the Children's Department.

PART ONE — Should be completed **WITHIN TWO WEEKS** of child's first attendance.

PART TWO — Should be completed at the time of **CLOSURE** OR during the **SEPTEMBER** or **MARCH** following Registration, whichever is earlier.

PART THREE — Should be completed at the time of **CLOSURE**.

The Senior Registrar or Consultant will be responsible for checking the item sheets. Any difficulties should be referred to Dr. Taylor.

PART TWO :	Please complete on closure or during the September or March following initial referral, whichever is earlier and return to Registry.

CARD 4

Items in this box should be filled in by the Records Department NOT by the Doctor. (Transfer form Card 1)

HOSPITAL NUMBER 1-6

CARD NUMBER 4 7

AGE (in years according to child's last birthday) 8-9

SEX Male 1 Female 2 10
ring one only

DIAGNOSIS

Clinical Psychiatric Syndrome 11-14

Developmental Disorder 15

Intellectual Level 16

Associated Medical Conditions 17-20

21-24

Associated Psychosocial Situations (Up to 3, in order of importance) 25-26

27-28

29-30

TREATMENT

In each case code : Not given : 0
Given : 1

Supportive Psychotherapy or play therapy with child 31

Systematic individual psychotherapy or play therapy with child 32

Group Therapy with child 33

Behaviour Therapy directly with child 34

Parent involved in behaviour therapy 35

Conjoint marital therapy (not including children) 36

Conjoint family therapy 37

Parent seen for advice, social help etc. only 38

Parents seen for systematic casework 39

Parents recieved formal psychiatric treatment at Maudsley-BRH (in the Children's Department or the Adult Department) 40

Parents recieved formal psychiatric treatment elsewhere 41

Coaching or Remedial Teaching of child at Maudsley - BRH or Camberwell CGU 42

Anti-convulsant drug prescribed for child 43

Other drug prescribed (to influence psychiatric or behavioural abnormality) 44

Other physical treatment given for psychiatric disorder (e.g. ECT) 45

Consultation with school, or teacher involved in treatment 46

Consultation with other institution or staff at institution involved in treatment (e.g. Children's Home, Reception Centre, etc.) 47

Community Social Worker involved in treatment 48

Milieu in-patient treatment (do not include patients admitted only for investigation) 49

Milieu day-patient treatment 50

Environmental manipulation (e.g. changing schools) 51

Admission for investigation only 52

Day-patient attendance for investigation only 53

Out-patient assessment only (e.g. Court report or second opinion without any provision of treatment) 54

INVESTIGATIONS

EEG Not done 0 Done 1 55
ring one only

I.Q. or other test of cognitive ability Not done 0 Done 1 56
ring one only

ATTAINMENT TEST Not done 0 Done 1 57
ring one only

Clinical Responsibility

Briscoe 0

Connell 1

Corbett 2

Cox 3

Dare 4

Hersov 5

Rutter 6

Sheldrick 7

Steinberg 8

Taylor 9

other consultant psychiatrist 10

other staff member (eg. psychologist) 11

Not assigned 12

ring one only

(enter one only) 58/59

DATE OF COMPLETION (Year) 1983 1

1984 2

1985 3

1986 4

1987 5

1988 6

N.K. 9 60

ring one only

DATE OF COMPLETION (Month) 01 - JAN 61/62

02 - FEB

etc.

COGNITIVE/SCHOLASTIC ASSESSMENT

Estimate of Intelligence (based on test or best judgement)

130+	Very superior, brilliant	:	0
115-129	superior, bright	:	1
100-114	HIGH AVERAGE: NORMAL	:	2
85-99	normal, average to dull average	:	3
70-84	dull to normal	:	4
50-69	mildly retarded	:	5
35-49	moderately retarded	:	6
20-34	severely retarded	:	7
below 20	profoundly retarded	:	8
	NOT ASSESSED	:	9 63

ring one only

Where IQ estimate comes from (best source)

WISC (Full) :
WISC (Short) :
WPPSI :
WAIS :

Other individual IQ or development test :

Vineland :
Teacher's estimate :
Other estimate :
Not applicable :

0
1
2
3
4
5
6
7
8

64

ring one only

Reading tests :
None :
Neale :
Schonell :
Other :

0
1
2
3

65

ring one only

Reading backward (more than 24 months below chronological age)

No :
Yes :
Don't know :

0
1
2

66

ring one only

Specific reading retardation (more than 28 months below expected level on standardised test)

No :
Yes :
Don't know :

0
1
2

67

ring one only

Other academic problems:

Spelling :
No :
Yes :

0
1

68

ring one only

Arithmetic :
No :
Yes :

0
1

69

ring one only

Other :
No :
Yes :

0
1

70

ring one only

**MAUDSLEY HOSPITAL CHILDREN'S
AND ADOLESCENT'S DEPARTMENT**

ITEM SHEET - PART THREE

(This section to be filled in by Registry Clerk)	
Child's Name	_____
Registration No.	_____
Physician in charge of case:	_____
Names of Person completing Item Sheet:	_____
Child's N.H.S. Number	_____

The item sheet must be completed for all patients seen in the Children's Department (including emergency referrals and all re-referrals i.e. cases previously registered and closed). It aims to provide a summary of some chief aspects of diagnosis, symptomatology and treatment in order to select cases for research purposes and to review the work of the Department.

The diagnostic scheme with which this item sheet should be used is based on the 9th Revision of the International Classification of Diseases but it differs in being placed within the structure of a multi-axial framework. The principles of the scheme and the methods of coding are outlined in the Classification Glossary which has been distributed to all registrars, and to all permanent staff in the Children's Department.

- PART ONE** — Should be completed **WITHIN TWO WEEKS** of child's first attendance.
- PART TWO** — Should be completed at the time of **CLOSURE** OR during the **SEPTEMBER** or **MARCH** following Registration, whichever is earlier.
- PART THREE** — Should be completed at the time of **CLOSURE**.

The Senior Registrar or Consultant will be responsible for checking the item sheets. Any difficulties should be referred to Dr. Taylor.

PART THREE: Please complete on closure and return to Registry.

CARD 5

Nos. 1-30 on this page should be filled in by the Records Department NOT by the Doctor. (Transfer form Card 1)

HOSPITAL NUMBER 1-6

CARD NUMBER 5 7

AGE (in years according to child's last birthday) 8-9

SEX Male 1 Female 2 10
ring one only

DIAGNOSIS

Clinical Psychiatric Syndrome 11-14

Developmental Disorder 15

Intellectual Level 16

Associated Medical Conditions 17-20

21-24

Associated Psychosocial Factors 25-26

27-28

29-30

Consultation with other institution or staff at institution involved in treatment (e.g. Children's Home, Reception Centre, etc.) 47

Community Social Worker involved in treatment 48

Milieu in-patient treatment (do not include patients admitted only for investigation) 49

Milieu day-patient treatment 50

Environmental manipulation (e.g. changing schools) 51

Admission for investigation only 52

Day-patient attendance for investigation only 53

Out-patient assessment only (e.g. Court report or second opinion without any provision of treatment) 54

OUT-PATIENT ATTENDANCES

(This applies to patient or to family)

a) DURATION < 6 months
> 6 months < 1 year
> 1 year < 3 years
> 3 years
N.K.

0
 1
 2
 3
 9 55

ring one only

TREATMENT

In each case code : Not given : 0

Given : 1

Supportive Psychotherapy or play therapy with child 31

Systematic individual psychotherapy or play therapy with child 32

Group Therapy with child 33

Behaviour Therapy directly with child 34

Parent involved in behaviour therapy 35

Conjoint marital therapy (not including children) 36

Conjoint family therapy 37

Parent seen for advice, social help etc. only 38

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Parents received formal psychiatric treatment elsewhere 41

Coaching or Remedial Teaching of child at Maudsley - BRH or Camberwell CGU 42

Anti-convulsant drug prescribed for child 43

Other drug prescribed (to influence psychiatric or behavioural abnormality) 44

Other physical treatment given for psychiatric disorder (e.g. ECT) 45

Consultation with school, or teacher involved in treatment 46

b) FREQUENCY 1-2
3-10
11-20
> 20

0
 1
 2
 3 56

IN-PATIENT TREATMENT

< 2 months
> 2 months < 6 months
> 6 months < 1 year
> 1 year

0
 1
 2
 3 57

ring one only

OUTCOME

(1) Worse
No change
Slightly improved
Improved
Much improved
Recovered
Not Known

0
 1
 2
 3
 4
 5
 9 58

ring one only

(2) Psychiatrically normal
Trivial or minor abnormalities only
Definite disorder with slight handicap only
Definite disorder with moderate handicap
Definite disorder with marked handicap
Not known

0
 1
 2
 3
 4
 9 59

ring one only

MODE OF DISCHARGE

Discharged
Lapsed
Surveillance
Died
Suicide
Open appointment
Admitted to hospital
Not known

0
1
2
3
4
5
6
9

ring one only 60

Clinical Responsibility

Briscoe
Connell
Corbett
Cox
Dare
Hersov
Rutter
Sheldrick
Steinberg
Taylor
other consultant psychiatrist
other staff member (eg. psychologist)
Not assigned

0
1
2
3
4
5
6
7
8
9
10
11
12

(enter one only) 61/62

DATE OF CLOSURE (Year)

1983	1
1984	2
1985	3
1986	4
1987	5
1988	6
N.K.	9

ring one only 63

DATE OF CLOSURE (Month)

01 - JAN
02 - FEB
etc.

64/65

Has Part Two been completed at same time as Part Three?

No	0
Yes	1

ring one only 66

A.2

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

RECORD [1]

NUMBER | | | | 1-3

DATE | | | | | | | 4-9

NAME

DATE OF BIRTH | | | | |

AGE (MONTHS) | | | |

10-12

SEX: MALE ☐ 0

FEMALE ☐ 1

| | 13

NAME OF MOTHER

NAME OF FATHER

ADDRESS

POST CODE

PHONE NUMBER

SCHOOL

ADDRESS

POST CODE

PONE NUMBER

- ARE YOU LIVING WITH

MOTHER AND FATHER ☐

MOTHER ☐

FATHER ☐

MOTHER AND STEPFATHER ☐

FATHER AND STEPMOTHER ☐

FOSTER PARENTS ☐

ADOPTEE PARENTS ☐

OTHER ☐

| | 14

- HOW MANY BROTHERS AND SISTERS HAVE YOU?

NONE	☐	0	
ONE	☐	1	
TWO	☐	2	
THREE	☐	3	
FOUR	☐	4	
MORE THAN FOUR	☐	5	15

- ARE YOU THE

OLDEST	☐	0	
MIDDLE ONE	☐	1	
YOUNGEST	☐	2	16

- DID YOU HAVE IN THE PAST A SERIOUS DISEASE?

YES	☐	1	
NO	☐	0	17

- IF YOU ANSWER YES, WHAT WAS IT?

- DO YOU GET ANY KIND OF PAIN?

YES	☐	1	
NO	☐	0	18

- IF YOU ANSWERED YES, GO THE NEXT QUESTION

- WHAT SORT OF PAIN HAVE YOU?

ABDOMINAL PAIN	☐	0	
HEADACHES	☐	1	
CHEST PAIN	☐	2	
LIMB PAINS	☐	3	
OTHER	☐	(IF YES, SPECIFY WHICH IT IS AND GO TO E)	4 19

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

PART [A]

THESE QUESTIONS ARE CONCERNING ONLY TO ABDOMINAL PAIN

1. WHEN DOES IT COME ON?
- | | | | |
|------------------------|--------------------------|---|----|
| MORNING BEFORE SCHOOL | ☐ | 0 | |
| DURING SCHOOL-TIME | ☐ | 1 | |
| AFTERNOON AFTER SCHOOL | ☐ | 2 | |
| EVENING | ☐ | 3 | |
| VARIES | ☐ | 4 | |
| DON'T KNOW | ☐ | 5 | 20 |

2. HOW LONG DOES IT LAST?
- | | | | |
|--------------------|--------------------------|---|----|
| LESS THAN 1 MINUTE | ☐ | 0 | |
| 1 TO 5 MINUTES | ☐ | 1 | |
| 5 TO 60 MINUTES | ☐ | 2 | |
| MORE THAN 1 HOUR | ☐ | 3 | |
| DON'T KNOW | ☐ | 4 | 21 |

3. HOW OFTEN DO YOU GET IT?
- | | | | |
|-------------------------|--------------------------|---|----|
| DAILY | ☐ | 0 | |
| 2 TO 6 PER WEEK | ☐ | 1 | |
| 1 TO 5 PER MONTH | ☐ | 2 | |
| LESS THAN ONE PER MONTH | ☐ | 3 | |
| DON'T KNOW | ☐ | 4 | 22 |

8. WHERE DOES THE PAIN START?

NAVEL	☐	0	
UPPER ABDOMEN	☐	1	
LOWER ABDOMEN	☐	2	
DIFFUSE	☐	3	
OTHER	☐	4	
DON'T KNOW	☐	5	26

9. DOES THE PAIN SPREAD?

YES	☐	1	
NO	☐	2	27

IF YOU ANSWERED YES, WHERE THE PAIN SPREAD TO

10. DO YOU GET ANY OF THESE TROUBLES WITH THE PAIN?

FEELING SICK	YES ☐ 1	NO ☐ 0
VOMITING	YES ☐ 1	NO ☐ 0
DIARRHOEA	YES ☐ 1	NO ☐ 0
CONSTIPATION	YES ☐ 1	NO ☐ 0
PALLOR	YES ☐ 1	NO ☐ 0
DIZZINESS	YES ☐ 1	NO ☐ 0
HEADACHE	YES ☐ 1	NO ☐ 0
FEVER	YES ☐ 1	NO ☐ 0
FAINTNESS	YES ☐ 1	NO ☐ 0
NO APPETITE	YES ☐ 1	NO ☐ 0
WEIGHT LOSS	YES ☐ 1	NO ☐ 0
TIREDNESS	YES ☐ 1	NO ☐ 0
SLEEP DISTURBANCE	YES ☐ 1	NO ☐ 0
OTHER (SPECIFY)	YES ☐ 1	NO ☐ 0

| | | | | | | | | | | | | | | 28

11. DOES ANYTHING START OFF THE PAIN?

YES	☐	1	
NO	☐	0	29

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1	
NO	☐	0	30

IF YOU ANSWERED YES, WHAT IS IT?

13. DOES ANYTHING MAKE IT BETTER?

YES ☐ 1

NO ☐ 0 | | 31

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

PART [B]

THESE QUESTIONS ARE CONCERNING ONLY TO HEADACHES

1.

WHEN DOES IT COME ON?

MORNING BEFORE SCHOOL

☐

0

DURING SCHOOL-TIME

☐

1

AFTERNOON AFTER SCHOOL

☐

2

EVENING

☐

3

VARIES

☐

4

DON'T KNOW

☐

5

| | 32

2.

HOW LONG DOES IT LAST?

LESS THAN 1 MINUTE

☐

0

1 TO 5 MINUTES

☐

1

5 TO 60 MINUTES

☐

2

MORE THAN 1 HOUR

☐

3

DON'T KNOW

☐

4

| | 33

3.

HOW OFTEN DO YOU GET IT?

DAILY

☐

0

2 TO 6 PER WEEK

☐

1

1 TO 5 PER MONTH

☐

2

LESS THAN ONE PER MONTH

☐

3

DON'T KNOW

☐

4

| | 34

8. WHERE IS THE SITE OF PAIN?

UNILATERAL	YES ☐ 1	NO ☐ 0
FOREHEAD	YES ☐ 1	NO ☐ 0
WHOLE HEAD	YES ☐ 1	NO ☐ 0
ON TOP HEAD	YES ☐ 1	NO ☐ 0
IN THE TEMPLES	YES ☐ 1	NO ☐ 0
ROUND THE EYES	YES ☐ 1	NO ☐ 0
BACK THE NECK	YES ☐ 1	NO ☐ 0
DIFFERENT LOCATION	YES ☐ 1	NO ☐ 0
DON'T KNOW	YES ☐ 1	NO ☐ 0
OTHER (SPECIFY)	YES ☐ 1	NO ☐ 0

| | | | | | | | | | 38

9. DO YOU GET ANY OF THESE TROUBLES WITH THE PAIN?

FEELING SICK	YES ☐ 1	NO ☐ 0
VOMITING	YES ☐ 1	NO ☐ 0
PALLOR	YES ☐ 1	NO ☐ 0
OTHER (SPECIFY)	YES ☐ 1	NO ☐ 0

| | | | | 39

10. DOES ANYTHING START OFF THE PAIN?

YES	☐	1	
NO	☐	0	40

IF YOU ANSWERED YES, WHAT IS IT?

11. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1	
NO	☐	0	41

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE IT BETTER?

YES ☐

1

NO ☐

0

| | 42

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

PART [C]

THESE QUESTIONS ARE CONCERNING ONLY TO CHEST PAIN

1. WHEN DOES IT COME ON?

MORNING BEFORE SCHOOL	☐	0	
DURING SCHOOL-TIME	☐	1	
AFTERNOON AFTER SCHOOL	☐	2	
EVENING	☐	3	
VARIES	☐	4	
DON'T KNOW	☐	5	43

2. HOW LONG DOES IT LAST?

LESS THAN 1 MINUTE	☐	0	
1 TO 5 MINUTES	☐	1	
5 TO 60 MINUTES	☐	2	
MORE THAN 1 HOUR	☐	3	
DON'T KNOW	☐	4	44

3. HOW OFTEN DO YOU GET IT?

DAILY	☐	0	
2 TO 6 PER WEEK	☐	1	
1 TO 5 PER MONTH	☐	2	
LESS THAN ONE PER MONTH	☐	3	
DON'T KNOW	☐	4	45

4. DO YOU GET IT

ONLY IN WEEKENDS	☐	0	
SOMETIMES IN WEEKENDS			
SOMETIMES IN WEEKDAYS	☐	1	
NEVER IN WEEKENDS	☐	2	46

5. HOW LONG HAVE YOU HAD THIS PAIN?

3 TO 6 MONTHS	☐	0	
6 TO 12 MONTHS	☐	1	
1 TO 2 YEARS	☐	2	
MORE THAN 2 YEARS	☐	3	
DON'T KNOW	☐	4	47

6. HOW DO YOU FEEL THIS PAIN?

SHARP	☐	0	
BURNING	☐	1	
GNAWING	☐	2	
DULL	☐	3	
PIN PRICK	☐	4	
TIGHTNESS	☐	5	
OTHER (SPECIFY)	☐	6	48

7. HOW SEVERE IS IT? INDICATE PUTTING A POINT IN A SCALE BELOW

	INTENSITY			
		M		
		O		
		D		
		E		
		R		
		A		
		T		
		E		
	M		S	
	I		E	
	L		R	
	D		E	
NO				PAIN AS
PAIN				BAD AS
				COULD BE

8. DOES THE PAIN SPREAD?

YES ☐ 1

NO ☐ 0

| | 49

9. IF YOU ANSWERED YES, SAY WHERE THE PAIN SPREADS TO

ARMS ☐ 0

BACK ☐ 1

OTHER ☐ 2

| | 50

10. DO YOU GET ANY OF THESE TROUBLES WITH THE PAIN?

PALLOR YES ☐ 1 NO ☐ 0

SWEATING YES ☐ 1 NO ☐ 0

BREATHING FASTER YES ☐ 1 NO ☐ 0

OTHER (SPECIFY) YES ☐ 1 NO ☐ 0

| | | | 51

11. DOES ANYTHING START OFF THE PAIN?

YES ☐ 1

NO ☐ 0

| | 52

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE THE PAIN WORSE?

YES ☐ 1

NO ☐ 0

| | 53

IF YOU ANSWERED YES, WHAT IS IT?

13. DOES ANYTHING MAKE IT BETTER?

YES ☐ 1

NO ☐ 0

| | 54

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

PART [D]

THESE QUESTIONS ARE CONCERNING ONLY TO LIMB PAINS

1.	WHEN DOES IT COME ON?			
	MORNING BEFORE SCHOOL	☐	0	
	DURING SCHOOL-TIME	☐	1	
	AFTERNOON AFTER SCHOOL	☐	2	
	EVENING	☐	3	
	VARIES	☐	4	
	DON'T KNOW	☐	5	55
2.	HOW LONG DOES IT LAST?			
	LESS THAN 1 MINUTE	☐	0	
	1 TO 5 MINUTES	☐	1	
	5 TO 60 MINUTES	☐	2	
	MORE THAN 1 HOUR	☐	3	
	DON'T KNOW	☐	4	56
3.	HOW OFTEN DO YOU GET IT?			
	DAILY	☐	0	
	2 TO 6 PER WEEK	☐	1	
	1 TO 5 PER MONTH	☐	2	
	LESS THAN ONE PER MONTH	☐	3	
	DON'T KNOW	☐	4	57

4. DO YOU GET IT

ONLY IN WEEKENDS	☐	0	
SOMETIMES IN WEEKENDS			
SOMETIMES IN WEEKDAYS	☐	1	
NEVER IN WEEKENDS	☐	2	58

5. HOW LONG HAVE YOU HAD THIS PAIN?

3 TO 6 MONTHS	☐	0	
6 TO 12 MONTHS	☐	1	
1 TO 2 YEARS	☐	2	
MORE THAN 2 YEARS	☐	3	
DON'T KNOW	☐	4	59

6. HOW DO YOU FEEL THIS PAIN?

DULL	YES ☐ 1	NO ☐ 0
WITH MOVEMENT	YES ☐ 1	NO ☐ 0
WITHOUT MOVEMENT	YES ☐ 1	NO ☐ 0
WITH TOUCH	YES ☐ 1	NO ☐ 0
SUPERFICIAL	YES ☐ 1	NO ☐ 0
DEEP	YES ☐ 1	NO ☐ 0
OTHER	YES ☐ 1	NO ☐ 0

| | | | | | | | 60

4.

DO YOU GET IT

ONLY IN WEEKENDS

☐

0

SOMETIMES IN WEEKENDS

SOMETIMES IN WEEKDAYS

☐

1

NEVER IN WEEKENDS

☐

2

| | 58

5.

HOW LONG HAVE YOU HAD THIS PAIN?

3 TO 6 MONTHS

☐

0

6 TO 12 MONTHS

☐

1

1 TO 2 YEARS

☐

2

MORE THAN 2 YEARS

☐

3

DON'T KNOW

☐

4

| | 59

6.

HOW DO YOU FEEL THIS PAIN?

DULL

YES

☐

1

NO

☐

0

WITH MOVEMENT

YES

☐

1

NO

☐

0

WITHOUT MOVEMENT

YES

☐

1

NO

☐

0

WITH TOUCH

YES

☐

1

NO

☐

0

SUPERFICIAL

YES

☐

1

NO

☐

0

DEEP

YES

☐

1

NO

☐

0

OTHER

YES

☐

1

NO

☐

0

| | | | | | | | | 60

7. HOW SEVERE IS IT? INDICATE PUTTING A POINT IN A SCALE BELOW

INTENSITY

MILD
MODERATE
SEVERE

NO
PAIN

PAIN AS
BAD AS
COULD BE

8. WHERE IS THE SITE OF PAIN?

JOINT	YES ☐ 1	NO ☐ 0
BETWEEN JOINT	YES ☐ 1	NO ☐ 0
UNILATERAL	YES ☐ 1	NO ☐ 0
BILATERAL	YES ☐ 1	NO ☐ 0
HIP	YES ☐ 1	NO ☐ 0
KNEE	YES ☐ 1	NO ☐ 0
OTHER	YES ☐ 1	NO ☐ 0
DON'T KNOW	YES ☐ 1	NO ☐ 0

| | | | | | | | | | 61

9. DOES ANYTHING START OFF THE PAIN?

YES	☐	1	
NO	☐	0	62

IF YOU ANSWERED YES, WHAT IS IT?

11. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1	
NO	☐	0	63

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE IT BETTER?

YES	☐	1	
NO	☐	0	64

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

PART [E]

THESE QUESTIONS ARE CONCERNING ONLY TO ABDOMINAL PAIN

1. WHEN DOES IT COME ON?
- | | | | |
|------------------------|--------------------------|---|----|
| MORNING BEFORE SCHOOL | ☐ | 0 | |
| DURING SCHOOL-TIME | ☐ | 1 | |
| AFTERNOON AFTER SCHOOL | ☐ | 2 | |
| EVENING | ☐ | 3 | |
| VARIES | ☐ | 4 | |
| DON'T KNOW | ☐ | 5 | 65 |
2. HOW LONG DOES IT LAST?
- | | | | |
|--------------------|--------------------------|---|----|
| LESS THAN 1 MINUTE | ☐ | 0 | |
| 1 TO 5 MINUTES | ☐ | 1 | |
| 5 TO 60 MINUTES | ☐ | 2 | |
| MORE THAN 1 HOUR | ☐ | 3 | |
| DON'T KNOW | ☐ | 4 | 66 |
3. HOW OFTEN DO YOU GET IT?
- | | | | |
|-------------------------|--------------------------|---|----|
| DAILY | ☐ | 0 | |
| 2 TO 6 PER WEEK | ☐ | 1 | |
| 1 TO 5 PER MONTH | ☐ | 2 | |
| LESS THAN ONE PER MONTH | ☐ | 3 | |
| DON'T KNOW | ☐ | 4 | 67 |
4. DO YOU GET IT
- | | | | |
|-----------------------|--------------------------|---|----|
| ONLY IN WEEKENDS | ☐ | 0 | |
| SOMETIMES IN WEEKENDS | | | |
| SOMETIMES IN WEEKDAYS | ☐ | 1 | |
| NEVER IN WEEKENDS | ☐ | 2 | 68 |

5. HOW LONG HAVE YOU HAD THIS PAIN?

3 TO 6 MONTHS	☐	0
6 TO 12 MONTHS	☐	1
1 TO 2 YEARS	☐	2
MORE THAN 2 YEARS	☐	3
DON'T KNOW	☐	4

| | 69

6. HOW DO YOU FEEL THIS PAIN?

7. HOW SEVERE IS IT? INDICATE PUTTING A POINT IN A SCALE BELOW

INTENSITY

	M		
	O		
	D		
	E		
	R		
	A		
	T		
	E		
M			
I			
L			
D			
		S	
		E	
		V	
		E	
		R	
		E	

NO
PAIN

PAIN AS
BAD AS
COULD BE

8. WHERE DOES THE PAIN START?

9. DOES THE PAIN SPREAD?

YES	☐	1
NO	☐	2

| | 70

IF YOU ANSWERED YES, WHERE THE PAIN SPREAD TO

10. DO YOU GET ANY OF THESE TROUBLES WITH THE PAIN?

FEELING SICK	YES ☐ 1	NO ☐ 0
VOMITING	YES ☐ 1	NO ☐ 0
PALLOR	YES ☐ 1	NO ☐ 0
DIZZINESS	YES ☐ 1	NO ☐ 0
SWEATING	YES ☐ 1	NO ☐ 0
BREATHING FASTER	YES ☐ 1	NO ☐ 0
OTHER (SPECIFY)	YES ☐ 1	NO ☐ 0

| | | | | | | | | 71

11. DOES ANYTHING START OFF THE PAIN?

YES	☐	1
NO	☐	0

| | 72

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1
NO	☐	0

| | 73

IF YOU ANSWERED YES, WHAT IS IT?

13. DOES ANYTHING MAKE IT BETTER?

YES	☐	1
NO	☐	0

| | 74

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

PART [F]

- 1. WHAT DO YOU THINK CAUSES THIS PAIN?**
- 2. IS THERE ANYTHING WRONG WITH YOU OR IN YOUR LIFE?**
- 3. ARE THERE ANY OTHER FEELINGS OR WORRIES ASSOCIATED WITH THIS PAIN?**
- 4. WHAT DOES YOUR FAMILY THINK IS THE CAUSE OF THIS PAIN?**
- 5. WHAT IS YOUR PARENTS EXPECTATIONS ABOUT YOUR FUTURE?**
- 6. WHAT DO YOU THINK TO DO IN THE FUTURE?**

THANK YOU FOR YOUR HELP

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS
-PARENTS VERSION-

RECORD [1]

NUMBER | | | | 1-3

DATE | | | | | | | 4-9

NAME

DATE OF BIRTH | | | | |

AGE (MONTHS) | | | |

10-12

SEX: MALE ☐ 0

FEMALE ☐ 1 | | 13

NAME OF MOTHER

NAME OF FATHER

ADDRESS

POST CODE PHONE NUMBER

SCHOOL

ADDRESS

POST CODE PONE NUMBER

- HE/SHE IS LIVING WITH

MOTHER AND FATHER ☐

MOTHER ☐

FATHER ☐

MOTHER AND STEPFATHER ☐

FATHER AND STEPMOTHER ☐

FOSTER PARENTS ☐

ADOPTEE PARENTS ☐

OTHER ☐ | | 14

- HOW MANY CHILDREN HAVE YOU?

NONE	☐	0	
ONE	☐	1	
TWO	☐	2	
THREE	☐	3	
FOUR	☐	4	
MORE THAN FOUR	☐	5	15

- HE/SHE IS THE

OLDEST	☐	0	
MIDDLE ONE	☐	1	
YOUNGEST	☐	2	16

- HE/SHE GOT ANY KIND OF PAIN?

YES	☐	1	
NO	☐	0	17

- IF YOU ANSWERED YES, GO TO THE NEXT QUESTION

- WHAT SORT OF PAIN HE/SHE GOT?

ABDOMINAL PAIN	☐	0	
HEADACHES	☐	1	
CHEST PAIN	☐	2	
LIMB PAINS	☐	3	
OTHER	☐ (IF YES, SPECIFY WHICH IT IS AND GO TO E)	4	18

- DID YOU HAVE IN THE PAST A SERIOUS DISEASE?

YES	☐	1	
NO	☐	0	19

IF YOU ANSWERED YES, WHAT WAS IT?

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS
-PARENTS VERSION-
PART [A]

THESE QUESTIONS ARE CONCERNING ONLY TO ABDOMINAL PAIN

1.
WHEN DOES IT COME ON?

MORNING BEFORE SCHOOL

☐

0

DURING SCHOOL-TIME

☐

1

AFTERNOON AFTER SCHOOL

☐

2

EVENING

☐

3

VARIES

☐

4

DON'T KNOW

☐

5

| | 20

2.
HOW LONG DOES IT LAST?

LESS THAN 1 MINUTE

☐

0

1 TO 5 MINUTES

☐

1

5 TO 60 MINUTES

☐

2

MORE THAN 1 HOUR

☐

3

DON'T KNOW

☐

4

| | 21

3.
HOW OFTEN DOES HE/SHE GET IT?

DAILY

☐

0

2 TO 6 PER WEEK

☐

1

1 TO 5 PER MONTH

☐

2

LESS THAN ONE PER MONTH

☐

3

DON'T KNOW

☐

4

| | 22

4.	DOES HE/SHE GET IT			
	ONLY IN WEEKENDS	☐	0	
	SOMETIMES IN WEEKENDS			
	SOMETIMES IN WEEKDAYS	☐	1	
	NEVER IN WEEKENDS	☐	2	23
5.	HOW LONG HAS HE/SHE HAD THIS PAIN?			
	3 TO 6 MONTHS	☐	0	
	6 TO 12 MONTHS	☐	1	
	1 TO 2 YEARS	☐	2	
	MORE THAN 2 YEARS	☐	3	
	DON'T KNOW	☐	4	24
6.	HOW DOES HE/SHE FEEL THIS PAIN?			
	SHARP	☐	0	
	DULL	☐	1	
	CRAMPING	☐	2	
	FULLNESS	☐	3	
	OTHER	☐	4	
	DON'T KNOW	☐	5	25
7.	WHERE DOES THE PAIN START?			
	NAVEL	☐	0	
	UPPER ABDOMEN	☐	1	
	LOWER ABDOMEN	☐	2	
	DIFFUSE	☐	3	
	OTHER	☐	4	
	DON'T KNOW	☐	5	26

8. DOES THE PAIN SPREAD?

YES

☐

1

NO

☐

2

| | 27

IF YOU ANSWERED YES, WHERE THE PAIN SPREAD TO

9. DOES HE/SHE GET ANY OF THESE TROUBLES WITH THE PAIN?

FEELING SICK	YES ☐	1	NO ☐	0
VOMITING	YES ☐	1	NO ☐	0
DIARRHOEA	YES ☐	1	NO ☐	0
CONSTIPATION	YES ☐	1	NO ☐	0
PALLOR	YES ☐	1	NO ☐	0
DIZZINESS	YES ☐	1	NO ☐	0
HEADACHE	YES ☐	1	NO ☐	0
FEVER	YES ☐	1	NO ☐	0
FAINTNESS	YES ☐	1	NO ☐	0
NO APPETITE	YES ☐	1	NO ☐	0
WEIGHT LOSS	YES ☐	1	NO ☐	0
TIREDDNESS	YES ☐	1	NO ☐	0
SLEEP DISTURBANCE	YES ☐	1	NO ☐	0
OTHER (SPECIFY)	YES ☐	1	NO ☐	0

| | | | | | | | | | | | | | | 28

10. DOES ANYTHING START OFF THE PAIN?

YES

☐

1

NO

☐

0

| | 29

IF YOU ANSWERED YES, WHAT IS IT?

11. DOES ANYTHING MAKE THE PAIN WORSE?
YES ☐ 1
NO ☐ 0 | | 30

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE IT BETTER?
YES ☐ 1
NO ☐ 0 | | 31

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

PART [B]

THESE QUESTIONS ARE CONCERNING ONLY TO HEADACHES

1.	WHEN DOES IT COME ON?			
	MORNING BEFORE SCHOOL	☐	0	
	DURING SCHOOL-TIME	☐	1	
	AFTERNOON AFTER SCHOOL	☐	2	
	EVENING	☐	3	
	VARIES	☐	4	
	DON'T KNOW	☐	5	32
2.	HOW LONG DOES IT LAST?			
	LESS THAN 1 MINUTE	☐	0	
	1 TO 5 MINUTES	☐	1	
	5 TO 60 MINUTES	☐	2	
	MORE THAN 1 HOUR	☐	3	
	DON'T KNOW	☐	4	33
3.	HOW OFTEN DOES HE/SHE GET IT?			
	DAILY	☐	0	
	2 TO 6 PER WEEK	☐	1	
	1 TO 5 PER MONTH	☐	2	
	LESS THAN ONE PER MONTH	☐	3	
	DON'T KNOW	☐	4	34

4. DOES HE/SHE GET IT
- | | | | | |
|-----------------------|--------------------------|---|--|----|
| ONLY IN WEEKENDS | ☐ | 0 | | |
| SOMETIMES IN WEEKENDS | | | | |
| SOMETIMES IN WEEKDAYS | ☐ | 1 | | |
| NEVER IN WEEKENDS | ☐ | 2 | | 35 |
5. HOW LONG HAS HE/SHE HAD THIS PAIN?
- | | | | | |
|-------------------|--------------------------|---|--|----|
| 3 TO 6 MONTHS | ☐ | 0 | | |
| 6 TO 12 MONTHS | ☐ | 1 | | |
| 1 TO 2 YEARS | ☐ | 2 | | |
| MORE THAN 2 YEARS | ☐ | 3 | | |
| DON'T KNOW | ☐ | 4 | | 36 |
6. HOW DOES HE/SHE FEEL THIS PAIN?
- | | | | | |
|------------|--------------------------|---|--|----|
| PRESSURE | ☐ | 0 | | |
| ACHING | ☐ | 1 | | |
| TIGHTNESS | ☐ | 2 | | |
| THROBBING | ☐ | 3 | | |
| OTHER | ☐ | 4 | | |
| DON'T KNOW | ☐ | 5 | | 37 |
7. WHERE IS THE SITE OF PAIN?
- | | | |
|--------------------|--------------------------------|-------------------------------|
| UNILATERAL | YES ☐ 1 | NO ☐ 0 |
| FOREHEAD | YES ☐ 1 | NO ☐ 0 |
| WHOLE HEAD | YES ☐ 1 | NO ☐ 0 |
| ON TOP HEAD | YES ☐ 1 | NO ☐ 0 |
| IN THE TEMPLES | YES ☐ 1 | NO ☐ 0 |
| ROUND THE EYES | YES ☐ 1 | NO ☐ 0 |
| BACK THE NECK | YES ☐ 1 | NO ☐ 0 |
| DIFFERENT LOCATION | YES ☐ 1 | NO ☐ 0 |
| DON'T KNOW | YES ☐ 1 | NO ☐ 0 |
| OTHER (SPECIFY) | YES ☐ 1 | NO ☐ 0 |

8. DO YOU GET ANY OF THESE TROUBLES WITH THE PAIN?

FEELING SICK	YES ☐ 1	NO ☐ 0	
VOMITING	YES ☐ 1	NO ☐ 0	
PALLOR	YES ☐ 1	NO ☐ 0	
OTHER (SPECIFY)	YES ☐ 1	NO ☐ 0	

| | | | | 39

9. DOES ANYTHING START OFF THE PAIN?

YES	☐	1	
NO	☐	0	40

IF YOU ANSWERED YES, WHAT IS IT?

10. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1	
NO	☐	0	41

IF YOU ANSWERED YES, WHAT IS IT?

11. DOES ANYTHING MAKE IT BETTER?

YES	☐	1	
NO	☐	0	42

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS
-PARENTS VERSION-
PART [C]

THESE QUESTIONS ARE CONCERNING ONLY TO CHEST PAIN

1.

WHEN DOES IT COME ON?

MORNING BEFORE SCHOOL

DURING SCHOOL-TIME

AFTERNOON AFTER SCHOOL

EVENING

VARIES

DON'T KNOW

☐

☐

☐

☐

☐

☐

0

1

2

3

4

5

| | 43

2.

HOW LONG DOES IT LAST?

LESS THAN 1 MINUTE

1 TO 5 MINUTES

5 TO 60 MINUTES

MORE THAN 1 HOUR

DON'T KNOW

☐

☐

☐

☐

☐

0

1

2

3

4

| | 44

3.

HOW OFTEN DOES HE/SHE GET IT?

DAILY

2 TO 6 PER WEEK

1 TO 5 PER MONTH

LESS THAN ONE PER MONTH

DON'T KNOW

☐

☐

☐

☐

☐

0

1

2

3

4

| | 45

4. DOES HE/SHE GET IT
- | | | | |
|-----------------------|--------------------------|---|----|
| ONLY IN WEEKENDS | ☐ | 0 | |
| SOMETIMES IN WEEKENDS | | | |
| SOMETIMES IN WEEKDAYS | ☐ | 1 | |
| NEVER IN WEEKENDS | ☐ | 2 | 46 |
5. HOW LONG HAS HE/SHE HAD THIS PAIN?
- | | | | |
|-------------------|--------------------------|---|----|
| 3 TO 6 MONTHS | ☐ | 0 | |
| 6 TO 12 MONTHS | ☐ | 1 | |
| 1 TO 2 YEARS | ☐ | 2 | |
| MORE THAN 2 YEARS | ☐ | 3 | |
| DON'T KNOW | ☐ | 4 | 47 |
6. HOW DOES HE/SHE FEEL THIS PAIN?
- | | | | |
|-----------------|--------------------------|---|----|
| SHARP | ☐ | 0 | |
| BURNING | ☐ | 1 | |
| GNAWING | ☐ | 2 | |
| DULL | ☐ | 3 | |
| PIN PRICK | ☐ | 4 | |
| TIGHTNESS | ☐ | 5 | |
| OTHER (SPECIFY) | ☐ | 6 | 48 |
7. DOES THE PAIN SPREAD?
- | | | | |
|-----|--------------------------|---|----|
| YES | ☐ | 1 | |
| NO | ☐ | 0 | 49 |
8. IF YOU ANSWERED YES, SAY WHERE THE PAIN SPREADS TO
- | | | | |
|-------|--------------------------|---|----|
| ARMS | ☐ | 0 | |
| BACK | ☐ | 1 | |
| OTHER | ☐ | 2 | 50 |

9. DOES HE/SHE GET ANY OF THESE TROUBLES WITH THE PAIN?

PALLOR	YES ☐ 1	NO ☐ 0
SWEATING	YES ☐ 1	NO ☐ 0
BREATHING FASTER	YES ☐ 1	NO ☐ 0
OTHER (SPECIFY)	YES ☐ 1	NO ☐ 0

| | | | 51

10. DOES ANYTHING START OFF THE PAIN?

YES	☐	1
NO	☐	0

| | 52

IF YOU ANSWERED YES, WHAT IS IT?

11. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1
NO	☐	0

| | 53

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE IT BETTER?

YES	☐	1
NO	☐	0

| | 54

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS
 -PARENTS-VERSION-
 PART [D]

THESE QUESTIONS ARE CONCERNING ONLY TO LIMB PAINS

1.

WHEN DOES IT COME ON?

MORNING BEFORE SCHOOL	☐	0	
DURING SCHOOL-TIME	☐	1	
AFTERNOON AFTER SCHOOL	☐	2	
EVENING	☐	3	
VARIES	☐	4	
DON'T KNOW	☐	5	55

2.

HOW LONG DOES IT LAST?

LESS THAN 1 MINUTE	☐	0	
1 TO 5 MINUTES	☐	1	
5 TO 60 MINUTES	☐	2	
MORE THAN 1 HOUR	☐	3	
DON'T KNOW	☐	4	56

3.

HOW OFTEN DOES HE/SHE GET IT?

DAILY	☐	0	
2 TO 6 PER WEEK	☐	1	
1 TO 5 PER MONTH	☐	2	
LESS THAN ONE PER MONTH	☐	3	
DON'T KNOW	☐	4	57

4. DOES HE/SHE GET IT
 ONLY IN WEEKENDS ☐ 0
 SOMETIMES IN WEEKENDS
 SOMETIMES IN WEEKDAYS ☐ 1
 NEVER IN WEEKENDS ☐ 2 | | 58

5. HOW LONG HAS HE/SHE HAD THIS PAIN?
 3 TO 6 MONTHS ☐ 0
 6 TO 12 MONTHS ☐ 1
 1 TO 2 YEARS ☐ 2
 MORE THAN 2 YEARS ☐ 3
 DON'T KNOW ☐ 4 | | 59

6. HOW DOES HE/SHE FEEL THIS PAIN?
 DULL YES ☐ 1 NO ☐ 0
 WITH MOVEMENT YES ☐ 1 NO ☐ 0
 WITHOUT MOVEMENT YES ☐ 1 NO ☐ 0
 WITH TOUCH YES ☐ 1 NO ☐ 0
 SUPERFICIAL YES ☐ 1 NO ☐ 0
 DEEP YES ☐ 1 NO ☐ 0
 OTHER YES ☐ 1 NO ☐ 0

| | | | | | | | | 60

7. WHERE IS THE SITE OF PAIN?

JOINT	YES ☐ 1	NO ☐ 0
BETWEEN JOINT	YES ☐ 1	NO ☐ 0
UNILATERAL	YES ☐ 1	NO ☐ 0
BILATERAL	YES ☐ 1	NO ☐ 0
HIP	YES ☐ 1	NO ☐ 0
KNEE	YES ☐ 1	NO ☐ 0
OTHER	YES ☐ 1	NO ☐ 0
DON'T KNOW	YES ☐ 1	NO ☐ 0

| | | | | | | | | | 61

8. DOES ANYTHING START OFF THE PAIN?

YES	☐	1	
NO	☐	0	62

IF YOU ANSWERED YES, WHAT IS IT?

9. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1	
NO	☐	0	63

IF YOU ANSWERED YES, WHAT IS IT?

10. DOES ANYTHING MAKE IT BETTER?

YES	☐	1	
NO	☐	0	64

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS
-PARENTS VERSION-
PART [E]

THESE QUESTIONS ARE CONCERNING ONLY TO OTHER PAINS

1.

WHEN DOES IT COME ON?

MORNING BEFORE SCHOOL

DURING SCHOOL-TIME

AFTERNOON AFTER SCHOOL

EVENING

VARIES

DON'T KNOW

☐

☐

☐

☐

☐

☐

0

1

2

3

4

5

| | 65

2.

HOW LONG DOES IT LAST?

LESS THAN 1 MINUTE

1 TO 5 MINUTES

5 TO 60 MINUTES

MORE THAN 1 HOUR

DON'T KNOW

☐

☐

☐

☐

☐

0

1

2

3

4

| | 66

3.

HOW OFTEN DOES HE/SHE GET IT?

DAILY

2 TO 6 PER WEEK

1 TO 5 PER MONTH

LESS THAN ONE PER MONTH

DON'T KNOW

☐

☐

☐

☐

☐

0

1

2

3

4

| | 67

4. DOES HE/SHE GET IT
ONLY IN WEEKENDS ☐ 0
SOMETIMES IN WEEKENDS
SOMETIMES IN WEEKDAYS ☐ 1
NEVER IN WEEKENDS ☐ 2 - | | 68

5. HOW LONG HAS HE/SHE HAD THIS PAIN?
3 TO 6 MONTHS ☐ 0
6 TO 12 MONTHS ☐ 1
1 TO 2 YEARS ☐ 2
MORE THAN 2 YEARS ☐ 3
DON'T KNOW ☐ 4 | | 69

6. HOW DOES HE/SHE FEEL THIS PAIN?

7. WHERE DOES THE PAIN START?

8. DOES THE PAIN SPREAD?
YES ☐ 1
NO ☐ 2 | | 70

IF YOU ANSWERED YES, WHERE THE PAIN SPREAD TO

9. DOES HE/SHE GET ANY OF THESE TROUBLES WITH THE PAIN?

FEELING SICK	YES ☐ 1	NO ☐ 0
VOMITING	YES ☐ 1	NO ☐ 0
PALLOR	YES ☐ 1	NO ☐ 0
DIZZINESS	YES ☐ 1	NO ☐ 0
SWEATING	YES ☐ 1	NO ☐ 0
BREATHING FASTER	YES ☐ 1	NO ☐ 0
OTHER (SPECIFY)	YES ☐	NO ☐

| | | | | | | | 71

10. DOES ANYTHING START OFF THE PAIN?

YES	☐	1
NO	☐	0

| | 72

IF YOU ANSWERED YES, WHAT IS IT?

11. DOES ANYTHING MAKE THE PAIN WORSE?

YES	☐	1
NO	☐	0

| | 73

IF YOU ANSWERED YES, WHAT IS IT?

12. DOES ANYTHING MAKE IT BETTER?

YES	☐	1
NO	☐	0

| | 74

IF YOU ANSWERED YES, WHAT IS IT?

NOW GO TO PART [F]

PAIN QUESTIONNAIRE FOR CHILDREN AND ADOLESCENTS

-PARENTS VERSION-

PART [F]

1. **WHAT DO YOU THINK WHICH COULD BE THE CAUSE OF THE PAIN?**
2. **IS THERE ANYTHING WRONG WITH HE/SHE OR IN HIS/HER LIFE?**
3. **ARE THERE ANY OTHER FEELINGS OR WORRIES ASSOCIATED THAT COULD BE ASSOCIATED WITH THIS PAIN?**
4. **WHAT DOES HE/SHE THINK IS THE CAUSE OF THIS PAIN?**
5. **WHAT IS YOUR PARENTS EXPECTATIONS ABOUT HIS/HER FUTURE?**

THANK YOU FOR YOUR HELP

HOW-I-FEEL QUESTIONNAIRE

Developed by C. Spielberger, C.D. Edwards, J. Montuori and R. Lushene

STAIC FORM C-1

NAME _____ AGE _____ DATE _____

DIRECTIONS: A number of statements which boys and girls use to describe themselves are given below. Read each statement carefully and decide how you feel *right now*. Then put an X in the box in front of the word or phrase which best describes how you feel. There are no right or wrong answers. Do not spend too much time on any one statement. Remember, find the word or phrase which best describes how you feel right now, *at this very moment*.

1.	I feel . . .	☐ very calm	☐ calm	☐ not calm
2.	I feel . . .	☐ very upset	☐ upset	☐ not upset
3.	I feel . . .	☐ very pleasant	☐ pleasant	☐ not pleasant
4.	I feel . . .	☐ very nervous	☐ nervous	☐ not nervous
5.	I feel . . .	☐ very jittery	☐ jittery	☐ not jittery
6.	I feel . . .	☐ very rested	☐ rested	☐ not rested
7.	I feel . . .	☐ very scared	☐ scared	☐ not scared
8.	I feel . . .	☐ very relaxed	☐ relaxed	☐ not relaxed
9.	I feel . . .	☐ very worried	☐ worried	☐ not worried
10.	I feel . . .	☐ very satisfied	☐ satisfied	☐ not satisfied
11.	I feel . . .	☐ very frightened	☐ frightened	☐ not frightened
12.	I feel . . .	☐ very happy	☐ happy	☐ not happy
13.	I feel . . .	☐ very sure	☐ sure	☐ not sure
14.	I feel . . .	☐ very good	☐ good	☐ not good
15.	I feel . . .	☐ very troubled	☐ troubled	☐ not troubled
16.	I feel . . .	☐ very bothered	☐ bothered	☐ not bothered
17.	I feel . . .	☐ very nice	☐ nice	☐ not nice
18.	I feel . . .	☐ very terrified	☐ terrified	☐ not terrified
19.	I feel . . .	☐ very mixed-up	☐ mixed-up	☐ not mixed-up
20.	I feel . . .	☐ very cheerful	☐ cheerful	☐ not cheerful

A.4

HOW-I-FEEL QUESTIONNAIRE

STAIC FORM C-2

NAME _____ AGE _____ DATE _____

DIRECTIONS: A number of statements which boys and girls use to describe themselves are given below. Read each statement and decide if it is *hardly-ever*, or *sometimes*, or *often* true for you. For each statement, put an X in the box in front of the word that seems to describe you best. There are no right or wrong answers. Do not spend too much time on any one statement. Remember, choose the word which seems to describe how you usually feel.

1.

I worry about making mistakes . . .

☐

 hardly-ever ☐

☐

 sometimes ☐

often

2.

I feel like crying

☐

 hardly-ever ☐

☐

 sometimes ☐

often

3.

I feel unhappy

☐

 hardly-ever ☐

☐

 sometimes ☐

often

4.

I have trouble making up my mind.

☐

 hardly-ever ☐

☐

 sometimes ☐

often

5.

It is difficult for me to face my problems .

☐

 hardly-ever ☐

☐

 sometimes ☐

often

6.

I worry too much

☐

 hardly-ever ☐

☐

 sometimes ☐

often

7.

I get upset at home

☐

 hardly-ever ☐

☐

 sometimes ☐

often

8.

I am shy

☐

 hardly-ever ☐

☐

 sometimes ☐

often

9.

I feel troubled

☐

 hardly-ever ☐

☐

 sometimes ☐

often

10.

Unimportant thoughts run through
mind and bother me

☐

 hardly-ever ☐

☐

 sometimes ☐

often

11.

I worry about school

☐

 hardly-ever ☐

☐

 sometimes ☐

often

12.

I have trouble deciding what to do

☐

 hardly-ever ☐

☐

 sometimes ☐

often

13.

I notice my heart beats fast

☐

 hardly-ever ☐

☐

 sometimes ☐

often

14.

I am secretly afraid

☐

 hardly-ever ☐

☐

 sometimes ☐

often

15.

I worry about my parents

☐

 hardly-ever ☐

☐

 sometimes ☐

often

16.

My hands get sweaty

☐

 hardly-ever ☐

☐

 sometimes ☐

often

17.

I worry about things that may happen . .

☐

 hardly-ever ☐

☐

 sometimes ☐

often

18.

It is hard for me to fall asleep at night. . .

☐

 hardly-ever ☐

☐

 sometimes ☐

often

19.

I get a funny feeling in my stomach. . . .

☐

 hardly-ever ☐

☐

 sometimes ☐

often

20.

I worry about what other think of me . . .

☐

 hardly-ever ☐

☐

 sometimes ☐

often

A.5

MOOD AND FEELINGS QUESTIONNAIRE

NAME	NUMBER				
	DATE				

In this form, there are some questions about how you may have been feeling or acting in the last 3 months.

If the sentences was true about you for most of the time in the last 3 months, put a "X" in the box under "TRUE". If the sentence was only sometimes true put a "X" in the box "SOMETIMES". If the sentence was never true put a "X" in the box under "NOT TRUE".

	TRUE	SOMETIMES	NOT TRUE
1. I felt miserable or unhappy	☐	☐	☐
2. I didn't enjoy anything at all	☐	☐	☐
3. I was less hungry than usual	☐	☐	☐
4. I ate more than usual	☐	☐	☐
5. I felt so tired I just sat around and did nothing	☐	☐	☐
6. I was moving and walking more slowly than usual	☐	☐	☐
7. I was very restless	☐	☐	☐
8. I felt I was no good any more	☐	☐	☐
9. I sometimes blamed myself for things that were not my fault	☐	☐	☐

10.	It was hard for me to make up my mind	☐	☐	☐
		TRUE	SOMETIMES	NOT TRUE
11.	I felt grumpy and irritable with my parents	☐	☐	☐
12.	I felt like talking less than usual	☐	☐	☐
13.	I cried a lot	☐	☐	☐
14.	I thought there was nothing good for me in the future	☐	☐	☐
15.	I thought that life was not worth living	☐	☐	☐
16.	I thought about death or dying	☐	☐	☐
17.	I thought my family would be better off without me	☐	☐	☐
18.	I thought about killing myself	☐	☐	☐
19.	I did not want to see my friends	☐	☐	☐
20.	I found it hard to think properly or concentrate	☐	☐	☐
21.	I thought that bad things would happen to me	☐	☐	☐
22.	I hated myself	☐	☐	☐
23.	I thought I was a bad person	☐	☐	☐
24.	I thought I looked ugly	☐	☐	☐

25.	I worried about aches and pain	☐	☐	☐
		TRUE	SOMETIMES	NOT TRUE
26.	I felt lonely	☐	☐	☐
27.	I thought nobody loved me	☐	☐	☐
28.	I did not have any fun at school	☐	☐	☐
29.	I thought I could never be as good as the other kids	☐	☐	☐
30.	I did everything wrong	☐	☐	☐
31.	I did not sleep as well as I usually sleep	☐	☐	☐
32.	I slept a lot more than usual	☐	☐	☐
33.	I was not as happy as usual, even when I was praise or rewarded	☐	☐	☐

Adapted from Costello and Angold (1988).

MOOD AND FEELINGS QUESTIONNAIRE
-PARENTS VERSION-

CHILD

NUMBER | | | |
DATE | | | | |

In this form, is about how your child may have been feeling or acting in the past 3 months.
If the sentences was true about your child for most of the time, put a "X" in the box under "TRUE".
If the sentence was only sometimes true put a "X" in the box "SOMETIMES". If the sentence was never true put a "X" in the box under "NOT TRUE".

		TRUE	SOMETIMES	NOT TRUE
1.	He/she felt miserable or unhappy	☐	☐	☐
2.	He/she did not enjoy anything at all	☐	☐	☐
3.	He/she was less hungry than usual	☐	☐	☐
4.	He/she ate more than usual	☐	☐	☐
5.	He/she felt so tired I just sat around and did nothing	☐	☐	☐
6.	He/she was moving and walking more slowly than usual	☐	☐	☐
7.	He/she was very restless	☐	☐	☐
8.	He/she felt I was no good any more	☐	☐	☐
9.	He/she sometimes blamed himself/herself for things that were not his/her fault	☐	☐	☐
10.	It was hard for him/her to make up			

	his/her mind	☐	☐	☐
11.	He/she felt grumpy and irritable with you	☐	☐	☐
		TRUE	SOMETIMES	NOT TRUE
12.	He/she felt like talking less than usual	☐	☐	☐
13.	He/she cried a lot	☐	☐	☐
14.	He/she thought there was nothing good for me in the future	☐	☐	☐
15.	He/she thought that life was not worth living	☐	☐	☐
16.	He/she thought about death or dying	☐	☐	☐
17.	He/she thought his/her family would be better without him/her	☐	☐	☐
18.	He/she thought about killing himself/herself	☐	☐	☐
19.	He/she did not want to see him/her friends	☐	☐	☐
20.	He/she found it hard to think properly or concentrate	☐	☐	☐
21.	He/she thought that bad things would happen to him/her	☐	☐	☐
22.	He/she hated himself/herself	☐	☐	☐
23.	He/she thought he/she was a bad person	☐	☐	☐
24.	He/she thought he/she looked ugly	☐	☐	☐
25.	He/she worried about aches and pain	☐	☐	☐

26.	he/she felt lonely	☐	☐	☐
27.	He/she thought nobody loved him/her	☐	☐	☐
		TRUE	SOMETIMES	NOT TRUE
28.	He/she did not have any fun at school	☐	☐	☐
29.	He/she thought he/she could never be as good as the other kids	☐	☐	☐
30.	He/she thought he/she did everything wrong	☐	☐	☐
31.	He/she did not sleep as well as he/she usually sleeps	☐	☐	☐
32.	He/she slept a lot more than usual	☐	☐	☐
33.	He/she was not as happy as usual, even when He/she was praise or rewarded	☐	☐	☐

Adapted from Costello and Angold (1988).

A.6

SELF-RATING QUESTIONNAIRE (FSSC-R)

NUMBER | | |

NAME

SEX: MALE ☐ FEMALE ☐

In this questionnaire we asks about a number of things or situations that may make some people of your age afraid. When someone is scared of something, then, if they meet it, or it happens, they may panic and get in a state. Or they may try hard to avoid and not meet the thing or situation that scares them. So, someone afraid of lifts may panic and get in state about using lift or may climb lots of stairs rather than get into a lift.

And someone afraid of dogs my panic whenever they meet a dog, or go along way around to school or to a friend's, so as to avoid and not meet a dog.

Thinking about the last 3 months we want you to say whether you have been afraid of the following things or situations.

If you HAVE NOT BEEN SCARED OF IT AT ALL IN THE LAST 3 MONTHS, then put a "X" in the first box under "NOT AT ALL".

If you HAVE BEEN SCARED OF IT IN THE LAST 3 MONTHS BUT DID NOT PANIC OR TRY TO AVOID IT, then put a "X" in the second box under "A LITTLE". And if you HAVE BEEN SCARED OF IT IN THE LAST 3 MONTHS AND PANICKED OR TRIED TO AVOID IT, then put the "X" in the third box under "A LOT".

Thinking about the last 3 months how much are you afraid of or have been afraid of:

NOT AT ALL A LITTLE A LOT

1.	HAVING TO TALK TO THE CLASS	☐	☐	☐
2.	GOING IN THE CAR OR BUS	☐	☐	☐
3.	GHOSTS OR SPOOKY THINGS	☐	☐	☐
4.	BEING SENT TO THE HEADTEACHER	☐	☐	☐
5.	BEING LEFT AT HOME WITH SOMEONE OUTSIDE THE FAMILY	☐	☐	☐

6.	MEETING SOMEONE FOR THE FIRST TIME	☐	☐	☐
7.	GOING TO THE DENTIST	☐	☐	☐
		NOT AT ALL A LITTLE A LOT		
8.	HIGH PLACES LIKE BRIDGES OR MOUNTAINS	☐	☐	☐
9.	SPIDERS	☐	☐	☐
10.	A BURGLAR BREAKING INTO YOUR HOME	☐	☐	☐
11.	FLYING IN A PLANE	☐	☐	☐
12.	BEING CALLED ON UNEXPECTEDLY BY A TEACHER	☐	☐	☐
13.	YOUR PARENTS CRITICIZING YOU	☐	☐	☐
14.	THUNDERSTORMS	☐	☐	☐
15.	DOING BADLY IN AN EXAM	☐	☐	☐
16.	BEING HIT BY A CAR	☐	☐	☐
17.	HAVING TO GO TO SCHOOL	☐	☐	☐
18.	DARK ROOMS OR CUPBOARDS	☐	☐	☐
19.	HAVING TO PERFORM IN FRONT OF OTHER	☐	☐	☐
20.	BEING CRITICIZING BY OTHERS	☐	☐	☐
21.	THE SIGHT OF BLOOD	☐	☐	☐
22.	GOING TO THE DOCTOR	☐	☐	☐

23.	FIERCE-LOOKING DOGS	☐	☐	☐
24.	GOING TO BE IN THE DARK	☐	☐	☐
		NOT AT ALL A LITTLE A LOT		
25.	BEING ALONE	☐	☐	☐
26.	HAVING TO STAY AFTER SCHOOL	☐	☐	☐
27.	CLOSED PLACES	☐	☐	☐
28.	LIFTS	☐	☐	☐
29.	GETTING A BEE OR WASP STING	☐	☐	☐
30.	RATS OR MICE	☐	☐	☐
31.	STRANGER	☐	☐	☐
32.	SEPARATIONS FROM YOUR PARENTS	☐	☐	☐
33.	USING PUBLIC TOILETS	☐	☐	☐
34.	EATING IN PUBLIC	☐	☐	☐
35.	BATS	☐	☐	☐
36.	TUNNELS	☐	☐	☐
37.	NEEDLES OR INJECTIONS	☐	☐	☐
38.	WATER	☐	☐	☐
39.	FIRE	☐	☐	☐

SELF-RATING QUESTIONNAIRE (FSSC-R)

-PARENTS VERSION-

NAME

NUMBER | | |

MOTHER ☐ FATHER ☐

DATE | | |

SEX: MALE ☐ FEMALE ☐

In this questionnaire we asks about a number of things or situations that may make some people of his/her age afraid. When someone is scared of something, then, if they meet it, or it happens, they may panic and get in a state. Or they may try hard to avoid and not meet the thing or situation that scares them. So, someone afraid of lifts may panic and get in state about using lift or may climb lots of stairs rather than get into a lift.

And someone afraid of dogs my panic whenever they meet a dog, or go along way around to school or to a friend's, so as to avoid and not meet a dog.

Thinking about the last 3 months we want you to say whether he/she has been afraid of the following things or situations.

If he/she HAS NOT BEEN SCARED OF IT AT ALL IN THE LAST 3 MONTHS, then put a "X" in the first box under "NOT AT ALL".

If he/she HAS BEEN SCARED OF IT IN THE LAST 3 MONTHS BUT DID NOT PANIC OR TRY TO AVOID IT, then put a "X" in the second box under "A LITTLE". And if he/she HAS BEEN SCARED OF IT IN THE LAST 3 MONTHS AND PANICKED OR TRIED TO AVOID IT, then put the "X" in the third box under "A LOT".

Thinking about the last 3 months how much he/she afraid of or have been afraid of:

NOT AT ALL A LITTLE A LOT

1.	HAVING TO TALK TO THE CLASS	☐	☐	☐
2.	GOING IN THE CAR OR BUS	☐	☐	☐
3.	GHOSTS OR SPOOKY THINGS	☐	☐	☐
4.	BEING SENT TO THE HEADTEACHER	☐	☐	☐
5.	BEING LEFT AT HOME WITH SOMEONE OUTSIDE THE FAMILY	☐	☐	☐

6.	MEETING SOMEONE FOR THE FIRST TIME ..	☐	☐	☐
7.	GOING TO THE DENTIST	☐	☐	☐
		NOT AT ALL A LITTLE A LOT		
8.	HIGH PLACES LIKE BRIDGES OR MOUNTAINS	☐	☐	☐
9.	SPIDERS	☐	☐	☐
10.	A BURGLAR BREAKING INTO YOUR HOME	☐	☐	☐
11.	FLYING IN A PLANE	☐	☐	☐
12.	BEING CALLED ON UNEXPECTEDLY BY A TEACHER	☐	☐	☐
13.	YOUR PARENTS CRITICIZING YOU	☐	☐	☐
14.	THUNDERSTORMS	☐	☐	☐
15.	DOING BADLY IN AN EXAM	☐	☐	☐
16.	BEING HIT BY A CAR	☐	☐	☐
17.	HAVING TO GO TO SCHOOL	☐	☐	☐
18.	DARK ROOMS OR CUPBOARDS	☐	☐	☐
19.	HAVING TO PERFORM IN FRONT OF OTHER	☐	☐	☐
20.	BEING CRITICIZING BY OTHERS	☐	☐	☐
21.	THE SIGHT OF BLOOD	☐	☐	☐
22.	GOING TO THE DOCTOR	☐	☐	☐

23.	FIERCE-LOOKING DOGS	☐	☐	☐
24.	GOING TO BE IN THE DARK	☐	☐	☐
		NOT AT ALL A LITTLE A LOT		
25.	BEING ALONE	☐	☐	☐
26.	HAVING TO STAY AFTER SCHOOL	☐	☐	☐
27.	CLOSED PLACES	☐	☐	☐
28.	LIFTS	☐	☐	☐
29.	GETTING A BEE OR WASP STING	☐	☐	☐
30.	RATS OR MICE	☐	☐	☐
31.	STRANGER	☐	☐	☐
32.	SEPARATIONS FROM YOUR PARENTS	☐	☐	☐
33.	USING PUBLIC TOILETS	☐	☐	☐
34.	EATING IN PUBLIC	☐	☐	☐
35.	BATS	☐	☐	☐
36.	TUNNELS	☐	☐	☐
37.	NEEDLES OR INJECTIONS	☐	☐	☐
38.	WATER	☐	☐	☐
39.	FIRE	☐	☐	☐

A.7

LIFE EVENTS CHECKLIST

NAME

NUMBER | | | |

DATE | | | | | |

Below is a list of things that sometimes happen to people. We would like you to think in the events you have experienced before your pain has started.

First of all, decide whether a particular event has happened to you. Use the first column headed "DID THIS HAPPEN" and put a "X" in the box marked "YES" or a "X" in the box marked "NO".

If you put a "X" in the box marked "YES", then move to the next column headed "WHAT WAS THE EFFECT ON YOU". Think about the effect of what happened on you and put a "X" in the box which best describes it.

If you say no, go to the next question.

		DID THIS HAPPEN BEFORE YOUR PAIN STARTED?		WHAT WAS THE EFFECT ON YOU?				
		YES	NO	VERY NASTY	NASTY	NO EFFECT	NICE	VERY NICE
1.	Moving to a new neighbourhood.	☐	☐	☐	☐	☐	☐	☐
2.	Birth of new brother, sister or adopted or fostered.	☐	☐	☐	☐	☐	☐	☐
3.	A new stepbrother or stepsister.	☐	☐	☐	☐	☐	☐	☐
4.	Changing to a new school.	☐	☐	☐	☐	☐	☐	☐
5.	Serious illness or injury in a parent, brother or sister.	☐	☐	☐	☐	☐	☐	☐
6.	Parents divorced or separated.	☐	☐	☐	☐	☐	☐	☐

7.	Increased arguments between parents.	☐ ☐	☐ ☐ ☐ ☐ ☐		
8.	Death of a brother or sister.	☐ ☐	☐ ☐ ☐ ☐ ☐		
DID THIS HAPPEN BEFORE YOUR PAIN STARTED?		WHAT WAS THE EFFECT ON YOU?			
		YES NO	VERY NASTY	NO EFFECT	VERY NICE
9.	Death of a grandparent.	☐ ☐	☐ ☐ ☐ ☐ ☐		
10.	Death of a close friend.	☐ ☐	☐ ☐ ☐ ☐ ☐		
11.	Father/stepfather away from home more often.	☐ ☐	☐ ☐ ☐ ☐ ☐		
12.	Mother/stepmother away from home more often.	☐ ☐	☐ ☐ ☐ ☐ ☐		
13.	Brother or sister (or stepbrother/ stepsister) leaving home.	☐ ☐	☐ ☐ ☐ ☐ ☐		
14.	Serious illness or injury in a close friend.	☐ ☐	☐ ☐ ☐ ☐ ☐		
15.	Parent getting into trouble with the police.	☐ ☐	☐ ☐ ☐ ☐ ☐		
16.	Mother or stepmother going back to work or working for the first time.	☐ ☐	☐ ☐ ☐ ☐ ☐		
17.	Entry into the home of a new partner for mother or father.	☐ ☐	☐ ☐ ☐ ☐ ☐		
18.	Parent going to prison.	☐ ☐	☐ ☐ ☐ ☐ ☐		
19.	Special recognition for good school work.	☐ ☐	☐ ☐ ☐ ☐ ☐		

20. Joining a new club. ☐ ☐
21. Doing badly in a exam. ☐ ☐

- ☐ ☐ ☐ ☐ ☐
- ☐ ☐ ☐ ☐ ☐

**DID THIS HAPPEN BEFORE
YOUR PAIN STARTED?**

WHAT WAS THE EFFECT ON YOU?

	YES	NO
22. Parent being less interested or loving towards you.	☐	☐
23. Parents nagging or picking on you more.	☐	☐
24. Serious illness or injury to you.	☐	☐
25. Failing to be picked for a school or club team, band or orchestra that you wanted to get into.	☐	☐
26. Doing badly in school work.	☐	☐
27. Being picked for a school or club team, a school band or orchestra.	☐	☐
28. Special prize or recognition for doing well in an activity (like sports, music or art).	☐	☐
29. A close friend moves a long way away.	☐	☐
30. Losing a close friend through arguments or being dropped.	☐	☐
31. Death of a pet.	☐	☐

VERY NASTY	NASTY	NO EFFECT	NICE	VERY NICE
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

**DID THIS HAPPEN BEFORE
YOUR PAIN STARTED?**

YES NO

WHAT WAS THE EFFECT ON YOU?

**VERY NO VERY
NASTY NASTY EFFECT NICE NICE**

**32. Mother losing
a job.**

☐ ☐

☐ ☐ ☐ ☐ ☐

**33. Father losing
a job.**

☐ ☐

☐ ☐ ☐ ☐ ☐

If there is anything important you feel we have missed out, or you would like to tell us about pleas add it below.

Thank you for helping in filling in this questionnaire.

Adapted from Johnson and McCutcheon (1980).

LIFE EVENTS CHECKLIST

-PARENTS VERSION-

NAME OF THE CHILD

NUMBER | | | |

DATE | | | | | |

Below is a list of things that sometimes happen to people. We would like you to think in the events he/she has experienced before his/her pain has started.

First of all, decide whether a particular event has happened to him/her. Use the first column headed "DID THIS HAPPEN" and put a "X" in the box marked "YES" or a "X" in the box marked "NO".

If you put a "X" in the box marked "YES", then move to the next column headed "WHAT WAS THE EFFECT ON YOU". Think about the effect of what happened on you and put a "X" in the box which best describes it.

If you say no, go to the next question.

**DID THIS HAPPEN BEFORE
HIS/HER PAIN STARTED?**

WHAT WAS THE EFFECT ON HIM/HER?

		YES NO		VERY NO VERY NASTY NASTY EFFECT NICE NICE				
1.	Moving to a new neighbourhood.	☐	☐	☐	☐	☐	☐	☐
2.	Birth of new brother, sister or adopted or fostered.	☐	☐	☐	☐	☐	☐	☐
3.	A new stepbrother or stepsister.	☐	☐	☐	☐	☐	☐	☐
4.	Changing to a new school.	☐	☐	☐	☐	☐	☐	☐
5.	Serious illness or injury in a parent, brother or sister.	☐	☐	☐	☐	☐	☐	☐
6.	Parents divorced or separated.	☐	☐	☐	☐	☐	☐	☐

7.	Increased arguments between parents.	☐	☐	☐	☐	☐	☐	☐	☐
8.	Death of a brother or sister.	☐	☐	☐	☐	☐	☐	☐	☐
DID THIS HAPPEN BEFORE HIS/HER PAIN STARTED?				WHAT WAS THE EFFECT ON HIM/HER?					
		YES	NO	VERY NASTY	NASTY	NO EFFECT	NICE	VERY NICE	
9.	Death of a grandparent.	☐	☐	☐	☐	☐	☐	☐	☐
10.	Death of a close friend.	☐	☐	☐	☐	☐	☐	☐	☐
11.	Father/stepfather away from home more often.	☐	☐	☐	☐	☐	☐	☐	☐
12.	Mother/stepmother away from home more often.	☐	☐	☐	☐	☐	☐	☐	☐
13.	Brother or sister (or stepbrother/ stepsister) leaving home.	☐	☐	☐	☐	☐	☐	☐	☐
14.	Serious illness or injury in a close friend.	☐	☐	☐	☐	☐	☐	☐	☐
15.	Parent getting into trouble with the police.	☐	☐	☐	☐	☐	☐	☐	☐
16.	Mother or stepmother going back to work or working for the first time.	☐	☐	☐	☐	☐	☐	☐	☐
17.	Entry into the home of a new partner for mother or father.	☐	☐	☐	☐	☐	☐	☐	☐
18.	Parent going to prison.	☐	☐	☐	☐	☐	☐	☐	☐
19.	Special recognition								

- for good school work. ☐ ☐
20. Joining a new club. ☐ ☐
21. Doing badly in a exam. ☐ ☐

- ☐ ☐ ☐ ☐ ☐
- ☐ ☐ ☐ ☐ ☐
- ☐ ☐ ☐ ☐ ☐

DID THIS HAPPEN BEFORE HIS/HER PAIN STARTED?

WHAT WAS THE EFFECT ON HIM/HER?

	YES	NO
22. Parent being less interested or loving towards you.	☐	☐
23. Parents nagging or picking on you more.	☐	☐
24. Serious illness or injury to you.	☐	☐
25. Failing to be picked for a school or club team, band or orchestra that you wanted to get into.	☐	☐
26. Doing badly in school work.	☐	☐
27. Being picked for a school or club team, a school band or orchestra.	☐	☐
28. Special prize or recognition for doing well in an activity (like sports, music or art).	☐	☐
29. A close friend moves a long way away.	☐	☐
30. Losing a close friend through arguments or being dropped.	☐	☐

VERY NASTY	NASTY	NO EFFECT	VERY NICE	NICE
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
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☐	☐	☐	☐	☐

31. Death of a pet. ☐ ☐ ☐ ☐ ☐ ☐ ☐

DID THIS HAPPEN BEFORE HIS/HER PAIN STARTED?		WHAT WAS THE EFFECT ON HIM/HER?					
	YES	NO	VERY NASTY	NASTY	NO EFFECT	NICE	VERY NICE
32. Mother losing a job.	☐	☐	☐	☐	☐	☐	☐
33. Father losing a job.	☐	☐	☐	☐	☐	☐	☐

If there is anything important you feel we have missed out, or you would like to tell us about pleas add it below.

Thank you for helping in filling in this questionnaire.

Adapted from Johnson and McCutcheon (1980).

A.8

FAMILY ENVIRONMENT SCALE

NAME OF THE CHILD

NUMBER | | | |

DATE | | | | |

SEX: MALE [] FEMALE []

NAME OF THE FATHER:

NAME OF THE MOTHER:

ANSWERED BY: FATHER [] MOTHER [] CHILD []

There are 90 statements in this scale. They are statements about families. You are decide which of these statements are TRUE of your family and which are FALSE. If you think the statement is TRUE or mostly TRUE of your family, make "X" on the box labelled TRUE. If you think the statement is FALSE or mostly FALSE of your family, make an "X" in the box labelled FALSE.

You may feel that some of the statements are true for some family members and false for others. Mark TRUE if the statement is TRUE for most members. Mark FALSE if the statement is FALSE for most members. If the members are evenly divided, decide what is the stronger overall impression and answer accordingly.

Remember, we would like to know what your family seems like to you. SO DO try to figure out how other members see your family, but DO give us your general impression of your family for each statement.

		TRUE	FALSE
1.	Family members really help and support one another.	[]	[]
2.	Family members often keep their feeling for themselves.	[]	[]
3.	We fight a lot in our family.	[]	[]
4.	We don't do things on our own very often in our family.	[]	[]
5.	We feel it is important to be the best at whatever you do.	[]	[]

6.	We often talk about political and social problems.	[]	[]
7.	We spend most weekends and evenings at home.	[]	[]
8.	Family members attend church, synagogue, mosque, or Sunday School fairly often.	[]	[]
		TRUE	FALSE
9.	Activities in our family are pretty carefully planned.	[]	[]
10.	Family members are rarely ordered around.	[]	[]
11.	We often seem to be killing time at home.	[]	[]
12.	We say anything we want to around home.	[]	[]
13.	Family members rarely become openly angry.	[]	[]
14.	In our family, we are strongly encourage to be independent.	[]	[]
15.	Getting ahead in life is very important in our family.	[]	[]
16.	We rarely go to lectures, plays, or concerts.	[]	[]
17.	Friends often come over for dinner or to visit.	[]	[]
18.	We don't say prayers in our family.	[]	[]
19.	We are generally very neat and orderly.	[]	[]
20.	There are very few rules to follow in our family.	[]	[]
21.	We put a lot of energy into what we do at home.	[]	[]
22.	It's hard to "blow off steam" at home without upsetting somebody.	[]	[]
23.	Family members sometimes get so angry throw things.	[]	[]
24.	We think out for ourselves in our family.	[]	[]
25.	How much money a person makes in not important.	[]	[]
26.	Learning about new and different things is very important in our family.	[]	[]
27.	Nobody in our family is active in sports, bowling, etc.	[]	[]
28.	We often talk about religious meanings of Christmas, Passover, or other holidays.	[]	[]
29.	It's often hard find things when you need them in our household.	[]	[]

30.	There is one family member who makes most of the decisions.	☐	☐
31.	There is a feeling of togetherness in our family.	☐	☐
32.	We tell each other about our personal problems.	☐	☐
		TRUE	FALSE
33.	Family members hardly ever lose their tempers.	☐	☐
34.	We come and go as we want to in our family.	☐	☐
35.	We believe in competition and "may the best man win".	☐	☐
36.	We are not that interested in cultural activities.	☐	☐
37.	We often go to movies, sports events, camping, etc.	☐	☐
38.	We don't believe in heaven or hell.	☐	☐
39.	Being on time is very important in our family.	☐	☐
40.	There are set ways of doing things at home.	☐	☐
41.	We rarely volunteer when something has to be done at home.	☐	☐
42.	If we feel like doing something on the spur of the moment we often just pick up and go.	☐	☐
43.	Family members often criticize each other.	☐	☐
44.	There is very little privacy in our family.	☐	☐
45.	We always strive to do things just little better the next time.	☐	☐
46.	We rarely have intellectual discussions.	☐	☐
47.	Everyone in our family has a hobby or two.	☐	☐
48.	Family members have strict ideas about what is right and wrong.	☐	☐
49.	People change their minds often in our family.	☐	☐
50.	There is a strong emphasis on following rules in our family.	☐	☐
51.	Family members really back each other up.	☐	☐
52.	Someone usually gets upset if you complain in our family.	☐	☐
53.	Family members sometimes hit each other.	☐	☐
54.	Family members almost always rely on themselves when a		

	problem comes up.	☐	☐
55.	Family members rarely worry about job promotions school grades, etc.	☐	☐
56.	Someone in our family plays a musical instrument.	☐	☐
		TRUE	FALSE
57.	Family members are not very involved in recreational activities outside work or school.	☐	☐
58.	We believe there are some things you just have to take on faith.	☐	☐
59.	Family members make sure their rooms are neat.	☐	☐
60.	Everyone has an equal say in family decisions.	☐	☐
61.	There is very little group spirit in our family.	☐	☐
62.	Money and paying bills is openly talked about in our family.	☐	☐
63.	If there's a disagreement in our family, we try hard to sooth things over and keep the peace.	☐	☐
64.	Family members strongly encourage each other to stand up for their rights.	☐	☐
65.	In our family, we don't try that hard to succeed.	☐	☐
66.	Family members often go to the library.	☐	☐
67.	Family members sometimes attend course or take lesson for some hobby or interest (outside of school).	☐	☐
68.	In our family each person has different ideas about what is right and wrong.	☐	☐
69.	Each person's duties are clearly defined in our family.	☐	☐
70.	We can do whatever we want to in our family.	☐	☐
71.	We really get along well with each other.	☐	☐
72.	We are usually careful about what we say to each other.	☐	☐
73.	Family members often try to one-up or out-do each other.	☐	☐
74.	It's hard to be by yourself without hurting someone's feelings in our household.	☐	☐
75.	"Work before play" is the rule in our family.	☐	☐

76.	Watching T.V. is more important than reading in our family.	[]	[]
77.	Family members go out a lot.	[]	[]
78.	The Bible is a very important book in our home.	[]	[]
79.	Money is not handle very carefully in our family.	[]	[]
		TRUE	FALSE
80.	Rules are pretty inflexible in our household.	[]	[]
81.	There is plenty of time and attention for everyone in our family.	[]	[]
82.	There are a lot of spontaneous discussions in our family.	[]	[]
83.	In our family, we believe you don't ever get anywhere by raising your voice.	[]	[]
84.	We are not really encouraged to speak up for ourselves in our family	[]	[]
85.	Family members are often compared with others as to how well they are doing at work or school.	[]	[]
86.	Family members really like music, art and literature.	[]	[]
87.	Our main form of entertainment is watching T.V. or listening to the radio.	[]	[]
88.	Family members believe that if you sin you will be punished.	[]	[]
89.	Dishes are usually done immediately after eating.	[]	[]
90.	You can't ge away with much in our family.	[]	[]

Adapted from Rudolf H. Moos (Family Environment Scale-Form R - 1974).

Start here and work across

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F											F
T	11	12	13	14	15	16	17	18	19	20	T
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T	21	22	23	24	25	26	27	28	29	30	T
F											F
T	31	32	33	34	35	36	37	38	39	40	T
F											F
T	41	42	43	44	45	46	47	48	49	50	T
F											F
T	51	52	53	54	55	56	57	58	59	60	T
F											F
T	61	62	63	64	65	66	67	68	69	70	T
F											F
T	71	72	73	74	75	76	77	78	79	80	T
F											F
T	81	82	83	84	85	86	87	88	89	90	T
F											F

FAMILY ENVIRONMENT SCALE

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