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THE IMPACT OF LANGUAGE ON THE EXPRESSION AND ASSESSMENT OF PAIN IN CHILDREN AGED 4-7 YEARS: A MIXED METHODS STUDY

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**THE IMPACT OF LANGUAGE ON THE EXPRESSION AND
ASSESSMENT OF PAIN IN CHILDREN AGED 4-7 YEARS: A
MIXED METHODS STUDY**

By

Pary Mohammad Azize

A thesis submitted to the University of Plymouth
In partial fulfilment for the degree of

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Pary Mohammad Azize

The impact of language on the expression and assessment of pain in children aged 4-7 years: a mixed methods study

Abstract

The assessment of pain in children has been an enduring theme in the research literature over many decades, with particular focus on how pain can be adequately measured and the extent of under-measurement of pain (American Academy of Pediatrics 2001; Coyne, 2006; McCaffery & Beebe 1989; Subhashini et al., 2009). Definitions of pain, and hence development of pain measurement tools, are often criticised for not addressing the influence of culture and ethnicity on pain (Bates et al., 1993; McCaffery & Beebe 1989; Zinke, 2007), in children, the perception and expression of pain is also affected by cognitive development (Hallström and Elander, 2004). Whilst there has been an increase in the number of children living in the United Kingdom (UK) who do not speak English as their first language, it has been acknowledged that the measurement and management of pain by health service professionals relies predominantly on their experience with English speaking children (RCN, 2009).

This study aimed primarily to examine how primary school age children in key stage 1 who speak English as a primary or additional language experience, express, and explain pain. This aim was addressed through three research questions: (1) how do primary school age children in key stage 1 talk about pain? (2) What are the similarities and differences in the language used to talk about pain by children with English as a primary and additional language? (3) Are there differences in the perceptions of pain by children of different age, gender, language background, and country of birth? A second aim was to examine whether language would affect actions taken by final year child health students and nurses working in Minor Injuries Units to manage pain in primary school age children.

Study objectives were addressed using a two phase mixed methods design. The first aim was addressed using six focus group interviews with groups of primary school children (aged 4-7) (Phase 1). Two methods were used in the interviews: use of drawings from the Pediatric Pain Inventory (Lollar et al., 1982) to capture the language used by children to describe pain and observation of the children's placing of pain drawings on red/amber/green paper to denote perceived severity of pain. Following data collection, the vocabulary of each child was assessed using a standardised lexical test (British Picture Vocabulary Score version II - BPVS II) (Dunn et al., 1997). To address the second aim, a factorial survey was conducted (Phase 2) with nurses working in Minor Injuries Units and child health nursing students to determine whether language has an impact on decisions made about the management of children in pain following a minor injury.

Phase 1 findings demonstrated that children from English as an Additional Language (EAL) backgrounds used less elaborate language when talking about pain but tended to talk about the pictures prior to deciding where they should be placed. The children's placement of pain drawings varied according to language background, gender, and age. The calculated language age of English lexical comprehension (BPVS II score) of monolingual children ($M=69.85$, $SD=19.27$) was significantly higher than EAL children ($M=47.93$, $SD=14.32$; $t(32) = 3.60$, $p = 0.001$, two-tailed). However, when these differences were explored in terms of year group, the differences remain significant with foundation and year 2 but not with year 1. For the EAL children, there were also significant relationships between BPVS II score and length of stay in the UK (spearman's rho 0.749, $p = 0.33$).

The Phase 1 findings were used to construct vignettes, describing hypothetical care situations, for Phase 2. Multinomial logistic regression was used to analyse the impact of a child's age, gender, language, parent's language, injury mechanism, and reaction to pain on the way in which the child's pain would be assessed and whether parents or an interpreter would be

invited to assist in pain assessment. Findings demonstrated that *observing the child's behaviour* is the most significant assessment process that is used to assess EAL children, rather than the Visual Analogue Scale (VAS), which was used with non-EAL children. This is significant as VAS is the mostly widely used tool to assess pain in health care settings. However, VAS is only effective if it can be understood by the child. Further, MIU nurses and child health students were more likely to involve parents who speak English well than those who speak English poorly but would ask for an interpreter if their involvement was necessary. In order for the respondents to explain their decisions, they were asked an open ended question for each vignette. They reported that language and age of children are the most common difficulties they faced during assessment of pain. Therefore, they suggested some solutions, like using an age appropriate tools for assessing younger children. Respondents also identified that using an interpreter is a time consuming process, which might delay the management of pain. In light of the growing numbers of EAL children in the UK; this research has application in a number of contexts. The variation in language would apply if children were reporting their own pain. However, the findings emphasise the need for sufficient time to be allocated to pain assessment to allow an individualised approach. Study findings suggest several factors that may be important in assessing pain in EAL children; these should be explored further in the context of clinicians' assessment of pain. The implications of the study impact on policy, practice, education, and future research.

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Author's declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award without prior agreement of the Graduate Committee.

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During the course of this study, relevant scientific seminars, and conferences were regularly attended at which work was sometimes presented in the form of the poster presentation, these are all recorded in the graduate school log book; external institutions were visited for consultation purposes and several papers prepared for publication.

Presentations and Conferences Attended:

- Poster presentation at Oxford University *ESRC Research Methods festival* from 5-8 July 2010. Published online.
- Poster presentation in the *First Global Congress for Consensus in Paediatrics and Child Health* in Paris, France from 17-20 February 2011.
- First prize winner in a poster presentation at the post graduate conference at Plymouth University on 19 April 2011

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Dedication

This thesis is dedicated to my husband (Luqman Othman Gubari) and children (Lavin Luqman Gubari and Tebin Luqman Gubari) who were patient with the total dedication I gave through the long journey of the study

It is also dedicated to my parents, who were enduring my studying far away from them.

I would also like to dedicate my thesis to all international children who suffered from pain in the UK

CHAPTER 1 INTRODUCTION

1.1 Introduction

There has been an increase in the number of children living in the UK who speak English as an additional language (EAL); however, the measurement and management of pain by clinicians relies predominantly on their experience with English speaking children (RCN, 2009). Much work has been undertaken to develop and validate tools for the assessment and management of pain in children. These tools are widely used and focus on three forms of assessment: firstly, individual self-report (for example using the ‘faces’ scale or visual analogue scale); secondly, behavioural assessment (for example assessment of behaviour using the FLACC scale - Face, Legs, Activity, Crying and Console ability), thirdly, physiological measurement of pain (for example heart rate and blood pressure). These tools, however, assume that children will experience and express pain in a similar manner.

The impact of language on the assessment and management of pain in children has not been widely researched. In order to improve pain management for children who have English as an Additional Language (EAL), it is important to identify potential barriers to the effective communication of pain by EAL children.

This chapter introduces key concepts relevant to the research problem. The study aim and research questions are presented and the potential significance of the study outlined. Theoretical and operational definitions of key terms used in the study are presented and the structure of the thesis is outlined.

1.2 The research problem

1.2.1 Language barriers and medical communication

Language is the key vehicle for interpersonal communication; children use it to understand gestures, and the social and cultural rules of communication (Cohen, 2001). Language helps

an individual to become “a full member of society”, and also builds the human personality because the person who is fluent is able to participate in all conversations, but without comprehensive language, people, especially children, may be isolated and stressed (Wittgenstein, 1967:89). In addition, speaking about pain is recognised as one of the most difficult forms of linguistic activities because of the added difficulty of communicating in medical terms, especially in a critical situation; therefore, it has been suggested that nonverbal communication could help in assessment of pain (Hadjistavropoulos and Craig, 2004). In addition pain expression can reflect both physical and emotional pain, for example children suffering from psychological distress or depression may not report their pain which may lead to inaccurate assessment and management of pain (Giordano et al., 2010). Further, Schott (2004) suggested that a painful situation may affect the linguistic ability of a patient. This challenge is more likely to arise among minority language patients who speak English as an Additional Language. de Rond and colleagues (2000) reported that assessment, communication, and documentation of pain may be problematic for a hospitalised patient, and language barriers are one of the most common problems facing patients because the experience of pain is mainly described through language and the verbalisation of pain (American Academy of Pediatrics, 2001; Ehlich, 1985; Herr et al., 2011; Isaacs et al., 2010). As Ferguson and Candib (2002) Narayan (2010) and Dogra (2010) found, race, ethnicity and language are obstacles in the relationship between doctors and patients with 32% of non-English speaking persons considered to have poor communication skills (Fryne et al., 1996). The potential impact on pain management is highlighted in a study by Cleeland and colleagues (1997); 65% of cancer patients from ethnic minorities received inadequate analgesia with regard to the recommended analgesic prescribing guidelines compared to 50% of the non-minority patients (Cleeland et al., 1997), which may lead to the risk of inadequate pain control. The ethnicity of the patient is something that must be addressed before any

medical interventions because of the difference in the meaning of pain across different ethnic groups (Koffman et al., 2008). A trained professional interpreter or bilingual health care professional may help to achieve an accurate medical diagnosis, and to assist non- English speaking patients with the verbal description of pain. However, an untrained interpreter could cause a serious error in the process of assessing and treating the patient's pain (Flores, 2005).

1.2.2 Intellectual development and children's pain

Astington and colleagues (1988) identified that, compared to younger children, school age children have entered a new stage of intellectual development which is accompanied by new values of perception and action, indicating a new sensitivity to the life of the mind. It means that children of this age can distinguish between external and internal factors, and can discriminate between appearance and reality. Moreover, school age children have a better grasp of language skills, so additional tools can be used to assess their health (Riley et al., 2004). However, Witt and Stein (2010) stated that children under seven do not have the facility to report pain accurately because their behaviour may vary significantly. It is generally accepted that children of school age have the capability to supply self-report assessment effectively; with Pölkki and colleagues (1999) reporting that school age children are able to describe their pain experiences using a combination of drawing and interviews. Findings from a recent study, identified that, when describing pain, children use a number of pain words and the ability of children to sustain attention increases rapidly between 5-7 years old (Yaster and Byerly, 2009).

1.2.3 Health professionals and the language of pain

Nurses tend to spend more time than doctors with children when they present to health services, hence they are in an ideal position to assess, in conjunction with parents, the extent of the child's pain. However, choosing the appropriate assessment tool is essential in order to

allow accurate diagnosis of the underlying condition and timely management of pain. Similarly, nurses are most likely to ensure that the child is placed in an environment conducive to the relief of pain, for example through taking steps to minimise the anxiety of the child and parents. When children are discharged home from health services; nurses play an important role in advising about on-going management. Therefore, nurses are required to have a good knowledge of the management of children's pain (de Rond et al., 2000). However, de Rond and colleagues (2000) also proposed that further studies are needed to address the importance of nurse's knowledge in the effective management of children's pain.

It is important for the health professional to have a good relationship with a child and to understand their experiences; language is the key to effective conversation or communication between them (Grypma, 2002). The description of pain may be problematic for children who have English as an additional language (EAL) due to lack of language ability; this group of children may put themselves at risk by using the wrong words or lexical terms to express their condition (Robinson and Gilmartin 2002). Therefore patients need to be mature in both linguistic and cognitive development in order to communicate effectively (Craig et al., 2006). As Nightingale (1859-1992 cited in Montes-Sandoval, 1999) wrote, it is important for nurses to understand pain in both physiological and psychological aspects. Health care professionals emphasise the need for children to use understandable language to describe pain, so that the right prescription of analgesia can be given (WHO, 2007). In terms of dealing with minority patients, doctors should be trained to provide concordant experience for minority patients who may otherwise receive low quality care (Ferguson and Candib, 2002). However, as Schott (2004) reported, there is no common language to accurately express the feeling of pain during painful experiences.

Research to develop a new paediatric pain assessment has been long needed especially in emergency situations (Goldberg and Morrison, 2007). Many research and policy initiatives have focused attention on how children are assessed and managed in the 'adult-orientated' world of health services such as Emergency Departments. As a result, recent audit work in many countries has demonstrated evidence that pain assessment is still not being appropriately assessed in the Emergency Department (Dunnachie, 2007; RCN, 2009). Eisen and Amiel (2007) suggested that 76% of children in emergency departments are undertreated for pain, and this figure is likely to be significantly higher for racial and ethnic minority children (Green et al., 2003).

1.2.4 Primary school age children and health and safety

The Health Promoting School is an idea that has developed over the last decade to address and prevent health problems at school level (Leger, 2000) and has played a role in assisting WHO in designing and developing guidelines for health promoting school in developing countries. In the UK, there has been an increase in pupils with English as an additional language in England of about 35% since 1997, and it was expected to reach 20% of the total school population in 2010, with 240 different languages being spoken (Govaris and Kaldi, 2010). In addition to educational achievement, schools must consider two other important issues, which are (i) health and (ii) safety (American Academy of Pediatrics, 2008; WHO, 2007). Children spend large amounts of time in the school environment, so health and safety is one of the most important duties of the school. It is vital to prevent any hazard that is deemed to cause a significant injury (Department for Education, 2011), because a significant injury requires at least three days off school and may incur a hospital visit (Severs et al., 2003). The head teacher is responsible for implementing a health policy which includes information for staff and parents, in order to prevent minor injuries from developing into major injuries and to protect the children and staff from physical hazards (Health and Safety

Policy, 2009; Severs et al., 2003). Assessing any physical hazard and administering quick and suitable primary care for accidents at school is the duty of the first aider, who must have attended a Health and Safety Executive course which is refreshed every three years (Department for Education and Employment, 1998). Campbell and Macdonald (1995) carried out a survey with a sample of primary and secondary school head teachers and found that improving communication between health services and educational staff is needed in order to develop the school health services. In addition, there should also be an appointed person at the school who is not a first aider but has emergency training, and who is responsible for the first aid equipment. Assessing children's needs is considered to be a difficult process in the school environment especially for EAL children (Bhattacharyya et al., 2003). Therefore, Bhattacharyya et al., (2003) recommended that there should be a member of support staff with EAL experience who can help in case of injury or illness.

1.3 Study Aim and Research Questions

In order to address the research problem outlined above, a study was designed to examine the influence of language on the assessment of pain in primary school aged children.

The **study aim** was to examine the impact of language on the expression and assessment of pain in primary school aged children

The study aim generated two major questions which guided the study. As indicated below, each was addressed through specific sub-questions:

1. How do primary school children who speak English as a primary or additional language express and explain pain?
 - a) How do primary school children talk about pain?
 - b) What are the similarities and differences in the language used to talk about pain by children with English as a primary and additional language?
 - c) Are there differences in the perception of pain by children of different age, gender, language background and country of birth?

- d) Is language ability affected by length of time the child has lived in the UK?
- 2. Does language influence the assessment of pain in simulated minor injury scenarios involving primary school aged children?
 - a) What judgments do final year child health nursing students and nurses working in a Minor Injuries Unit (MIU) make about the assessment of pain for children with different language abilities?
 - b) Does the language of the parents affect decisions made about assessment of the child?
 - c) Are there differences in the judgments about pain assessment made by students and MIU nurses?
 - d) What difficulties do students and MIU nurses identify in assessing pain for EAL children?

1.4 Terminology used in this thesis

The terms used in this study require an operational and theoretical definition, in order to clarify the researcher's understanding of the world. Terms commonly used in the thesis are defined below; theoretical definitions are selected from the literature and operational definitions identify how the theoretical definition was used in this study.

Pain (Theoretical definition)

Unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (International Association for the Study of Pain, 1979).

Pain (Operational definition)

A subjective condition that is primarily expressed through language.

Assessment of pain (Theoretical definition)

The process that is undertaken to record pain using self-report, physiological investigation, and behavioural assessment (RCN, 2009).

Assessment of pain (Operational definition)

This is generally undertaken before the management of pain. It is the process of decoding pain by the health professional; the intensity of pain is a key approach to pain measurement, which should be measured through various tools, including patient's verbal and nonverbal expression and vital signs.

Key stage 1 (Theoretical definition)

The first two years of schooling from the end of foundation to year 2 in England and Wales (Education Act, 2002).

Key stage 1 (Operational definition)

This refers to children aged between 4-7 years.

Monolingual children (Theoretical definition)

This is the term used to identify children who can speak and understand just one language (Brojde et al., 2012)

Monolingual children (Operational definition)

This refers to those children who have ability to express their feeling in a single language.

EAL children (Theoretical definition)

This is the term currently preferred in the UK. It refers to children who speak English as an Additional Language, and are living away from their home country (Bhattacharyya et al., 2003). Although their performance in English may lack fluency and be below expected levels for their age, they have the same potential to reach full linguistic competence as Monolingual children

EAL children (Operational definition)

Children who do not speak English as their native language

Bilingual children (Theoretical definition)

Children who speak two languages to communicate, there are various interpretations of bilingualism, dependently on the level of proficiency, age, the range of exposure. For example children who become bilingual may be Monolingual in their first language when they start school and develop English as a second language, with the ability to communicate in either language (Lieven, 2010).

Bilingual children (Operational definition)

A child that has learned two languages during childhood and is literate in both languages

Limited English proficiency (LEP) (Theoretical definition)

People who have suffered from insufficient access to medical primary care and preventative care, and who have been reported as displaying difficulties in medical communication (Wilson et al., 2005)

Limited English proficiency (LEP) (Operational definition)

Individuals who have faced difficulties in gaining a medical intervention because of language barriers

Language-concordance (Theoretical definition)

Language concordance is an essential component of effective communication between patients and doctors and is considered to be one of the elements that can improve care delivery to non-English speaking patients (Kanter et al., 2009)

Language -concordance (Operational definition)

An important development which helps EAL patients to gain access to health promotion care through decreasing language barriers in medical communication

Language – discordance (Theoretical definition)

This refers to Limited English Proficiency (LEP) patients who do not receive adequate health education and intervention compared to language concordant provision (Ngo-Metzger et al., 2007).

Language – discordance (Operational definition)

This refers to patients who are not able to gain an access to medical interventions because of the unavailability of language support like a language concordant physician or a professional clinical interpreter.

1.5 Significance of the study

This study may prove significant in contributing to an area which is currently under researched and will generate further studies in this field. In light of the growing numbers of EAL children in the UK; this research has a wide application in a number of contexts.

It is anticipated that the study findings will lead to improved care for EAL children experiencing pain, through providing evidence of potential barriers to the effective communication of pain by EAL children, which will lead to better assessment and management of pain by health professionals. The study has the potential to contribute to the cultural competent care agenda and highlight the importance of cultural awareness for health care professionals.

This work has practical implications both for health professionals and EAL service users, in that it will help articulate and develop good practice in the assessment of children's pain, including the matching process between the child and their language expression, together with a better shared understanding of the influence of race and ethnicity on the experience of pain. It is hoped that this will optimise clinical judgment regarding the management of children's pain. Additionally, this study may yield valuable results due to the mixed methods research design; the combination of methods enhances the capacity of both qualitative and

quantitative research to identify and understand factors that influence expression and assessment of pain in primary school age children.

The first phase of this study will make a contribution to our understanding of research methods by using drawings from the Pediatric Pain Inventory (Lollar et al., 1982) to stimulate discussion amongst children and capture natural conversation about pain.

If the researcher improves their understanding or ascertains the current state of knowledge in the field of identifying factors that impact on the assessment of pain among primary school age children (key stage 1) generally and especially EAL children, it will enable them to make practical recommendations to facilitate health assessment and intervention among these target populations.

1.6 Structure of the Thesis

The thesis consists of nine chapters. The first three chapters provide an introduction to the study and the relevant literature and the study methods. Chapter 4 summarises the analysis of the Phase 1 findings, providing an overview of how primary school age children in key stage 1 communicate pain. The details of the theoretical framework outline of existing theories which are related to the research topic are presented in chapter 5. Chapter 6 presents the method used to collect data for Phase 2 and demonstrates how Phase 1 findings influenced methodological choices for Phase 2. Chapter 7 provides an analysis of the second phase findings, and outlines the responses gained from the participants through a factorial survey. Chapter 8 discusses the implication of these findings. Chapter 9 concludes the thesis and summarises the outcomes and the findings of the study; the research implications, and limitations of the study are also presented in this chapter.

1.7 Summary

This chapter has outlined the extent of the research problem and the manner in which this study addresses some unanswered research questions. In order to be familiar with the range of methodologies adopted by previous researchers, and to clarify the choice of research questions for the empirical study, a literature review was undertaken. This covers the empirical and theoretical literature on the role of language in the perception, experience, and expression of pain by primary school age children in key stage 1 and is presented in the following chapter.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

Language can be seen to be the primary means by which pain is expressed. Therefore, accurate pain assessment is likely to be affected by communication barriers for example the way children describe (encode) pain will affect the way nurses assess (decode) it. The aim of this study is to examine how primary school age children in key stage 1 who speak English as a first or additional language experience, express, and explain pain.

This literature review provides an overview of previous and relevant research that has been undertaken to examine how pain is experienced. The research presented focuses on the importance of language in pain expression, the role of communicating pain in pain assessment and management, the use of metaphorical language by children in order to express their internal feelings and the effect of culture and language on pain experience.

The objective of this review is to ascertain the current state of knowledge in this field, to familiarise the researcher with the range of methodologies adopted in relevant research projects, and to clarify the choice of research questions for the empirical study. The topic of pain expression among children with EAL is not one that has been widely researched, so the purpose of this study is to identify the impact of language on the assessment of pain among Monolingual children in general, and EAL children in particular, as this has potential to affect the management of pain by health professionals. The literature review can be classified in two parts. In the first, the emphasis is on pain because pain has various physiological, psychological, linguistic, and emotional manifestations which need to be communicated if pain assessment is to take place (Melzack and Wall, 1965). Therefore, following explanation of the search strategy and overview of the key papers, this review begins by exploring the nature of pain in relation to a number of definitions and then examines the impact language

may have on the way pain might be expressed. This study will therefore focus on the perception of pain in children and the factors which affect pain expression.

The second part of the literature review explores language, which has a primary role in expressing pain. Firstly, pain expression among monolingual children is examined and secondly, among children with English as an additional language. Further, this review will examine the effect of factors such as age, gender, language, mechanism of injury and verbal and nonverbal reaction to pain on the assessment of pain. The chapter ends with a conceptual model proposed as a means of understanding pain perception- the socio communication model of pain. Evidence from studies with adults is included where this helps to explain how conceptual perspectives and clinical practice in pain management has developed over time.

2.2 Search strategy and key papers

In the last three decades between 1979-2012, studies were identified using a variety of sources including computerised data bases from different databases such as BNI, Cinahl, and Medline, PubMed and dissertation abstracts, manual searches of nursing medical and methodological journals and books, or their available alternative variations, `grey` literature such as policy documents, conference proceeding and local project reports and citations in papers identified in all of the above searches. Searches were conducted using key terms such as pain, children, language of pain expression, English as an additional language (EAL) children, school age children and pain, ethnicity and pain evidence (details in appendix 1).

A summary and critical analysis of key papers reviewed is shown in Table 2.1.

Table 2.1 Summary of key papers from literature review

Themes	Author	Purposes of study	Methodology	Main findings	Critical analysis
The nature of pain	Filligim, 2005	To discuss the multiple methods of pain assessment that are available, including consideration of the circumstances under which method may be most useful.	Self-report methods for assessing pain, Quantitative sensory testing and Response bias	Pain measurement should accommodate the multidimensional nature of pain, including assessment of both the sensory and affective qualities of pain	This study used an appropriate method to address the multidimensional aspect of pain. However, the authors did not consider the linguistic features of pain reporting.
Family involvement	Coyne, 2006	To explore children's, parents' and nurses' views on participation in care in the healthcare setting.	The grounded theory method was used and data were collected through in-depth interviews, questionnaires, and observation. Sample consisted of 11 children, 10 parents, and 12 nurses from four paediatric wards in two hospitals in England.	Health professionals' communication behaviour may reflect recognition of children's cognitive abilities rather than their competence to understand. The fact that children's nurses appeared to make decisions about involving children in decision making in the absence of a reliable framework was a significant finding and highlighted a real problem in the climate at the time of data collection.	The findings of both studies have clinical significance and highlight the difficulties of involving children in decision-making. However, the samples did not include children and their parents who are unable to speak English well, hence in contemporary nursing practice the findings have limited relevance.
	Hallström and Elander (2004).	To explore what kind of decisions and how these decisions were made during a child's hospitalization.	During a 9-week period 24 children and their parents were followed during the course of events at the hospital. In total 135 hours of observations were made and analysed in two steps.	The children and their parents were usually involved in the decision-making process. Children and parents made few decisions themselves and even if they disagreed with the decision made, few decisions were reconsidered.	

<p>The individuality of pain expression</p>	<p>Briggs, 2010</p>	<p>It explores the individuality of patients' pain expression and the effect of healthcare professionals' reactions to people experiencing pain, and also to describe the importance of pain assessment.</p>	<p>The second in a series of articles on pain used participant observation.</p>	<p>Individual and multidimensional in nature, patients' expression of pain are influenced by a variety of personal and situational factors. Nurses' role is to promote effective communication in a trusting, therapeutic nurse-patient relationship, enabling pain expression and a full pain assessment</p>	<p>The study findings identified that effective communication between patient and nurse is important for pain assessment. However, whilst many personal and situational factors were analysed, the absence of linguistic factors was not identified as an omission by the researchers. This paper was published during data collection for this study hence it was used to inform discussion, rather than conduct of the study.</p>
<p>Expression of pain and hospital environment</p>	<p>Kortesluoma et al., 2008</p>	<p>To examine how hospitalized children express pain through drawings, and was carried out by examining children's thematic drawings of pain</p>	<p>A comparison was made between hospitalized children and healthy control groups with respect to the thematic contents, cognitive and emotional characteristics of pain drawings. The drawings were sorted in categories on the basis of content and cognitive competence and emotional disturbances.</p>	<p>The hospitalized children showed a lower level of cognitive capacity than their healthy controls. The control group children revealed a higher level of emotional disturbance than the hospitalized children. The groups differed in the contents of their drawings. The drawings of the hospitalized children frequently depicted medical procedures, whereas the drawings of the healthy controls depicted more consoling human and family relations.</p>	<p>Pain can temporarily block the verbal expression of pain, however, this study reported that hospitalised children can and do represent their pain through drawing. This study emphasises the contribution that non-verbal activities can make to pain expression.</p>

Pain and communication skill	Bischoff et al., 2003	To assess the effectiveness of an intervention to improve communication skills of physicians who deal with allophone patients	'Before-and-after' intervention study, in which both patients (allophone and francophone) and physicians completed visit-specific questionnaires assessing the quality of communication	At baseline, mean scores of patients' assessments of communication were lower for allophone than for francophone patients. At follow-up, five out of six of the scores of allophone patients showed small increases ($P < 0.05$) when compared with French-speaking patients.	This study demonstrated that the quality of communication as perceived by allophone patients can be improved with specific training aimed at primary care physicians. Hence communication is amenable to research intervention.
	Floor et al., 2003	To determine the frequency, categories, and potential clinical consequences of errors in medical interpretation.	During a 7-month period, they audio taped and transcribed pediatric encounters in a hospital outpatient clinic in which a Spanish interpreter was used. For each transcript, they categorized each error in medical interpretation and determined whether errors had a potential clinical consequence.	Errors in medical interpretation are common, averaging 31 per clinical encounter, and omissions are the most frequent type. Most errors have potential clinical consequences, and those committed by ad hoc interpreters are significantly more likely to have potential clinical consequences than those committed by hospital interpreters. Because errors by ad hoc interpreters are more likely to have potential clinical consequences, third-party reimbursement for trained interpreter services should be considered for patients with limited English proficiency.	This study used appropriate methods and was one of the first studies to highlight the potential threats to safety if interpreters are not used correctly.

Culture and pain	LaVeist and Jeter, 2002	To examine a national sample of African American, white, Hispanic, and Asian American respondents to test the hypothesis that doctor-patient race concordance is predictive of patient satisfaction.	The analysis used the 1994 Commonwealth Fund Minority Health Survey to construct a series of multivariate models.	These findings suggest support for the continuation of efforts to increase the number of minority physicians, while placing greater emphasis on improving the ability of physicians to interact with patients who are not of their own race.	The sample of African American, white, Hispanic, and Asian American respondents was used to test this hypothesis. However, it needed an increased diversity of patients' linguistic backgrounds in order to assess their interactions with physicians who did not share their ethnic background.
	Erzinger, 1991	To examine the interaction of language and culture in medical encounters between Spanish-speaking Latino patients and their doctors who have a range of Spanish language ability and a variety of cultural backgrounds.	Initial ethnographic fieldwork investigated Spanish-speaking patients' perceptions of doctors' Spanish language skill as it relates to their medical service	To elaborate on these fieldwork findings, medical encounters were audio taped for detailed conversational analysis. Data from the two methods illustrate how language and culture interact in accomplishing communicative tasks as doctors attend Spanish-speaking patients.	This study used appropriate methods to investigate how culture and language interact in a medical encounter, however, it would be more useful to investigate this interaction among more diverse cultural and linguistic backgrounds

	<p>Bate,1993</p>	<p>to understanding the cultural dimensions of the <i>chronic</i> pain experience.</p>	<p>Quantitative study of reported chronic pain perception in 372 chronic pain patients in six ethnic groups, who were under treatment at a multidisciplinary pain-management centre.</p>	<p>It appears that pain intensity variation may be affected by differences in attitudes, beliefs, and emotional and psychological states associated with the different ethnic groups.</p>	<p>A bio - cultural model may be useful in conceptualizing the complex interactions of biological, cultural, and psychosocial factors in the process of human pain perception. However, using quantitative method to measure the intensity of pain and to determine the diverse perception of pain among different ethnic groups is not adequate because qualitative methods or both of them are more appropriate to assess variations in the perception, experience and cultural variations of chronic pain.</p>
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Verbalisation of pain	Stanford et al., 2005	To determine the use of self-report in pediatric pain assessment assumes children have acquired a capacity to understand and use common words to describe pain.	Two complementary research methodologies were employed. Study 1 used the CHILDES database, an aggregated transcript database of multiple research studies examining spontaneous speech development across childhood. Transcripts of 14 randomly selected studies, yielding a total of 245 child participants ranging in age from 1 to 9 years, were searched for seven English primary pain word-stems: 'ache', 'boo-boo', 'hurt', 'ouch', 'ow', 'pain', and 'sore'. Study 2 surveyed 111 parents of children aged 3 to 6 years old concerning words the children commonly used for pain.	Both studies indicated that the most frequently used word-stems were 'hurt', 'ouch', and 'ow'. These words first emerged in children's vocabularies as early as 18 months of age. The word-stem 'pain' was used relatively infrequently and gradually emerged in children's vocabularies. The findings indicate that young children rely on a select number of words to describe pain, with these words appearing in children's vocabularies at an early age. These results have implications for developmentally appropriate pain assessment in young children	The linguistic development of children in these studies was addressed among children in general, however, they did not consider the capacity of those children who were not be able to speak English well to use a range of pain words.
	Jerrett and Evans, 1986	To address children's pain vocabulary and to determine the feasibility of achieving a meaningful grouping of children's pain words and the pain intensity implied by the words.	Descriptive study carried out to examine how a group of school-age children view their pain. This was an initial step to demonstrate that children can describe pain and do possess a pain vocabulary. sample of 40 school-age children were the subjects for this study	All the pain word descriptors used by the children in response to the question 'Can you think of words to describe what pain feels like?' were categorized on the basis of the Melzack classification.	

<p>The benefit of using professional interpreter</p>	<p>Jacobs, 2001</p>	<p>To determine whether professional interpreter services increase the delivery of health care to limited-English-proficient patients</p>	<p>Two-year retrospective cohort study during which professional interpreter services for Portuguese and Spanish-speaking patients were instituted between years one and two. Preventive and clinical service information was extracted from computerized medical records.</p>	<p>Professional interpreter services can increase delivery of health care to limited-English-speaking patients</p>	<p>Using only retrospective to gain information from computerized medical reports to identify the effect of professional interpreter is not significant findings. While using some prospective data, through interviewing the LEP patients or through observing the services might have a stronger outcome.</p>
<p>Language barrier and health care utilization</p>	<p>Grubbs, 2006</p>	<p>To determine whether LEP individual awareness of this law improved language access through interpreter utilization</p>	<p>In June 2003, a telephone survey of 1,200 Californians was conducted in 11 non-English languages. The survey included items on English proficiency, awareness of language law, health care utilization, and communication methods.</p>	<p>Awareness of language law is not sufficient to resolve language barriers for LEP individuals. Provider and organization level barriers to language access must be addressed.</p>	<p>Although this was a significant sized sample, however, children were not included.</p>

<p>Pain assessment and narrative</p>	<p>Koffman et al., 2008</p>	<p>To explore and compare the meanings of pain among 26 Black Caribbean and 19 White patients with advanced cancer</p>	<p>Qualitative interviews 26 Black Caribbean and 19 White patients with advanced cancer. Patients were recruited from oncology outpatient clinics, a lung clinic and palliative care teams. Interview transcripts were analysed using the framework approach. A total of 23/26 Black Caribbean and 15/19 White patients reported cancer-related pain.</p>	<p>Two further meanings of pain emerged from Black Caribbean patients' accounts: pain as a 'test of faith' that referred to confirmation and strengthening of religious belief, and pain as a 'punishment' that was associated with wrongdoing. These meanings influenced the extent patients were able to accommodate their distress. Pain assessment needs to consider the patients' narratives that include the meanings they attribute to this symptom, and which may be governed by culture</p>	<p>Spiritual beliefs related to the meaning of pain were addressed among the participants, without taking the medical and clinical meanings of pain into account.</p>
<p>Pain and communication barrier</p>	<p>Simon and Robinson, 2002</p>	<p>To explore the perceptions of nurses and parents of the management of postoperative pain in children. This paper focuses on issues of knowledge and communication.</p>	<p>Using matched interviews between 20 parents and 20 nurses many issues arose relating to the nurse/parent communication process. It was also clear that despite nurses' knowledge of pain management being deficient, they had expectations that required parents to have a level of knowledge they did not possess.</p>	<p>The findings suggest that nurses' poor communication with parents and nurses' knowledge deficits in relation to children's pain management create obstacles to effective pain management. These obstacles need to be addressed in order to improve the management of children's pain through better education of nurses and two way communications with parents.</p>	<p>This study investigated the view of the nurses and parents in order to determine the issues of knowledge and communication between them. However, the communication between nurses and children was omitted from this study.</p>

Factors influence pain management in children	Gimble-Berglund, 2008	To identify factors that influence nurses' pain management in children.	A qualitative design was used. Twenty-one nurses working in one paediatric department were interviewed using semi-structured interviews. Data were analysed by means of content analysis.	Pain management in children could be improved through increased co-operation between Nurses, physicians, and parents. Planning time and good routines could facilitate pain management. Education about pain management and children's pain behaviour might also improve nurses' ability to manage pain in children.	The study findings have a clinical significance because it identified factors that influence pain management in children; however, the data were collected only from nurses and did not explore the children's point of view.
Language and culture	Jiang, 2000	To discuss the inseparability of culture and language, presents. Three new metaphors relating to culture and language, and explores cultural content in specific language items through a survey of word associations.	The survey was designed for native Chinese speakers (NCS) in Chinese, as well as for native English speakers (NES) in English Among the 28 NCS subjects, 11 were male and 17 female; 12 were teachers, and 16 were postgraduates of English linguistics; their ages ranged from 22 to 59. Among the 28 NES subjects, 10 were male and 18 female; 26 were Americans, and 2 were Canadians; their ages ranged from 20 to 64.	The intimate relationship between language and culture is strikingly illustrated by the survey of word associations. The items filled in by NCS convey Chinese culture, and the items written by NES convey English culture. The referents of language are the entities, events, states, processes, characteristics, and relations that exist in the culture, whether these are referred to by single words or by phrases.	The survey of word association is important to determine the relationship between culture and language; hence, it should be applied to other linguistic backgrounds, and not only Chinese speakers.

2.3 Pain

2.3.1 Definition of pain

When exploring the nature of pain, it is important to recognise that there are numerous definitions of pain, all acknowledging pain to be a complex phenomenon and the subject of many research studies over the past few decades (Fillingim, 2005). This review focuses on three well-known definitions: the International Association for the Study of Pain (IASP) (1979), McCaffery (1979) and the American Academy of Pediatrics (AAP) (2001) (see table 2.2). These definitions have been selected as they are representative of decades of theorising about pain and cover the three dimensions of pain: sensory, emotional and intensity (Chapman and Nakamura, 1999). There is an active relationship between these aspects and the impact of social background or personal factors on the experience of pain (Craig, 1984). Further, the three definitions represent the way in which pain is suffered, experienced, assessed and managed (Hadjistavropoulos and Craig, 2002).

Table 2.2 Definitions of Pain

Author	Definition
International Association for the Study of Pain (IASP) (1979: 250)	An unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage
McCaffery (1979: 11)	Whatever the person experiencing it says it is.
American Academy of Pediatrics (AAP) (2001:793)	One of the most common adverse stimuli experienced by children, occurring as a result of injury, illness, and necessary medical procedures

The IASP is the leading professional forum for science, practice, and education in the field of pain management. In an early publication IASP (1979) argued that practitioners needed to establish the needs of the patient to receive treatment for all forms of pain, with or without tissue damage. Further, they provide a minimum standard vocabulary in order to deal with pain in the health setting. Therefore, this vocabulary was developed more to be used in the clinical setting rather than in terms of experimental work, or for physiologic or anatomical purposes (IASP, 1979). Moreover, Witt and Stein (2010), in IASP evidence-based guide to pain management in settings with limited resources suggested that pain experience is fundamental to the cultural development of all societies, reiterating the notion that suffering is a part of the pain experience (Treede et al., 1999).

The IASP definition refers to a number of aspects that complicate the study of the epidemiology of pain and emphasizes two points. First, that pain is always subjective and secondly the difficulty in communicating pain verbally (Verhaak et al., 1998). The possibility of an objective measurement of pain is excluded by two aspects of this definition:

1. The definition refers to ‘actual and potential tissue damage’,
2. The subjective character of pain is emphasised by referring to ‘unpleasant sensory and emotional experiences (IASP, 1979).

The second definition was developed by McCaffery (1979) in response to the challenge of the assessment of pain in the health care setting. Most pain guidelines reflect the philosophy of McCaffery, namely that the patient’s self-report is the only reliable measure of pain severity. This is reflected through verbal and non-verbal behaviour and through the patient’s attitude and beliefs; therefore, pain is also regarded as a deeply personal experience (Biro, 2010; Simons and Roberson, 2002). This emphasizes problems that can arise if patients do not have adequate language to describe their pain metaphorically. As Sussex (2009) suggested, it is important for clinicians to understand pain metaphorically rather than diagnose it directly.

However, children who suffer from critical illness or deteriorate rapidly have difficulty in measuring pain using a visual analogue scale because of their inability to communicate and express their feelings verbally and non-verbally; as a result, self-report of pain is not the `gold standard` for them (IASP, 1995; Lascaratou, 2007). Therefore, communication is important to reflect the child's cognitive abilities. The second element that McCaffery focused on in her definition of pain was the need for verbal communication of pain. In a grounded theory study Coyne (2006) explored the views of children, parents, and nurses on the participation of children in care, in a health care setting. In depth interviews, observation and drawings were conducted with 11 children, 10 parents, and 12 nurses. In terms of the interviews, Coyne asked parents and children four open questions: reason for hospitalisation, parent's participation, nurse's participation, and children's participation. Coyne found that not all children can report their pain, and in particular there are many children who have difficulty in communicating their feelings of pain verbally because of their cognitive immaturity. Further, infants and preverbal toddlers' perception of pain may be unreliable because they do not have the ability to determine accurately the location, intensity, and severity of pain (Atkinson, 1996; Haley, 1985).

Dissatisfied with (their perception of) inadequate assessment and treatment of children who endure pain, the American Academy of Pediatrics (AAP) (2001:450), advocated for the rights of children to have access to an improved health service, in which their experience of pain and suffering is addressed with competence. They demanded that paediatricians further their knowledge and training, specifically in areas of pain management, they were also required to have knowledge about the assessment of children's experience of pain, and effective communication with them. The AAP definition of pain refers to pain as an unpleasant stimulus experienced by children (see Table 2.2). The AAP emphasise the challenges faced by child health practitioners who need to investigate the feelings behind the expression of

pain, because children have a limited capacity to self-report their pain especially in infancy. As a consequence, AAP cite evidence that children's pain is often undertreated, which might cause anxiety and distress for the caregiver (Subhashini et al., 2009). Furthermore dealing with children's pain, especially infants, takes more time and effort because practitioners need to use an accurate assessment tool and, where possible, involve the family as part of a multi-disciplinary approach (AAP, 2001). However, Melzack (1996) earlier argued that defining pain as an 'adverse stimuli' confuses the protective responses with the pain experience, and loses sight of the causes of pain in terms of experience, physical events, and psychological process.

In conclusion, although these definitions cover a number of dimensions of pain, including the nature of pain, the subjectivity of pain experience, and a number of causes of pain, however, they do not take cultural and linguistic factors into consideration (Witt and Stein, 2010). There are many factors that influence the way pain is experienced and a patient's tolerance of pain, such as biological factors, tissue damage, and individual differences in nociceptive and emotional factors. Arguably, depending on different cultural backgrounds, not all children may experience the same level of pain (Bates et al., 1993; IASP, 2001). In some cultures pain is not expressed until sometime after the injury/painful event indicating that individual cultures have different levels of tolerance to pain (McCaffery and Beebe, 1989). As McCaffery and Beebe (1989) suggested, pain communication is difficult especially among children who speak a different language. However, there is a lack of contemporary research regarding the influence of culture and ethnicity on pain (Zinke, 2007).

2.3.2 Cognitive development and children's pain expression

In children, cognitive development plays an active role in the perception and expression of pain and having a voice in their decision making, as Hallström and Elander (2004) assessed 24 children and their parents' involvement in decisions and found that as children mature in

terms of cognitive development, they can describe their pain more effectively. In particular, it is thought that `sensory and emotional` experience is not communicated effectively by younger children (Wellman et al., 1995). However, despite a large number of studies conducted, there is no consensus regarding the age at which children can communicate pain effectively (see Table 2.3).

Table 2.3 Studies and theories related to effective communication of pain

Authors	Sample	Main Findings
Research studies		
Anglin (1993)	<i>N=96 Age: 6 -10 years</i>	Younger children have a more limited repertoire of pain vocabularies than older children and adults.
Wellman (1995)	<i>N= 5 children Age: 2-5 year</i>	Children aged 2-5 years can understand vocabulary for both positive and negative emotional experience; however they may be limited in using some emotional vocabularies.
Goodenough and colleagues (1999)	<i>N=110 mixed gender children Age: 3-15 years</i>	Children under 8 years could not distinguish between severities of pain, while, above this age children might have capabilities to determine some source of pain components.
Pölkki and colleagues (1999)	<i>N=20 children Age: school age children aged 7-11 years</i>	School age children can describe pain in psychological and physiological way and methods of relieving pain were identified.
Rebok and colleagues (2001)	<i>N=114children Age: 5-11years</i>	Children as young as 5 years have capabilities to describe their internal perception, but they cannot discriminate between their inner perception and external behaviour until age 6-7 years. At 8 years children fully understood key terms.
Koopman and colleagues (2004)	<i>N=158 children 80 diabetics children 78 healthy children Age: 5-11 years</i>	Chronic pain is one of the factors that affect children’s cognitive abilities. Children under 11 years have difficulties in understanding illness internally.
Stanford and colleagues (2005)	<i>N=58 children Age: 4.8- 6.3 years</i>	Older children were less likely to verbalise pain than younger children.
Kortesusuloma and colleagues (2008)	<i>N=59children 37 hospitalised children 22 healthy children Age : 5-11 years</i>	Older children are more capable than younger to understand pain. Furthermore, hospitalised children were shown to have a lower cognitive capacity than healthier children but healthier children experienced a higher level of emotional disturbance.
Theories		
Piaget (1929)	<i>“Genetic epistemology theory”</i>	Children as young as 3-7 years are more intuitive than older children in perception of pain
Astington and colleagues (1988)	<i>Theory of mind</i>	Children aged 2-6 years can show understanding of reality, perception and can discriminate between appearance and reality.

In children, cognitive development plays an active role in the perception and the expression of pain because, as children mature in terms of cognitive development, they can communicate pain verbally more effectively (Hallström and Elander, 2004).

In their intensive longitudinal study, Wellman and colleagues (1995) studied language production in a small group of children. They interviewed five children aged 2-5 years in two phases in order to examine their use of positive and negative emotional terms such as: happy, sad, mad, cry, as well as pain words like: hurt, sting, and burn. In the results of the first phase it was concluded that children aged 2-5 years can develop vocabulary used to express both positive and negative emotional experiences. In terms of the second phase results, they reported that children may be limited in using emotional vocabulary in order to express their emotional feelings. Therefore, although the findings are interesting to consider the level of the child's cognitive and mental development related to their understanding of pain vocabulary, this sample size of five children is not representative enough to apply the findings to a child's general ability to understand vocabulary and emotional experiences.

Although Piaget (1929) in his cognitive development theory did not investigate children's understanding of emotions, he did investigate their understanding of mental states such as thoughts and dreams. He suggested that preschool children who use a mental state term such as `think` or `know` do so in an external way or as a physical reference rather than a mental reference. In effect, young children have a tendency to repeat particular phrases; however, this does not mean that they have grasped a comprehensive understanding of the words they utter. This view is supported by Haley (1985) who suggests that it is important to use language in a way that children can understand. However, it may be difficult for preschool age children to describe their pain through using the right word because their vocabularies and language abilities are just developing; in addition to difficulties in describing pain, their rating of pain may be biased (Baeyer et al., 2009). However, school age children are able to

communicate their experience of pain to some degree. Irrespective of both cognitive and mental development, language competency is an important factor which needs to be considered in the assessment of children who are experiencing pain (Pölkki et al., 1999). This understanding of language and competency is of great relevance to assessing pain amongst EAL children, particularly as language barriers create a real challenge for EAL children when articulating their feeling of pain (RCN, 2009), even in circumstances where they are cognitively and mentally mature. Essentially, they are disadvantaged by their limitations to understand (decode) both native language and medical terminology when communicating (encoding) their experience of pain effectively.

Children need to understand the `pain word` in a verbal context in order to communicate pain (Hadjistavropoulos and Craig, 2004). In their large intervention study Stanford and colleagues (2005) videotaped 58 children aged 4.8- 6.3 years old while being given a preschool immunization in order to explore the importance of verbal pain communication. After they transcribed and counted the expressed `pain` word by children they found that older children were less likely to verbalize pain using a primary pain word like boo-boo, `ow` and `ouch` than younger children. Koopman and colleagues (2004) interviewed 158 children regarding their concepts of different types of illness. They were questioned about their level of knowledge in terms of disease aetiology, treatment, and prevention. The level of understanding of illness in the Koopman et al., (2004) study was congruent with Piaget's theory of cognitive development. This study found that children below 11 years have difficulties in understanding illness. According to Piaget's theory, it is important to understand how the development of children affects their capacity to use pain assessment tools (Piaget, 1969). Piaget described several stages of a child's development. According to Piaget's theory, between 5 and 7 years, children reach Intuitive stage 2 in terms of development; this is a sub stage of the preoperational stage. In this sub stage children tend to

be very inquisitive and ask many questions in order to acquire large amounts of information, as they absorb information without thinking about the source of it. However, in a qualitative study (Pölkki et al., 1999) 20 school age children who were admitted to a paediatric ward in the University hospital were interviewed. The data were collected first via the children's writing about their feelings of pain physiologically, psychologically and methods of relieving it. Secondly, a tape recorded interview was conducted based on their writing. Pölkki and colleagues (1999) in their qualitative analysis (content analysis) reported that school age children (7-11 years) are able to describe their pain in both psychological and physiological way and have methods for seeking assistance. Questions can be raised about the tool that this study used to encourage children to express their internal feeling. As it has been acknowledged, children enjoy drawing and expressing their feelings visually rather than writing about them because this method seems likely to be more formal and children do not like a formal interview (Ackermann, 2004).

Harris (2008) examined children's ability to understand emotion, and concluded that children who are old enough to understand emotion are able to report verbally and reactivate the past emotion. However, Wittgenstein (1953) suggested that children as young as 2 years old may express their emotional feelings vocally but not as an emotional report. For example a child may say `ow` or `ouch` to express pain but not be able to describe their experience using language. Therefore, Harris (2008) found that language plays an important role in allowing children to talk about their positive, negative, past and future emotional events.

An older child is more capable than younger children of understanding pain, and older children report psychological feelings more than younger children, whereas crying provides evidence of pain among younger children (Abu-saad, 1984; Stanford et al., 2005). Goodenough and colleagues (1999) made observations of 110 children in mixed age groups (aged 3-15 years) consisting of an equal number of boys and girls. The children rated their

perception of the intensity and the unpleasantness of needle pain during venepuncture using VAS tool in order to examine self-report of pain among different age groups and genders. They reported that children under age 8 years, especially boys, were not able to distinguish the intensity of pain while above this age children of both genders may have the capability to determine the intensity of some sources of pain component in comparison to others. Further, they found a high correlation ($r=0.78$) between age and the perception of intensity of pain, so pain intensity decreases as age increases. They reported that, in addition to other factors, as the child grows up they make progress toward a linguistic communication of pain. Craig and colleagues (2006) transcribed a large amount of pain language in an observational survey of the verbal interaction between healthy children and adults in order to investigate how children developed language and linguistic communication. The results of this study concluded that language is an important form of pain communication.

Rebok and colleagues (2001) studied the abilities of three age groups to describe their health problems and well-being in three cross sectional studies among 114 children age 5-11 year old, and found that children as young as 5 have the ability to describe their internal perception, emotional and cognitive abilities, but they cannot discriminate between their inner perception and external behaviour until the age of 6-7 years. The study authors stated that the age when children are able to fully understand key terms is 8 years and older. However, the earlier work of Astington and colleagues (1988) disagrees with the Rebok (2001) study; finding that children aged 2-6 can show an understanding of reality, perception and can discriminate between appearance and reality. Jerrett and Evans (1986) and Pölkki and colleagues (1999) supported this argument demonstrating that children from age 5-9 are able to employ pain vocabulary. Piaget (1969) also suggested that younger children are more intuitive than older children in their perception of pain. This is supported by Stanford and colleagues (2005) who reported that younger children are more likely than older children to

verbalise pain and that there is not a significant relationship between language development and pain report. They also identified that there is a difference between younger and older children's use of vocabularies. In an earlier study Anglin (1993) reported that children aged 6-10 years have a limited repertoire of morphological knowledge such as pain vocabularies than older children and adults. These studies demonstrate that there is no consensus in the literature about the age at which children are able to communicate pain effectively.

2.3.3 Pain and language expression

Human communication and the expression of feelings are achieved mainly through language, which has been referred to as 'the human tool that symbolises the cultural model' (Deacon 1997). The way in which pain is expressed helps health professionals to understand the patient's reaction and responses to pain in order to optimise pain management (Briggs 2010). Briggs (2010) in an observational study, focused on the effect of the patient's experience of pain or the individuality of pain expression on the multidimensional pain assessment which is influenced by a variety of personal and situational factors such as the physical, psychological, social, culture and spiritual components of pain. As a consequence, health professional such as nurses have a vital role in fully recognising a child's pain through a therapeutic nurse-patient relationship.

Children often express pain using words comprising mainly of vowels such as 'ooo', 'aiee', 'oy' and 'oh', making it more difficult to distinguish between types of pain (Selzer 2011). However, the expressive abilities of children can also be affected by stress, which often accompanies illness; hence if the person's psychological balance is disturbed then expression is affected whether or not there is a linguistic problem in expressing and using pain words (Pölkki et al., 1999). Kortesusuloma et al., (2008) interviewed 22 healthy children and compared them with 37 hospitalised children in order to examine the cognitive and emotional characteristics of children's drawings of pain. They argued that describing their pain is

difficult for hospitalised children in terms of their cognitive abilities because pain may impair their linguistic ability. By contrast, healthy children have more ability to draw an incident that would result in pain, for example when shown a picture of a child falling off a bike, children can describe the event based on memory or imagination not current experiences. However, although it is difficult to define another person's feelings, parents can play a role in the process of teaching children to be able to use suitable words to express pain (Wittgenstein, 1967). Further, Vessy (2003) explored children's psychological responses to hospitalisation based on the method outlined by Cooper (1989). This method consists of three factors: developmental level, ecological variable, and biological variable, using a psychological science perspective. Vessy found that if hospital is perceived as a stressful place for children, it can affect their emotional reactions (and expression of pain).

Waddie (1996) examined the challenges posed to clinicians by Wittgenstein's theoretical approach to pain (viewing language as a key to unload pain experience and expression). Wittgenstein (1967) proposed that people cannot explain their feelings without language; hence absence of pain expression through language can be interpreted as absence of pain. Further, Wittgenstein (1967:101) argued that it is unacceptable to assume that there is no pain without experience, and stated that "the subject of pain is the person who gives it expression," later echoes in McCaffery's (1979) definition. Waddie, through her literature review, also emphasised that 'the silence of clients must not be taken to assume there is no suffering' (Waddie, 1996: 871).

Kramersch (2008) examines the effect of three major strands of thought - language, thought and culture - on the triadic relationship and then he explores these ideas in applied linguistic research. He found that a person can create experiences through language expression and cultural reality; as a consequence, he posits that many manifestations such as social skills, training and cognitive behaviour should be considered through language. Lang and

colleagues (2000) randomised 241 adult patients to receive intra operatively standard care (n=79), structured attention (n=80) and self-hypnotic relaxation (n=82), then the patients rated their pain using a VAS scale before and every 15 minutes during and after the procedure. Lang and colleagues (2000) provide strong evidence to support the need for active communication between nurses and other health professionals, and identify that all the health professionals needs to listen actively, and that the patient need active language in order to gain a deep understanding of their symptoms. As Hornakova (2006) reported, effective intercultural communication between health professionals and patients can be achieved mainly when conversation is comprehensible to both sides. Otherwise, language becomes a major barrier to the accurate measurement of pain in cross- cultural research (Todd, 1996). To support this view Johnson (1996) reported that active communication needs active local language and literacy; however, any deficiency in local language can cause a big barrier to communication and also cause shame and frustration to the people involved.

There are many studies reporting that children's pain was neglected in the late 1970s and early 1980s (Beyer et al., 1983; Eland and Anderson, 1977; Mather and Mackie, 1983). More recently, Stalnikowicz and colleagues (2005) asked nurses, physicians, and patients in an emergency department (ED) to rate the intensity of pain on a visual analogue scale (VAS tool) in order to improve pain management in the ED. They found that deficits in staff knowledge with regards to using VAS tool had a significant effect on pain management. Similarly, Bonham (2001) in his over view of articles published in United States journals between 1st July 1990 and 30th June 2000, selected 472 articles in order to investigate discrimination in pain treatment in terms of race and ethnicity. He found that the majority of studies reported that race and ethnicity pose further risk factors for under-use of analgesia (Bonham 2001). He also made recommendations to decrease biological and cultural

disparities in pain treatment by increasing research in this field and presenting the experience of pain among a variety of peoples in order to explore reasons for these disparities.

Communication is often problematic for children with English as an Additional Language and can cause failures in access to health care, especially for pain assessment and management (RCN, 2009). Therefore, it is important to provide linguistically appropriate measures that have been validated with racial and ethnic minority populations to avoid any potential difficulties in being able to communicate (Zinke, 2007). Furthermore, it can aid allophone patients (a Swiss term used for people who do not speak the local language) in a culturally diverse population to gain good quality health assistance and care. In their intervention study, Bischoff and colleagues (2003) assessed the effectiveness of communication of physicians dealing with Allophone and Francophone patients who attended an outpatient clinic in French-speaking Switzerland. The researchers found that communication assessment of Allophone patients was lower (mean score) when compared with the French speaking children (Francophone). This was supported by Wittgenstein's earlier theoretical work (1967) arguing that language plays an important part in health care, especially in the aspect of pain communication. Wilson and colleagues (2009), in their recent systematic review of 99 experiments and study reviews to investigate the impact of paying attention to pain descriptors in persistent pain, found that personalised pain descriptors and the use of appropriate language may communicate the pain experience better than the use of questionnaires such as The McGill Pain Questionnaire (MPQ (Melzack,1975)). Over two decades ago, Heath (1989) argued that, despite important work in philosophy underpinning the growing body of research, pain is still engaged in a complex relationship between physiological change and behavioural expression. More recent study findings reviewed indicate that this remains the case.

2.3.4 Interpretation and limited language proficiency

The term `Limited English Proficient` (LEP) refers to individuals whose primary language is other than English and who cannot speak English at all or who speak English so poorly that they cannot communicate in English without assistance. Inevitably, LEP patients living in English-speaking countries will need to seek health care from monolingual English-speaking providers; however, Lee (2001:4) reports that when “adequate translation or interpreter services are not available, LEP patients’ access to, and quality of, health care may be compromised”.

In the United States, government policy and health systems have paid financial attention to the supply of language services for patients who have limited language proficiency in the local language and they have recognised the importance of interpreters in multicultural societies. A legal policy is under consideration so that the interpreter should be funded by a private health insurer, Medicare or Medicaid, as has been suggested by the federal civil rights policy (Ku and Flores, 2005). As a consequence, the US, through Federal law, is looking at ways of providing interpretation services for Limited English Proficient (LEP) patients in order to reduce medical errors by obliging health care providers to fund language access and thus optimise quality of care (Grubbs et al., 2006). However, there is still a gap in gaining this service in the US because of the financial implications, which were estimated at \$268 million a year over a decade ago (Office of Management and Budget, 2002). A proposed solution is to provide untrained interpreters or private interpreters for LEP patients.

Flores and colleagues (2003) audio taped the conversation of 153 visits by bilingual paediatric patients aged 11 years in the paediatric outpatient department in an urban Massachusetts hospital. The audiotapes recorded the conversation between the patient, doctors and the professional hospital interpreter (Spanish interpreter) or *ad hoc* interpreter during a 7 month period. The conversations were then transcribed in order to identify medical

interpretation errors and the consequences of medical interpretation errors for the patients' health outcome. The result of this study found that there were 396 overall interpreter errors, which account on average about 31 errors in each encounter. The most common error was omission (52%), false fluency (16%), substitution (13%), editorialisation (10%), and addition (8%). All of these errors had a direct potential consequence for the health services (63%); most errors occurred when *ad hoc* interpreters provided the service.

Findings from other studies (Flores, 2005; Jacobs et al., 2001; Wilson et al., 2005) also suggest that a lack of trained interpreters limits the health services that patients receive. Aranguri and colleagues (2006) recruited sixteen Hispanic adult patients who were either Spanish monolingual or bilingual Spanish (English- Spanish) and nine physicians, in order to record and analyse their interviews in terms of physician –interpreter and patient interactions. Thirteen of the interviews included an interpreter, and three were conducted entirely in Spanish. The researchers discovered that using an untrained interpreter in the conversations between patients with English as an additional language and physicians might cause unsatisfactory communication. Therefore, training is important for both interpreter and physician in order to decrease the conversation loss and increase the effectiveness of the interpreted information. Any language barrier or medical interpreter error might affect the diagnosis which could have a direct effect on the medical treatment (Jacobs et al., 2001).

The World Health Organisation (WHO) (2000) stated that the United Kingdom health care provision is ranked as fifteenth best in Europe and eighteenth in the world. The principle is that the UK National Health Service is based on is free access to health care services (Chapman, 2010); this includes free access to interpretation services in UK hospitals. However, there are three language and advocacy service (interpreter) challenges in the medical sector in the UK that need to be taken into account:

1. Advocate - related challenges which includes personal skills development, the capacity for career building, ethnicity, culture values and gender;
2. Service and organisation related challenges which include health professional awareness and training, and commissioning and sub contractual arrangements;
3. Client related challenges, which are mobile populations, client satisfaction, ethnic and cultural values, and the range of recruitment in research trials (Ansari et al., 2009).

Hence the availability of adequate and appropriate interpreter services remains a challenge, regardless of cost.

2.3.5 Children and family involvement in the clinical decisions

It is important for children to understand their illness in order for them to be involved in decision making processes. However, this can be problematic. McCabe (1996) in his evidence review summarised factors influencing children's involvement in decisions about their medical care in terms of developmental issues such as cognitive and social development, clinical issues including childhood issues such as emotional and physical state, family issues like cultural background and religious affiliation, and situational issues like stress, anxiety. All of these issues may affect medical treatment; McCabe recommended that it is important for the paediatric psychologist to determine the level of involvement that the children have and bring ethical and clinical issues into consideration when involving the child's family in their medical decisions.

As children grow older the ability to either consent or refuse their treatment develops. In the case study presented by Harrison and colleagues (1997) to address the challenge that physicians faced when involving children in their medical decisions, it was argued that involving the family can raise ethical issues and can impact on the physician's work to assess children's capacity to decide. Furthermore, Hallström and Elander (2004) observed 24 children and their parents during the child's hospitalisation in order to identify the level of

child and parental involvement in medical decision making. It was found that both children and parents displayed different levels of participation in medical decisions; the researchers suggested that it is important for the nurses to promote the child's rights by making them feel that they are part of the medical team. Greenberg and colleagues (1999) conducted a pre-post comparative study to investigate parent's knowledge of post-operative paediatric pain management. This study demonstrated the effectiveness of an educational programme (video presentation) in improving parents' knowledge and in building a useful network to open discussion between parents with various levels of knowledge and health professionals. Greenberg et al., (1999) randomly chose 100 parents whose children were scheduled for inpatient postoperative pediatric pain care. The parents answered 30 questions before and immediately after viewing a video; the parents were asked the same questions, with significant improvement in answers. Without such educational input, the misconceptions of both parents and health professionals might affect their ability to communicate effectively.

Language ability also has an impact on issues of consent. Not all children have the same level of comprehension of the concept of consent, therefore, in order to determine the children's level of involvement it is important to consider children physically, intellectually, emotionally and personally (RCN, 2011). Ford and colleagues (2007) found that primary school age children may participate in their medical decisions; however, although they do not have a full capacity to decide, they can provide informed assent. The RCN (2011), in their guidance for nurses regarding informed consent in health and social care research, suggested that it is the responsibility of nurses to respect the autonomous decisions of patients regarding their treatment. As well as this, it is important for the nurse to acknowledge diversity among patients (including children) and consider factors such as ethnicity, gender, disability, religious beliefs, culture, language, and level of understanding when gaining informed consent. Therefore, nurses should deal with these issues and factors sensitively. Despite

attention being paid in the literature to children's issues regarding their involvement in clinical decision making; there is still a lack of research exploring how children with English as an additional language participate in their medical decision making and communicate pain verbally.

2.3.6 The impact of culture on pain responses

Culture has been defined as “a pattern of learned beliefs, values, and behaviours that are shared within a group; it includes language, styles of communication, practices, customs, and views on roles and relationships” (Betancourt, 2004:953). There are many early studies describing the relationship between culture and pain (Streltzer and Wade 1981; Wolff and Langley 1968; Zborowski 1952; Zola 1966) and a particular focus on differences in pain tolerance and attitudes toward pain (Wiesenberg et al., 1985).

Diverse family and cultural beliefs can lead to significant variations in how children learn about pain and how they behave when in pain (Keefe et al., 1997). However, Hadjistavropoulos and Craig (2004) propose that the patient's culture is not the only factor that affects assessment of pain; health professional cultures may also interfere with this process in the hospital setting. Furthermore, LaVeist and Jeter (2002) examined a national sample of African American, white, Hispanic, and Asian American children to test the hypothesis that doctor-patient race concordance is predictive of patient satisfaction. They found that ethnic minority children prefer interaction with physicians of the same race and ethnicity, as they can initiate social interaction to aid language use. To support this argument Green and colleagues (2003) in a brief review of the literature regarding the effect of ethnicity and race on the perception of pain concluded that Hispanic children tend to be undertreated for pain in comparison with non-Hispanic groups.

Language and linguistic diversity are ways that the cultural meaning of pain and the effective verbalisation of pain can be determined (Stanford et al., 2005). Almost a decade earlier,

Grypma (2002) offered a similar opinion, saying that language is the only way to determine an individual's culture. As Fabrega and Tyma (1976) stated in their early publication the expression of pain by an individual through using metaphorical words is one of the ways to detect the patient's culture and language influences, so for example lexical, grammatical, and semantic variations are examples of these influences. The value of language and literacy in all cultural groups lies in shared attitudes and beliefs (Espinosa, 2005). Cultural background has been identified as an important factor that influences pain behaviour and expression (Melzack and Wall, 1996). However, there are considerable differences within cultures in the expression of pain (Grypma, 2002). Despite strategies emphasising individualised health care, problems with quality of care persist for non-English, culturally-diverse, patients (Bernard et al., 2006).

Pain is one of the global experiences illustrating congenital insensitivity (the inability to feel pain) beginning at birth, which means that pain is not just understood through physiological and biochemical responses but it is self-possessed through sensory, emotional, and cognitive components (Rollman, 2004). In an experimental study using a multidimensional treatment to investigate the effect of ethnicity on the tolerance of chronic pain, Edwards and colleagues (2001) interviewed 337 adult patients (68 African American and 269 white) who were suffering from chronic pain using a standard clinical questionnaire to measure the patient's tolerance. The results suggested that sensitivity to noxious stimuli may be accompanied by an increase in sensitivity to harmful effects. African Americans displayed ethnic differences in reporting clinical pain, although the size of the ethnic differences was much larger for the magnitude tolerance of ischemic pain, which is caused by poor blood supply than clinical pain measure. It is even more critical for patients from different cultural backgrounds, because there is a different meaning of pain within culture in relation to biological variation, personal awareness and belief (Davidhizar and Giger, 2004). Zborwski (1952) stated that

there are a variety of attitudes across cultures toward different types of pain such as pain expectancy and pain acceptance. The studies reported here suggest that pain may be under or over-managed if cultural interpretation of pain is not taken into account,

Aun and colleagues (1986) stated that health professionals should pay attention to cultural background and language during the process of pain assessment and management. Language is one of the barriers that can lead to a decrease in the quality of care for patients with English as an additional language; therefore, a professional interpreter can help solve this particular problem (Jacobs et al., 2001). On the other hand, a shortage of language does not just affect the quality of care to the patients, but also causes burden and stress for nurses and doctors working in hospital (Bernard et al., 2006). Therefore, Ferguson and Candib (2002) suggested that training is important for health professionals to deal with ethnic minority patient's conditions. However, still further research is required to examine relationships between health professionals and ethnic minority patients in relation to cultural communication because, as Roberts and colleagues (2007) reported, there is limited research addressing communication barriers among minority language speaker patients and health professionals.

In order to investigate cultural attitudes, it is important for doctors to take into consideration how to distinguish between pain apprehension – pain tolerance reflected in a tendency to avoid painful sensations -, and pain anxiety which refers to the psychological status of patients caused by pain (Wolff and Langley, 1968).

2.3.7 Pain and Gender

There are other factors besides race and ethnicity that affect responses to pain, including age, gender, and language ability. A number of studies have suggested that there is a difference between responses to painful stimuli according to gender (Woodrow et al., 1972; Harris and Rollman, 1983; Chesterton et al., 2003; Miller and Newton, 2006). Miller and Newton (2006) reported that there are differences between males and females in the perception of pain.

According to Brooks- Brunn and Kelser (2000), females are more likely than males to report pain to health professionals; however, in an epidemiological survey of patients' pain, it was found that females have a lower threshold to pain than males (Vallerand, 1995). Fillingim and Maixner, (1995) reviewed the literature in order to identify the impact of gender on pain responses and found that females are more sensitive to noxious stimulation of pain than males. Therefore, they recommended further examination of gender responses to pain. Gender and levels of gonadal steroid are not the only factors contributing to this variation but there are also gender related social and behavioural factors which influence noxious stimulation such as lifestyle and any hormonal changes especially in females which might affect the responses to nociceptive stimulation. Further studies are needed to draw definitive conclusions about associations between pain and gender (Miller and Newton, 2006).

2.3.8 Pain assessment and pain measurement

Pain assessment requires a clinical and systematic approach in order to gain a picture of the patient's entire pain experience. However, pain measurement requires the quantification of one aspect of pain (Hain, 1997; Wood, 2004); this can be difficult to achieve because pain is a subjective phenomenon and the complexity of personal pain experiences can also lead children, in particular, to have difficulty expressing pain (Stanford et al., 2005). Assessment of pain among infants and children requires consideration of the child's age, developmental level and cognitive development, as well as communication skills, and medical diagnosis (Haley, 1985, Hamers et al., 1994).

Generally pain is measured using three methods: 1. self-report, 2. behaviour, and 3. physiological measurement, depending on the child's age and cognitive development (Morton, 1999). There are many valid tools that have been used to measure the intensity of pain in children (RCN, 2011). However, Erzinger (1991), in an ethnographic study to

investigate doctor's assessment of pain in Spanish speaking children, found that accurate pain assessment relies on a child's ability to describe the pain using spoken language.

One of the common problems faced by linguistic minority patients in the medical setting is the relationship and communication between them and health professionals (Isaacs et al., 2011). In describing pain children use many pain words; in a descriptive study Jerrett and Evans (1986) examined the vocabulary of 40 children aged 6-12 years during self-report of their pain experience. They found that children in this age group can describe their perception of pain; however, pain may also have a negative effect on language, and temporarily block the language (Schott, 2004). In order to determine the meaning of pain, especially among children with a different cultural background, it is important for the health professional to ask questions that help children to describe their condition in detail (Koffman et al., 2008). In a qualitative study, Koffman and colleagues, (2008) interviewed 26 Black Caribbean and 19 White adult patients with advanced cancer and found that pain assessment has a vital role in the patient's narrative and what they understand from their pain.

It is important for the nurse to have an understanding of the patient's culture; otherwise a poor assessment or other negative consequence may occur. In addition, nurses and doctors need to investigate the child's ethnicity in terms of their coping ability and the family's attitude toward their children's pain. Doctors also need to know a child's ethnicity before diagnosis or measurement of the children's intensity of pain (Todd et al., 1993). Thomas and Rose (2002) investigated ethnic differences in pain experiences of 84 Afro-West Indian, Anglo-Saxon, and Asian adult patients, and identified that there are highly significant ethnic differences in rating pain and it is important to develop appropriate pain treatment.

In a comparative study, Rømsing and colleagues, (1996) examined the relationship between a child's rating of their pain and nurses' pain score using two pain intensity tools (poker chip

and VAS tool) in pre and post operation treatment of 100 children aged 3-15 years who had been scheduled for tonsillectomy. Although, there was a significant correlation between the child and the nurse's pain score after analgesics ($r = 0.35-0.43$, $P < 0.001$), nurses underestimated the children's pain prior to analgesia. Therefore, even nurses, who tend to spend longer with the hospitalised child than doctors, are not always able to interpret the child's pain experience accurately (Rømsing et al., 1996).

The expression of pain is problematic for all children, therefore, unless the child can express pain in a way that can be understood by the receiver (health professional), communication will break down between the two parties. There are different tools that can help health professionals to assess children's pain. However, they are not always adequate because children need to have an age appropriate tool. Even when these tools are available, language barriers are one of the major problems that affect the expression of pain among EAL children, as identified earlier in this chapter. In adult patients, observing behaviour tends to be used as a pain indicator among those who have communication difficulties (Rhodee et al., 2007; Herr et al., 2006); this is also recommended when assessing children but has not been subjected to empirical study (Blount and Loiselle, 2009).

2.3.9 Pain and communication barriers

There are many barriers in the assessment and management of pain. Communication between health practitioners and parents is one of the important keys to improving pain management (RCN, 2009). In a phenomenological study, Simons and Roberson (2002) interviewed 20 parents and 20 nurses to explore the perceptions of both regarding post-operative paediatric pain management, and found that deficiencies in the nurse's knowledge were likely be due to poor communication. Therefore, poor communication can create an obstacle in the process of pain management (Jacobs et al., 2001). Furthermore, any deficit in communication between

health professionals and children who are patients can cause an emotional challenge (such as failure to cope, unpleasant emotions, and feeling miserable) to the patient (Byrne et al., 2001).

Communication can be problematic even with an English speaking child (Schmidley, 2001), and this problem is likely to be increased if the individual has limited English proficiency. Grubbs and colleagues (2006) conducted a telephone survey with 1200 Limited English Proficient (LEP) adults in 11 languages in order to raise awareness of the LEP language barrier in a health care setting. The results showed that the most significant factor that influences quality of care is language barrier; he suggested that utilizing an interpreter and using language concordance might improve the accuracy of the health assessment in the health care setting. Ferguson and Candib (2002) in their literature review study determine the influence of having increasing numbers of physicians from diverse linguistic backgrounds in order to improve the quality of doctor- patient's concordant relationship. From their findings they recommend that it is important to provide a doctor with a similar ethnicity to the patient in order for EAL patients to achieve effective, culturally competent care. Further in-depth research is needed to address culturally diverse patient's clinical communication (Bischoff and colleagues, 2003); this is particularly important if the doctor acts as both health professional and interpreter.

Recent study findings emphasise that it is important for nurses to ensure that the patient is able to explain what pain means to them by using a culturally sensitive pain assessment and asking many exploratory questions (Narayan, 2010). At the same time, nurses should have knowledge of cultural differences, in terms of interpersonal levels of belief, attitude, and communication skills in order to communicate effectively (Robinson and Gilmartin, 2002). However, despite attempts to encourage children to describe pain effectively, there are

critical gaps regarding their ability to report pain experiences, depending on the individual situation. At a broader level, further research is required to better explain the way in which nurses and patients understand and conceptualise the process of pain assessment in clinical nursing practice (Sloman et al., 2005).

2.3.10 Pain and the language of pain

Freedman and Calfee (1984) highlight the gap between everyday language and formal language. Language is the key to expression, and is also one of the most important ways used to manifest a person's thoughts and feelings (Bloom, 1998). Through language the person can communicate the meaning of words because language is used as a means of communication (Clark and Gerrig, 1990). As Wood and Bioy (2008) found, talking can make a child feel better because, in addition choosing the suitable word to express the feeling, it can lead to an accurate diagnosis and possible cause of the feeling. Three decades ago, when children with an acute or chronic condition were more likely to be managed in hospital, Savedra and colleagues (1982) found that hospitalised children are better than non-hospitalised in describing pain, because they have experienced more pain. Whilst the distinction between hospitalised and non-hospitalised is less relevant today, this study remains important as it highlights the relevance of language rehearsal. Therefore in order to determine the meaning of pain, especially among children with a different cultural background, it is important for the health professional to ask questions that help them to describe their condition in detail (Narayan, 2010). It has been suggested that the expression of pain is a personal feeling, so it needs 'private language' to express it (Craig, 1984).

Pain is also recognised as a subjective phenomenon that is expressed through public pain (physiological responses) and private pain (socio-culturally determined responses). Public pain is experienced and displayed through the physiological responses, while private pain is discussed as a part of a social relationship; the difference between the two types of pain is the

use of language and nonverbal symbols (Waddie, 1996). Wittgenstein, in his philosophy of psychology, stated that the expression of pain is a part of the pain itself and is not separate. Wittgenstein (1967) attempted to adapt his theory to nurses in a medical setting, as he proposed that nurses ignored silent patients, which may include young children and children with English as a second language who are in their first stages of learning English. Instead, nurses rely on physiological investigation. His theory stated that language is part of the pain experience arguing that only private pain can communicate the extent of pain. Because the inner experience of private pain is represented through corresponding language and some patients prefer to keep it private, there is a tendency to objectivise public pain through depending on physiological symptoms. As a result no language is required to express public pain. However, the private pain experience can be represented through various forms of public behaviour such as a verbal or nonverbal reaction to pain. For example as Wittgenstein (1968) argued that the word pain only expresses the presence of sensation and does not describe it. Therefore as Hadjistavropoulos and Craig (2004) argued, in order to understand the complex psychological process that represents pain control, it is important to focus both on `pain` as a subjective experience and on the way in which an individual chooses to communicate their pain to others.

Focussing on the usage-based model of language, Tomasello (2000) in an observational study suggested that observation of language in actual communication events can be used to determine the psycholinguistic operation of the individual. Irrespective of whether English is their first language; there can be no doubt that children may have problems with the acquisition of the language for its expression. Yuill and Oakhill (2010) found that 10-15% of children whose first language is English have a problem with English comprehension; therefore, it is likely to be a bigger problem for children with English as an additional language

2.3.11 Pain management and communication barriers in children

Communication is a mechanism for personal interaction (Daividhzar & Bechtel, 1998). One of the common problems faced by linguistic minority adult patients in a medical setting is the relationship and conversation between them and health professionals (Isaacs et al., 2010). Gimbler-Berglund (2008) interviewed 21 nurses in a paediatric department using semi structured interviews; content analysis revealed that a lack of cooperation between parents and health professionals and between nurses and physicians can affect the behaviour of children. Certain routines in the organisation and nurses' lack of experience or knowledge can lead children to be uncooperative. This not only impacts on personal interaction but it also affects the quality of care offered to the patient.

Language and communication are considered to be the most important factors that need to be addressed by nurses and patients because without adequate language patients may not gain the best outcome, (Todd, 1996; Weinick and Krauss, 2000; Woloshin et al., 1997). In their study of communication barriers with health service users who were not fluent in English, Robinson and Gilmartin (2002:457) identified that health practitioner education needs to establish a good "level of knowledge, cultural awareness, and communication skills." National UK guidelines for the management of pain in children also emphasise the need for nurses to have an understanding attitude toward the patient's position in order to determine their health problems (RCN, 2009).

Oligoanalgesia is an insufficiency in prescribing analgesics for patients with pain and depends on many factors such as gender, language, and severity of injury (Todd and colleagues, 1994). In a retrospective cohort study Todd and colleagues (2000) reviewed the records of physicians who assessed and treated the injuries of 217 isolated long bone fracture adult patients in the emergency department (127 of them were black and 90 were white

patients). Although, medical records indicate that they experienced the same level of pain, without taking ethnicity into consideration, the study showed that white patients were more likely to receive analgesia than black patients (74% and 56% respectively). As a result, ethnicity is identified as one of the risk factors that can lead to inadequate administration of analgesia in the emergency department (Todd et al., 2000). The priority of health care professionals in the emergency department is paediatric pain management (IASP, 2005); however, oligoanalgesia still remains a major concern of the doctor in emergency departments (Rupp and Delaney, 2004). As Heath (1989) notes, even low intensity pain is unpleasant pain. Despite technological developments in paediatric pain management, pain is still undertreated generally among children (Drendel et al., 2006; Rupp and Delaney, 2004; Stalnikowicz et al., 2005; Taylor et al., 2008).

Many other factors affect the process of assessing and managing children in pain, one of these is the use of invalid tools to assess and reassess pain intensity, which can result in inaccurate doses of analgesia and a misunderstanding of the subjective experience of how to conceptualise the level of pain (Stalnikowicz et al., 2005). A lack of nurse's knowledge about pharmacological science, fear about the side effects of analgesia, and respiratory depression in neonates may also affect the process of assessment and treatment of pain (Simons and Roberson, 2002; Taddio et al., 2006). However, Todd and colleagues (1993) argued that the under prescription of analgesia is not just due to these factors, but with some patients the perception of pain depends on cultural variations in sensitivity to pain. However, Mass and colleagues (1990) rejected the use of theoretical models; he noted that the human situation is complex and encouraged the nurse to find a way to encourage adult and paediatric patients to express their feelings.

Treatment of pain is a complex task for children in general and it might be increased problem for EAL children because self-report is not the gold standard for them. Despite all the attention paid to training nurses to be able to a good knowledge assessing and treating pain properly, still there are inadequacies in treating children who have English as an additional language.

2.4 Language

2.4.1 Language socialization and language acquisition

The term ‘language acquisition’ is used to describe the process of language learning competence at different ages, while ‘language socialisation’ determines how language becomes a tool of socialisation activities, and examines the social context and the appropriate use of language through a discourse understanding of the social context (Schieffelin and Ochs, 1986). Language is an indicator of social interaction and cognitive ability (Majid et al., 2004), social interaction plays an important role in the interpersonal and psychological processes which facilitate the learning and cultural knowledge used to organise and acquire communicative competence. Language socialisation and acquisition are integrated and are vital in order for children to play an active role as a person in society and acquire a language deeply; otherwise children are likely to repeat the words of others without understanding them (Ochs and Schieffelin, 2001). Language and cognition are not only achieved through socialization but are also achieved through the amount of exposure to the other language which enables the individual to identify relationships between language, thought and reality (Bialystok, 2002). When children build the reality of social interaction in the structure of language this leads to cognition (Scollon, 1982).

In terms of emotional expression, children become linguistically competent when they have the capability to convey their feelings to others and recognise others’ moods or emotions

(Harris, 2008). Language plays a vital role in understanding the language socialisation both as a source of information and as a resource for display of affect (Ochs and Schieffelin, 2008). With the intention of identifying how emotion impact on social action, there is a cross-linguistic analysis hypothesis which states that phonological morpho-syntactic and discourse features of language intensify and specify feeling, mode, attitude, and disposition (Bernstein, 1959). This hypothesis has underpinned many studies into language competence.

In terms of second language socialisation, Duff and Talmy (2011) in an ethnographical study to provide a broader description of culture, communities and second language acquisition, found that communicative competence and knowledge of value are important in acquiring a second language. As a consequence, language can be acquired in the environment with appropriate cultural meaning and social interaction processes (Ziglar, 2008). The term 'sociocultural knowledge' is used to refer to knowledge about grammar, morphology, syntax, phonology, lexis, and pragmatic language. Further, social interaction is also important; people can acquire the second language more easily when they are in the language culture or in the situation in which the language is used (Yang, 2009).

2.4.2 Language acquisition and age

There is difference between a person's language and speech. A person's language is the vocabulary a person knows and consists of all the words in their mental dictionary, while speech is a chain of decisions about the particular topic with particular persons and situations (Cazden, 1968). Therefore, it is important for children to have both speech and language with communication skills in order to develop the social and emotional aspects of their learning (Morgan, 2010). However, language acquisition and language learning are different concepts. Krashen (1982:10) proposed a different definition for each 'acquisition' is the gaining of early or primary linguistic data while 'learning' depends on linguistic rules and feedback. As

Vygotskiĭ (1978) reported, the expression of inner speech depends on the development of elaborated written communication. Starting at approximately 6 months of age, children's feelings are expressed through facial expressions which means that "novel entities develop" in order to signal to the mother that there is a positive or negative experience toward uncertain situations (Ochs and Schieffelin, 1989: 8). By the age of 10-12 months, infants begin to inform the care giver about their feelings through affective information that requires the care giver to understand the other's needs (Gotzke and Goss, 2007). Therefore social referencing plays an important role in both language use and language acquisition; social interaction between caregiver and child builds active linguistic communication because children at this age only use crying in order to meet their needs. Furthermore, children at age 13-24 months are more self-aware and have the capability to direct their interaction with the caregiver; in terms of linguistic ability, children at this age can communicate with others using expressive information to control utterances, request information, and discuss episodes (Owens, 2008). Children at age 25-36 months are able to understand reality, routine and can discover new ways to communicate with others. From a linguistic point of view, children at this age are using more linguistic cues (narrative) than non-linguistic cues (gesture). Hoff (2009) said that at age 20 -30 months children are able to clarify 75% of their requests. As well as this they can learn to use some emotional words to indicate sleep, distress, and dislike and also begin to use the word `please` when requesting things (Hulit and Howard, 2005). Between 37-70 months children are increasingly sociable and use longer narratives and their utterances might be clearer and communication also becomes more proficient.

Beyond five years, children attempt to imitate and repeat others' conversations, and can also learn more than one language (Owens, 2008). Interestingly, children aged between 5-7 years can speak fluently and confidently without grammatical errors and tell stories from their memory banks (Scottish Further Education Unit, 2005). However, they need external help in

order to form a question and respond appropriately if there is no visual clue to what the question refers to, for example like object, person or action in the setting (Child Development Institute, 2007). This acquisition and learning development reflects only on a child's first language (Johnson and Newport, 1989). As a consequence, language is the heart of personal expression and it is a key response to personal and fundamental needs. Therefore linguistic resources are used to express the language emotion, which includes not just lexical but grammatical and discourse structures as well (Ochs and Schieffelin, 1989).

2.4.3 Second language and age

Age is an active factor in developing a second language achievement (Bista, 2010). There are various motivations to learn a second language including: learning opportunity, individual differences and learning style, which all bring a new and different performance in the stage of second language learning. Children aged 5-9 years can learn to speak a second language more fluently, more quickly and more easily than younger children (Dicks, 2009). Further, Collier (1987) found that children as old as 8-12 are able to acquire a second language efficiently (Gleitman and Newport, 1995). Lenneberg (1967) proposed the 'critical period hypothesis', which means that the primary learning of first language acquisition begins from birth until early puberty; Richards and Schmidt (2002) refer to this period as a 'sensitive period'. On the other hand, Snow and Hoefnagel-Hoihle (1978) pointed out that second language acquisition happens faster and qualitatively better before puberty. They tested this prediction in a longitudinal study with 3 groups of monolingual English children; the first group consisted of children aged between 3-5 years, the second 8-10 years old, and the third group was children aged between 12-15 years old. They were all tested individually at school or home during their first year in Holland, and the session was audio recorded in order to check and score their acquisition of Dutch language. This was done by testing their pronunciation of words, auditory discrimination, sentence judgement, and vocabulary using the Peabody

Picture Vocabulary Tests (PPVT). The results of this study found that the fastest second language acquisition was in the third group who were aged between 12-15 years old. However, the lowest acquisition of Dutch language was the first group aged between 3-5 years old. Therefore, to determine whether or not this can be applied to second language acquisition in other countries, Johnson and Newport (1989) compared 46 native Korean or Chinese speakers who arrived in the United States between age 3-39 and who had lived in United States between 3-26 years. Their English Proficiency was tested in terms of a wide variety of English grammar structures. The results of this study showed that there is a strong relationship between the age of arrival and language performance, and demonstrated the advantage of earlier arrival over later arrival. They concluded that second language acquisition can be achieved mainly during the critical period of language acquisition between the ages of 5-15 years.

There is a complex relationship between bilingualism and cognitive development which may have a direct impact on the child's education (Costa et al., 2008), in the review of previous studies, Lee (1996) focused on three issues. First, he reviewed early studies in order to identify the relation between cognitive development and bilingualism, and concluded that bilingualism has a negative effect on cognitive development. However, he identified unreliability and shortcomings in the methodological approach in assessing the children's level of bilingualism. Second, in his review of recent studies he found that, for later approaches in studying the level of bilingualism, researchers depended on "balanced bilingualism" in assessing children's bilingual level, which means equal learning of both languages (p: 500). Finally, he examined actual theories, revealing strong evidence for the relation between bilingualism and cognitive development, such as: objectification, code switching, and verbal mediation. This showed that the active processing of linguistic

information into a coherent system can be achieved through this theory because language presents as an active tool in approaching the cognitive task.

Two decades ago, Flores argued that there is still a belief that low intellect is the result of a “genetic inferiority” in immigrants and any differences in language can cause deficiency (Flores et al., 1991:370). Therefore, labelling children as having an intellectual disability is a problem faced by children at school, especially children from low socio economic groups, bilingual children and children with English as a second language (Flores et al., 1991; Diaz, 1983). However, Fine (1990) disagrees with using the term “at risk” to describe EAL children because it defines these children in term of their Intelligent Quotient without addressing how their lack of language may have influenced their score. In addition, there are still some gaps in not taking balanced bilingualism` in to account. Therefore, imbalance in acquiring both languages, especially for young children who have just recently begun to learn a second language, can lead them to display weak intellectual ability in psychometric tests (Diaz, 1983).

2.4.4 Theory of language

There are several theories of language, Narrative is the way that children can present their past experiences, and moreover perceive shared ideologies and traditions (Shick and Melzi, 2010). Bernstein’s theory is concerned with speech rather than language and how the contextual constraints on speech can define social relationships. Children who can access an elaborated code can select from a wide range of alternatives, whereas, those with a restricted code have less language items available to them. As Parke (2001) stated, EAL children tend to use simple language in their narratives or story telling because they have a lexical problems, while English children use richer language. Furthermore EAL children have two levels of difficulty. Firstly, imitation, as supported by the study done by Champion and colleagues (2003) which highlighted children from different backgrounds who develop their

stories by repeating the stories of others in order to incorporate culturally preferred discourse features. Secondly, linguistic, which includes a lack of vocabulary and grammar.

Bernstein (1971) made the distinction between competence and performance, stating that competence is a child's ability to understand and access the rule system in terms of his or her speech, while performance refers to the culturally specific choices a speaker makes. Bernstein (2000) stated that EAL children can achieve and acquire the level of competence, but in order to achieve this stage they need to have an appropriate English curriculum at school.

Theory of mind refers to the ability of children to understand and explain their own thinking and comprehend the desires, feelings, and behaviour of others (Miller and Newton, 2006).

With regard to a causal link between language and theory of mind, Astington and Jenkins (1999) demonstrated that there is a strong relationship between the theory of mind and language, and there is no performance in the theory of mind without linguistic ability. As a result, earlier theory of mind performance tests did not predict the language outcome performance, but the language performance test predicted the performance on the theory of mind test. For example, the study done by Chandler and colleagues (1989) reported that three year old children, even with a sufficient understanding of a concept, cannot explain the task because of the complexity of language. Piaget (1954-1980) argued that both theory of mind and language depend on cognitive abilities, because if children have a weak language capacity, and at the same time have a good level of understanding the task, they can succeed at the theory of mind test, but they still need to acquire language to explain the task. There is support for this belief that language does not detract from the cognitive ability but only facilitates the ability to perform theory of mind (Astington and Jenkins, 1999). Taking theory of mind into account can help clinician to enhance the child's communication and language development (Miller and Newton, 2006).

2.4.5 Linguistic Diversity and culture

Over the last decade, the field of bicultural diversity has developed in both practical and theoretical aspects by examining relationships between linguistic, cultural and biological manifestations (Maffi, 2005). Through language, a person can describe their culture because language is the mirror of culture (Jiang, 2000). To support this idea Jiang conducted a survey with two populations: 28 postgraduate students and teachers who were Native Chinese speakers (NCS) and 28 Native English speaker (NES). In this survey the researcher selected ten words all related to everyday life: `food`, `clothes`, `family`, `friend`, `job`, `money`, `culture`, `success`, `happiness`, `love`. The participants were asked to list them in a table and were asked to write 6 additional words in front of each item. All the Chinese words were then translated into English. Through word association to the language items, Jiang (2000) explored the cultural content and found that all the words that were written by the Chinese reflected Chinese culture and the words were written by English speakers reflected English culture. Therefore, according to the philosophical views of Jiang, he argued that there is no culture without language and vice versa. For him culture is the `blood` and language is the `blood vessel`, without the blood the culture would die and without the blood vessel there is no structure for the culture. However, Jiang's study did not focus on words with similar meaning in both languages, which could lead to cultural misunderstandings. Spencer-Oatey (2000) argued that humans can represent the culture in general text structure through written and spoken acts. Although putting some words on the paper is not only reflecting the cultural background, it is important to consider semantic components of speech (Valdes, 1986).

There is a difference between children's use of English depending on whether they were born in an English-speaking country or elsewhere, as it will have been affected by the specific environmental stimulation (Gleitman and Newport 1995). Thus, it has long been considered important to understand how language behaviour and socialisation processes impact on the

ability to express culture (Sapir, 1921). Language is an active tool which is used to transfer cultural identity and meaning (Kramsch, 1998). In one of 12 experimental research projects undertaken as part of the study of nursing care research project, funded by Royal College of Nursing, Hayward (1975) investigated the impact of giving relevant information to postoperative patients to reduce their pain and anxiety; he concluded that language is the most important instrument of socialisation, and is an important part of human life. Therefore, trying to understand culture without taking socialisation and environment into account might affect the flow of the `blood stream`.

Figure 2.1 shows the points of articulation between culture and language (Liddicoat et al., 2003:9), with the left side indicating factors closer to 'pure' culture and the right side indicating those closer to 'pure' language. This diagram was formulated as part of a policy review for the preparation of teachers in Australia. However, it is of interest to this study as it proposes factors that affect this relationship from world knowledge to pronunciation and speech acts. This include the effects of world knowledge on understanding the culture in context, which means that culture is fundamental to the way people speak, read, listen, and write in terms of pragmatic norms, norms of interaction, grammar lexicon and pronunciation. As a consequence language form has a vital role in the transmission of the culture in morphological and non-morphological structures. For this study the right side of the continuum is of particular interest.

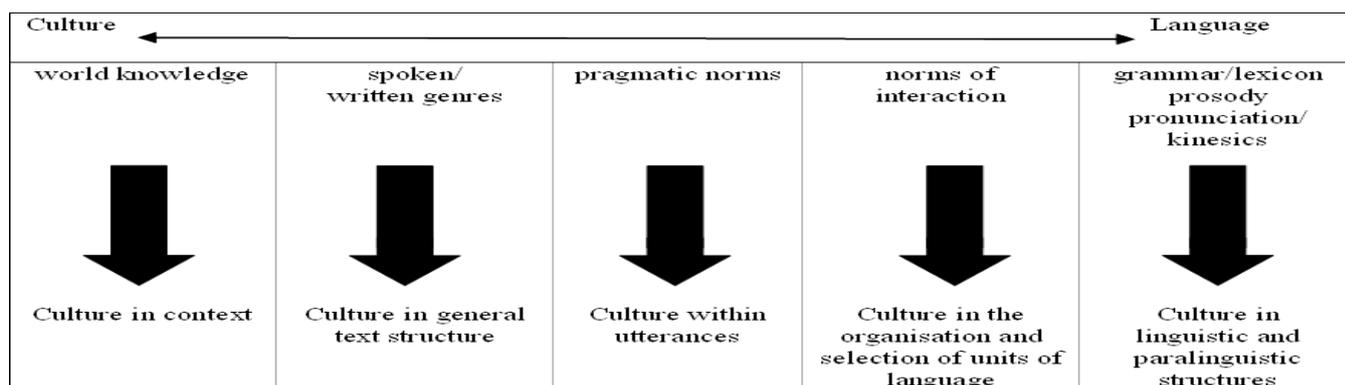


Figure 2.1 Points of articulation between culture and language (Liddicoat et al., 2003: p 9).

2.5 Theoretical framework

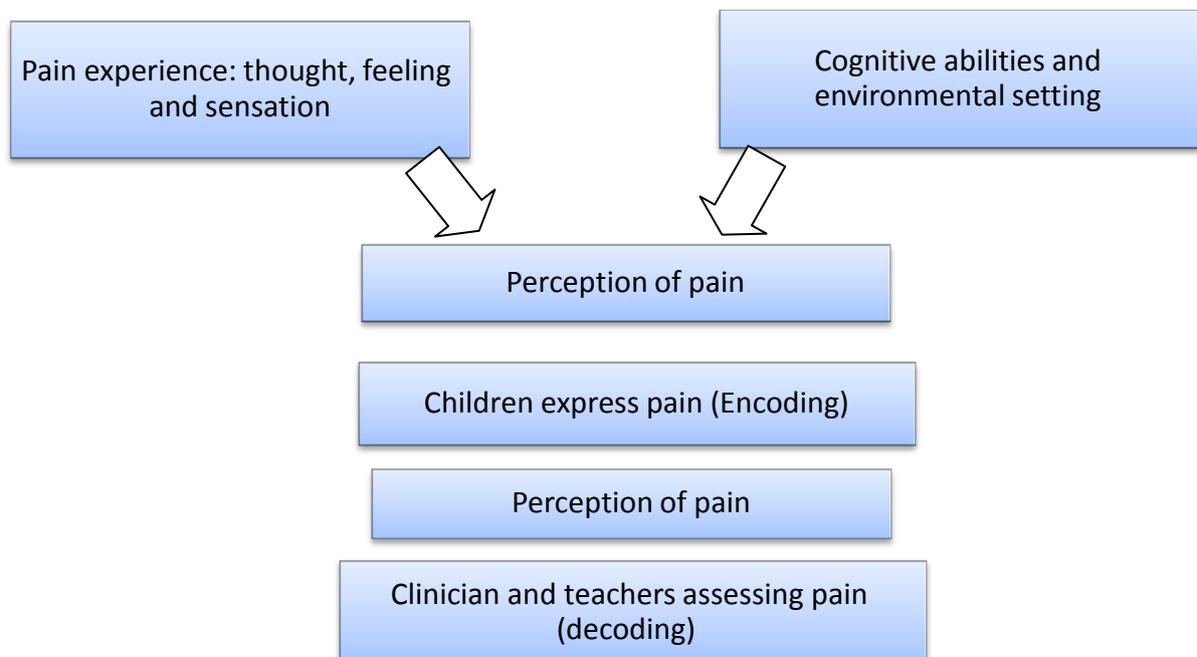
Socio- communication model of pain

The importance of language is emphasised in the socio-communication model of pain (Hadjistavropoulos and Craig, 2002). Language is used by children to express (encode) their pain; however, clinicians need to understand the language used in order to assess (decode) pain. This model also helps to explain how the use of interpreters adds an extra layer to the language transmission, increasing the opportunities for misunderstanding (Endacott et al., 2010). The socio-communication model of pain (Hadjistavropoulos and Craig, 2004) emerged from the literature review as a useful framework to explore the objectives for this study (see figure 2.1). In phase 1 of this study, the model was used to examine how children express (encode) pain. Findings from phase 1 are presented at chapter 4. Chapter 5 then re-examines the model in the context of phase 1 data and explains how it was adapted for phase 2 of the study. The main components of this study conceptual framework are:

- Encoding pain: this refers to how children perceive experience and express pain to others (Self-report of pain).

- Perception: this is the heart of pain communication, because the feeling of pain is essential for the body to respond to the external message (injury). It also motivates children to communicate pain (Craig et al., 2006). There are differences in pain thresholds among children depending on cultural sensitivity and cultural stoicism (cultural stereotyping) (Finley et al., 2009).
- Experience: this refers to determine the intensity of pain, children's feelings are important as a basic value to communicate the quality and quantity variations of pain in order to encode their pain to the health professional (Finley et al., 2009).
- Expression: this relates to using appropriate pain word to express their perception, which important for nurses to decode their pain, because it presents the value of children's sensory and emotional experiences, cognitive development, cultural background, and the context of pain (Finley et al., 2009). The model is explained more fully in chapter 5.

Figure 2.2 The Socio-Communications model of pain: (adapted from Hadjistavropoulos and Craig, 2004).



2.6 Limitations of the current literature

As Table 2.1 highlights, the literature review has shown that this is a topic area that has been under-researched. This literature review has provided an overview of communication of pain in children, common issues that children face during encoding of pain expression and the difficulties those health professionals face during the process of recognising pain among children. However, there are important limitations which this study attempts to address:

1. Most relevant research takes a functional approach to assessing children's capacity to communicate pain without taking into account the children's ethnicity and cultural background.
2. The review of pain definitions demonstrates the tendency to cover general aspects of the nature of pain, without considering linguistic issues.
3. Some of the research has particular methodological weaknesses in terms of study design, for example there is a lack of the use of qualitative methods. In much of the research, the research methods do not allow children the opportunity to talk about their experiences in-depth. In addition, some of the quantitative studies used insufficient sample size and did not include participants with different cultural backgrounds and language levels (Endacott et al., 2010). Further, children did not feature in most of the research therefore there was a lack of child specific design approach.
4. Most of the research has been conducted by native English speakers which may exclude EAL children. Therefore, there may be a cultural bias that is not acknowledged or addressed in most of the research.

In summary, whilst some previous researchers have addressed elements of the complex dynamic between language, communication and pain, none have examined how or whether language has an impact on how pain is expressed and assessed in children aged 4-7 years.

2.7 Summary

This chapter presented a review of studies to identify the impact of language on the expression of pain among children. The literature was classified in two parts: pain and language. The importance of language in the expression of pain focused on various definitions of pain, together with a review of previous studies that examined the impact language may have on the way pain is expressed linguistically.

Based on this review, it is important to conduct further research which explores the linguistic barriers to the assessment of pain among children in general, but especially primary school age children in key stage 1 who speak English as an additional language. Moreover it is essential that linguistic or communication difficulties are not seen as a *`de facto`* barrier to conducting research. The aim of this study therefore was to examine the impact of language on the expression and assessment of pain in primary school aged children.

The following chapter presents the design for the whole study, research questions addressed in each phase and methods, with the rationale, ethical considerations, and steps taken to ensure the methods are appropriate for use with children. Methods used for Phase 1 are then presented, with rationale for selection.

CHAPTER 3 RESEARCH DESIGN AND PHASE 1 METHODS

3.1 Introduction

This chapter begins with presentation of the Aims and Research Questions for the whole study and related ontological and epistemological considerations. This is followed by consideration of the criteria for designing a mixed method study: first the mixed methods design is introduced, secondly, the explanatory design approach selected for this study is critiqued, and finally, the mixed method approach is justified in relation to the study aim and research questions. Methods used for Phase 1 data collection are then presented and critiqued, with a rationale for decisions made.

3.2 Research Design

3.2.1 Research Aim and Research Questions

The **study aim** was to examine the impact of language on the expression and assessment of pain in primary school aged children aged between 4-7 years old.

The study aim generated two major questions which guided the study and correspond to the two phases of the study. As indicated below, each was addressed through specific sub-questions:

1. How do primary school children who speak English as a primary or additional language express and explain pain?
 - a. How do primary school children talk about pain?
 - b. What are the similarities and differences in the language used to talk about pain by children with English as a primary and additional language?
 - c. Are there differences in the perception of pain by children of different age, gender, language background and country of birth?
 - d. Is language ability affected by length of time the child has lived in the UK?
2. Does language influence the assessment of pain in simulated minor injury scenarios involving primary school aged children?

- a. What judgments do final year child health nursing students and nurses working in a Minor Injuries Unit make about the assessment of pain for children with different language abilities?
- b. Does the language of the parents affect decisions made about assessment of the child?
- c. Are there differences in the judgments about pain assessment made by students and MIU nurses?
- d. What difficulties do students and MIU nurses identify in assessing pain for EAL children?

Research Question 1 (and sub-questions 1a-1d) was addressed in Phase 1; question 2 (and sub-questions 2a-2d) was addressed in Phase 2.

In Phase 1, thirty seven primary school children (aged 4-7 years) completed a picture placement activity and took part in a focus group interview. In Phase 2, twenty child health nursing students and twenty nurses working in Minor Injuries Units completed a factorial survey. Phase 1 methods are presented in detail in sections 3.6-3.9 of this chapter and Phase 2 methods are presented in Chapter 6.

3.2.2 Ontology and Epistemology of the study

The topic of pain expression among children with EAL is not one that has been widely researched (Rollman, 2004). This study examined how children who speak English as a first or additional language discuss pain in order to determine the impact of language on expression and assessment of pain in primary school age children (key stage 1). Health researchers are increasingly pragmatic, which means the researcher needs to understand the reality and knowledge in the context of particular ontological and epistemological positions, sometimes referred to as an artificial dichotomy (Saks and Allsop, 2007).

In order to select appropriate methods and participants, the researcher needs to address:

“Beliefs about ontology (What kind of being is the human being? What is the nature of reality?), epistemology (What is the relationship between the inquirer and the known?), and methodology (How do we know the world, or gain knowledge of it)”. (Guba and Lincoln, in Denzin and Lincoln, 2005, p. 22).

These beliefs are also reflected in the research questions. For this study the questions acknowledge multiple realities – the need to capture the perspectives of children from different backgrounds (Phase 1) and nurses with different levels of experience (Phase 2) but also focused on participants’ judgments about pain. Hence a mixed methods approach, allowing use of both quantitative and qualitative methods emerged as the most appropriate design to address the research questions.

A number of different approaches to mixed methods can be taken; these are outlined below in section 3.2.3. However, underpinning the methodological decisions made in this study was Crotty’s pragmatic approach to mixed methods, as reflected below:

- Ontology: can be defined as ways of viewing the world – for example, realism, idealism. For this study constructivism was used as multiple realities and meanings are derived from participants view and tangible entities (Saks and Allsop, 2007). Constructed realities ought to match tangible entities as much as possible to represent the multiple constructions of individuals in order to generate the consensus theory (Lincoln and Guba, 1985)
- Epistemology: Used to define the reality through choosing the procedure that can be established to accept what the reality is (Hart, 1998)
- Axiology: The researcher’s ethical stance towards the role and the value of ethics. For example does the researcher put their feelings first and ignore the ethical considerations of the subject (Hart, 1998).

- Methodology: the importance of combining data sources to provide a wider perspective, both quantitative and qualitative data were collected and mixed in interpretation (see figure 3.1)
- Rhetoric: both formal and informal writing styles were used by the researcher and informal responses of the participants were included in study findings.

The descriptive explanatory sequential mixed method design was employed using qualitative and quantitative data collection (see the model in figure 3.1). The rationale for this is presented below. Other considerations are: access to the setting, recruitment, and ethical issues all of which informed the research design. These issues will be explored in more depth throughout the chapter.

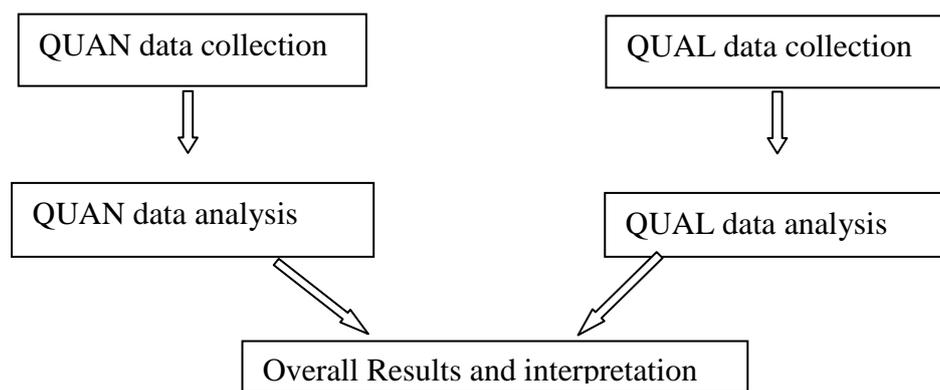


Figure 3.1 Explanatory sequential mixed methods design (based on Creswell and Plano-Clark 2007:46)

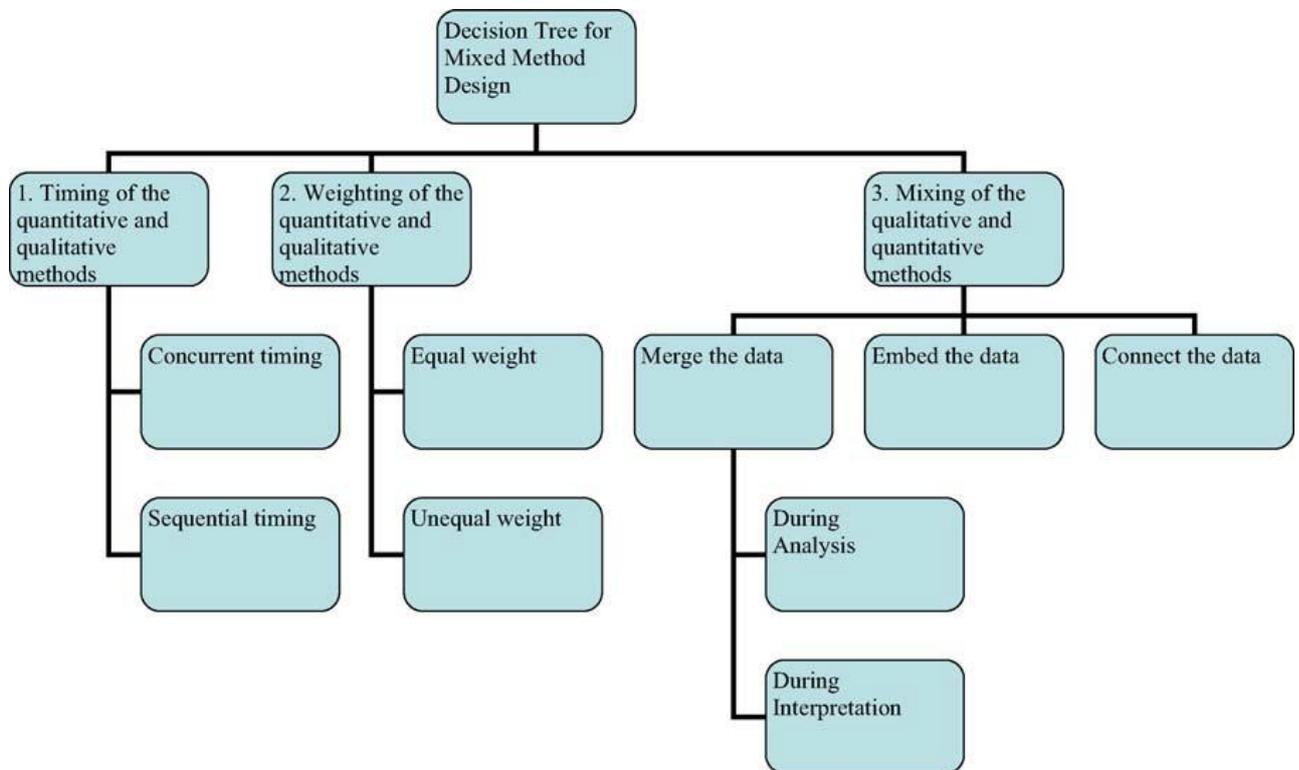
3.2.3 Mixed Methods

Mixed methods have been used widely over the past decade in health and social sciences as reflected in the extensive range of published paper and books (Azorin and Cameron, 2010; Carr, 2009; Creswell et al., 2004; Foss and Ellefsen 2002; Kemper et al., 2003; Lipscomb, 2008; Poole 1999; Tashakkori and Teddlie, 2003; Twinn, 2003; Wendler 2001). The combination of different methods in one study has a long history (see, for example, Miles and Huberman 1994). However, in the past decade, the advantages of using a formal mixed methods design have been widely recognised (Creswell, 2009). Creswell and Plano-Clark

(2011) reported that mixed methods provide an appropriate methodology to address health problems, and give a greater understanding of the study findings. Furthermore, a mixed method enables the researcher to investigate a complex research question in a more flexible way and posits both qualitative and quantitative data as important (Johnson et al., 2007).

Mixed methods allow the integration of different methods in the same study, and are often characterized by containing both qualitative and quantitative elements (Creswell and Plano Clarke, 2007). Qualitative data may be collected by using open ended interview (in depth interviewing), and field observation (participant observation) and analysed by coding the themes to develop the categories, while quantitative data is often based on close-ended questions, observational checklists, and chart audits that are analysed by using descriptive and inferential statistical procedures (Creswell et al., 2004). The mixed methods design chosen is dependent on decisions made in three dimensions: timing of data collection, relative weight of data sources, and integration of data (Creswell and Plano Clark, 2007; Creswell, 2009) (see figure 3.2). This depth of decision making about sequencing of data collection from the outset makes this a useful design to address the aims of this study. The way in which these decisions were made for this study is presented in section 3.2.6.

Figure 3.2 Decision tree for mixed methods design (Creswell and Plano Clark, 2007: 80; Doyle et al., 2009: 180).



Timing

The first stage is to decide whether the qualitative and quantitative methods will be used concurrently or sequentially. For example, qualitative data may be collected using interviews, followed by a structured questionnaire (a sequential approach). Alternatively, interview and questionnaires can be used at the same time (concurrent data collection). The important decision here is whether the data from one method needs to inform how the data will be collected for the second method. The timing of data collection and interpretation is integral to, and influenced by, decisions regarding the weighting of the quantitative or qualitative aspect of the research as well as the intended mix of the data (see Figure 3.2)

Weighting

Weighting refers to decisions made regarding the priority of the dominance of the methods used. Creswell (2009) stated that not giving both approaches equal priority affects the interpretation of the final results. Since the primary focus of this research is the experience of pain through the language of expression, the qualitative approach was given more weight than the quantitative approach, as this allows experience to be explored (see Figure 3.2)

Integration of data

The third stage is to decide where in the research the combination of data from the methods will take place. Many authors have suggested that if the researcher uses the two approaches concurrently, it will be difficult to carry out a mixed methods design successfully because of contradiction of results, so it is important to add more data collection or present both of the data in a parallel fashion so that the researcher identifies some confirmation of the new finding (Johnson et al., 2007). However, Ivankova and colleagues (2006) stated that sequential studies also have disadvantages, as it takes a huge amount of time and resources to undertake the different phases of a study and, because this sequential type of mixed methods data collection is conceptualised through four models (triangulation, exploratory, explanatory and embedded), the researcher has to decide, a priori, which model will be used and how to use the result from the first phase to develop the second phase (see Figure 3.2)

Mixed methods are demanding for the researcher because it requires extra time for data collection and analysis for both approaches (Creswell et al., 2003), because the researcher tends to get a different quality and quantity of information from different research approaches (Bryman, 2007).

3.2.4 Types of mixed methods

Creswell and Plano-Clark (2007) have developed a number of mixed methods designs and classify them into four main types: triangulation, embedded, explanatory, and exploratory. The key features of these will now be presented with an overview of their potential application in this study

Triangulation design

Triangulations design the most common and well known results using both approaches at the same time (concurrently). In order to best understand the research problem better, the researcher begins to implement qualitative and quantitative results in one phase equally in the same time frame (Creswell and Plano-Clark, 2011). While in traditional form of triangulation data from both data are integrated in the interpretation phase, mixed methods uses a data transformation model. In this model both sets of data are collected concurrently, and after the initial analysis, the data from one approach are transformed, whether quantifying the qualitative data or qualifying the quantitative data. However, in concurrent data collection it is possible that one type of the data might cause bias to the other. In order to prevent bias, it is important in this case to postpone the qualitative data collection until after the intervention of quantitative data collection (Creswell and Zhang, 2009) (see Figure 3.1).

Embedded design

The embedded design is the most popular design in health science research (Creswell, 2009). The embedded design deliberately places one of the approaches as dominant, while the other is supportive (Greene and Caracelli 1997). This method was previously called the ‘concurrent nested mixed methods design’ (Creswell et al., 2003); in this method the data are embedded either concurrently or sequentially. For example one of the approaches might be a

longitudinal study (quantitative) embedded with the smaller qualitative component or vice versa (Creswell and Zhang, 2009).

Explanatory design

The explanatory design gives priority to the quantitative phase and then uses qualitative data to explain the quantitative results. However, the qualitative phase has priority in selecting the participants. The combination of data in this design involves connecting the quantitative data analysis with the qualitative data collection procedure, for example the first phase might be to select the instrument and then to administer the instrument to the sample population, the investigator then use the qualitative data to explain the quantitative results.

Exploratory design

In exploratory design, the first phase begins with the qualitative phase which helps in the development of the quantitative phase, especially in testing the instrument (Creswell et al., 2003). This design is the opposite of the explanatory sequential design, for example after the qualitative results used to explore the quantitative data collection. The qualitative finding can be used to generate the sample population for the quantitative study.

Following consideration of these models, this study was based on the explanatory design approach in both phases. After the initial quantitative activity (picture placement activity), the researcher used qualitative data collection techniques to identify how children communicate pain. This type of design is often quantitatively driven in the first phase although the qualitative data may be emphasized in the second phase. In this study, quantitative and qualitative data were collected in both phases.

3.2.5 Issues in Mixed Methods Research

As noted above, mixed methods usually include qualitative and quantitative data collection, and require the researcher to be clear how the two elements complement each other, this will

depend on the demands of particular research problems, however the approach needs to be well designed, as failure to combine the data means failure to use a mixed approach in the study (Creswell and Tashakkori, 2007). Whilst the idea of mixing qualitative and quantitative research has gained popularity among researchers and has developed significantly (Greene and Caracelli, 1997; Leech et al., 2010; Sandelowski, 2000; Swanson, 1992; Tashakkori and Teddlie, 1998; Onwuegbuzie et al., 2010), there are a growing numbers of authors who question the success of combining qualitative and quantitative methods in one study (Bourgois, 2002; Kinn and Curzio, 2005; Kitzinger and Barbour, 1999; McKinlay, 1993). Plano-Clark et al., (2008) and Tashakkori, and Teddlie (2003) identified the six major basic issues of mixed methods research.

1. **Development of a nomenclature associated with mixed methods** is extremely vital and overdue. A common definition of both qualitative and quantitative research methods have been slow to develop, so many scholars would like to see greater consistency in the definition of terms. Differences in terminology and typology are more likely therefore to be problematic in the development in the field of mixed methods research.

2. The **utility of mixed methods research**, requiring the researcher to clarify the usefulness of using this approach and justify why methods should be combined in one study. Generally this enables the researcher to simultaneously answer confirmatory and exploratory questions and therefore generate a theory in the same study. For this study, the importance of using mixed methods is to determine the ability of children to quantify the intensity of pain (confirmatory question) and to capture in depth experience used to talk about pain in order to qualify the data (exploratory question).

3. The **research paradigm is very practical**, as pragmatism can be considered to be the best paradigm for justifying the use of mixed methods research and to support the

use of both qualitative and quantitative method in the same study (Tashakkori and Teddlie, 2003).

4. **Design issues**, the typology of mixed methods design includes five criteria (the reason for choosing the method, types of data collection and analysis, priority given to qualitative or quantitative methods, implementation whether concurrent or sequential, and the integration phase between qualitative and quantitative data (Creswell et al., 2004), therefore the researcher needs to ensure that the research design is built on these criteria.

5. **Drawing inferences**: inferential statistics are based on sample selection and sample size and therefore statistical analysis is limited by the inclusion of qualitative data because the distribution is unknown; this can lead to a lack of interpretation of data because of the limited capacity of the researcher to integrate different types of data in the analysis phases. Most issues arise in terms of coding and counting of codes to convert the conversation to the numerical codes in order to quantify the qualitative data (Bazeley, 2002).

6. **The logistics** of conducting mixed methods research which means combining at least two methods together in a single study.

Although a mixed methods approach has drawbacks it also has advantages: it could be argued that mixing both qualitative and quantitative approaches allows the researcher a deeper understanding of the complex issues rather than exploring them in separate studies (Creswell and Plano- Clark, 2007; Creswell, 2009). It provides a statistical method that allows the quantitative data to expand information derived from the numerical data to support the narrative data gathered from qualitative approach. It is a valuable method to communicate the needs of individual and groups of individuals who are underrepresented (Mertens, 2003; Punch, 2002).

Supporters of mixed methods studies argue that mixed methods gather much more comprehensive data in terms of both forms of data in a single study than do quantitative and qualitative separately (Creswell and Plano-Clark 2007; Newman and De Marco, 2003). This is supported by Onwuegbuzie and Leech, (2004) who reported that in recent years the advantages of mixed methods have been increasingly acknowledged. Indeed, Poole and colleagues, (1999) and Doyle and colleagues, (2009) suggested that the future of nursing and health research lies in mixed methodologies because of the increased validity/credibility provided through this approach (Creswell and colleagues, 2004), as using a purely quantitative approach might have a negative impact on the development of nursing theory (Poole and colleagues, 1999). It is important to make three main decisions before choosing the particular type of mixed method design (Creswell and Plano- Clark, 2007), which are: identifying the use of theoretical lens, identifying the data collection procedures, and identifying the data analysis and integration procedure (Hanson 2005).

3.2.6 Rationale for using mixed methods in this study

Mixed methods research is not designed to replace either of qualitative and quantitative approaches but rather to draw from the strengths and minimize the weaknesses of both. The main purposes for performing mixed methods are triangulation, complementarity, development, initiation, and expansion (Greene et al., 1989). The triangulation gives the study a greater validity by looking for confirmation between the quantitative and qualitative data. Using a mixture of approaches; the complementarity enables the researcher to see the whole picture of the study phenomenon and the data can be used to clarify each other. The initiation, which looks for the new perspective in order to offset weaknesses and provides stronger inference which helps to redesign the research questions (Creswell, 2003). Then using the findings of one method can help develop the structure of the other.

This mixed methods study was conducted in two phases. For phase one, two methods were used:

1. A quantitative method to identify the children's rating of the pain depicted in paediatric pain inventory drawings.
2. The drawings were also used qualitatively, through the use of focus group interviews with groups of English monolingual and English as an Additional Language primary school child: Drawings from the Pediatric Pain Inventory (PPI) were applied in this study in order to trigger discussion and capture the language used by children to describe pain (Lollar et al., 1982).

For phase two, child health nursing students, and Minor Injuries Unit (MIU) Nurses completed a factorial survey to make judgments about management of fictional pain scenarios. This was followed by an open question for each scenario.

In both phases qualitative data was used to expand on quantitative data incorporating the qualitative approach as the priority method and the quantitative method as a supportive method (see Figure 3.1). The qualitative and quantitative methods were carried out sequentially because the first phase contributed to the second phase. Creswell and colleagues (2004) stated that a sequential approach is the suitable approach when one of the methods is used to develop the other method. Both quantitative and qualitative approaches were required for this study because children needed to be familiar with these PPI pictures before they were discussed during the qualitative phase. For second phase also quantitative and qualitative approaches were required, as the decisions of the respondent being examined relate to assessment of pain through factorial survey, then factorial survey was also designed to further our understanding in order to identify the difficulties that respondents face when assessing pain.

3.3 Role of the researcher when interviewing children as participants

It is important as a researcher to create a good relationship with the children so that they would want to continue throughout the research process (Powell and Smith, 2009). In order for the researcher to respond sensitively and appropriately to a diversity of behaviours of the children, it was important to have a thoughtful approach to the situation and display specific and different skills from those involved in researching adults (Punch, 2002). Children have a different view of the world from an adult, which needs to be understood by the researcher (Westcott and Littleton, 2005). When interviewing children it is necessary for the researcher to use clear and simple questions and to be aware of the fact that children often give “socially desirable responses.” (Heary and Hennessy 2002:51) especially for those children who have a different ethnic backgrounds (Hopwood et al., 2009). It is advisable that the researcher adapt a form of communication that is familiar to the children, such as using informal words like `mummy` and `daddy` when asking questions in order to obtain accurate natural responses. In addition, it may be necessary to use more images to encourage children to focus and concentrate (Grieg et al., 2007).

In phase 1 of this study interviewing children involved communication between the researcher and participants in which they collaborate on a narrative, or a story telling in order to get an active understanding of the material (Alldred and Burman, 2005). When planning to involve children in a research sample, it is important for the researcher to consider child's age, physical abilities, psychological learning abilities, race, and ethnicity (Davies and Westcott, 1999).

3.4 Using focus group interviews

There has been an increase in the use of focus groups as an alternative to the traditional individual interview (Heary and Hennessy, 2002). Krueger and Casey (2000: 5) describes

focus groups as “a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment.” Using focus groups, the researcher can see the world of the participants, determine the participants’ perspective, and examine the logic behind participants’ thoughts or behaviour, as well as giving them the opportunity to express their feelings in a relaxed setting. Using a focus group to identify cultural knowledge and to access the language participants use to think and talk about a topic can help researchers formulate a conceptual framework (Hughes and DuMont, 1993). Although researchers require the participants to discuss the research questions and therefore to have a good developmental ability, the main strength of focus groups over individual interviews lies in the synergy created by the conversational nature of data collection (Onwuegbuzie et al., 2009). Focus groups have flexibility which allows the researcher to combine qualitative and quantitative data (Morgan, 1997), for example encouraging a group to come to a consensus such as commonly used in nominal group techniques.

It has been demonstrated that when the focus group is used as a method of data collection with carers, participants value the opportunity to discuss problems with their peers, and gain benefit from the empathy of other participants (Chambers et al., 2001). Kitzinger (1995) said that focus groups encourage the researcher to ask and talk to the whole group instead of asking and talking individually to each person.

3.4.1 Considerations in use of focus groups in children

Until the 1980s, focus group methods appear to have been used with adults, limited publications then appeared documenting their use with children (Heimann-Ratain et al., 1985). There followed a gradual growth of focus groups with children. Heary and Hennessy (2002) suggested that in eliciting children’s views on health related subjects, focus groups are a helpful method to identify and learn the children’s ideas and opinions.

The depth of data obtained on a range of sensitive topics suggests that the use of focus groups provides an effective method of collecting qualitative data within groups of children who have English as a primary or additional language, and to assess children's talk about pain, because it allow them to explore their knowledge, perceptions and experiences (Heary and Hennessy, 2002). In addition, this is also valuable for the researchers to be familiar with the developmental changes among children's understanding of health and illness, especially when the children ask inappropriate questions and misinterpret information during the focus group interview (Damon and Lerner 2006).

A focus group was used because a structure interview require a huge amount of time to be invested and a questionnaire was not suitable because participants of this study in this phase were children and children might not be literate enough to complete a questionnaire (Hannan, 2007). Focus group interviews have been previously used in studies examining children's experiences of pain (Heary and Hennessey, 2002; Kitzinger 1995), as they allow the children to take part in the discussion, and to give them confidence within the group.

There is some debate around the validity of children's opinion; Hill (2005) states that children are unreliable and not fully formed individuals to express reliable opinions because of their lack of maturity and rationality. Lewis (1992) pointed out that children in focus groups may take on themes from the other children rather than express their own opinion. Nevertheless, it is important to determine the children's view of the world (Levine and Zimmerman, 1996).

Focus group interviews were used as they were likely to generate more narrative than individual interviews; this approach has been previously used to discuss sensitive topics with children (Hoppe et al., 1995). Focus group interviews are a valuable method for understanding the children's experiences about a specific topic, drawing on their own personal experience rather than objective investigation. For example, in this study it is

important to determine the ability of EAL children to discuss the topic of pain in their second language which is English.

Focus group interviews provided a way of observing a normal conversation between children and examining the language they use when discussing pain. Indeed many researchers believe that focus group interviews engage children and reduce the pressure and embarrassment upon children when answering questions and they encourage support from the others in the group (Gibson, 2007).

To increase the negotiation, communication, interaction, and control, it is important to focus on particular dynamic groups, such as families and friendship groups (Eder and Fingerson, 2001). To obtain an adapted situation and to motivate children to reduce anxiety, it is necessary to meet them in a flexible setting such as school or home environment (Kitzinger, 1995). Hill and colleagues (1996) argued that the school is the best place to run the focus group for the children because they are more comfortable and it is also enabled to use of entertainment materials like games, drawing material and exercise to encourage them to integrate with the group (Greig et al., 2007).

3.4.2 Ethnographic principles in focus group interviews

Ethnography is a “distinct type of research where the knowledge that is produced depends on the researcher taking part in close social interaction with informants over extensive periods of time” (Christensen, 2004: 166). Ethnographic research seeks to uncover cultural rules; in order to achieve this, the researcher needs to understand what the rules are, how they have developed, and when they are and are not applied. This is usually achieved through the researcher living, working, and observing the cultural group. The intent of this study was not to provide `ethnography` of children who have English as an additional language. Indeed the increasing acceptance of qualitative research has led to greater exploration and investigation

and has contributed to knowledge development. If the study uses ethnographic methods, the interviewer may not capture the language used by interviewees during discussing pain through these PPI pictures. Therefore, observing them is not enough to capture the linguistic features of the children. However, it was important for the researcher to spend time in the normal cultural setting in which the data collection focus group interviews was to take place. This allowed the researcher to appreciate the normal rules governing conversation between the focus group participants. In particular it was important to ensure that the usual 'classroom rules' were applied during the focus group interviews.

3.5 Ethical issues

3.5.1 Potential risks of involving children in research

Very little has been published about ethical issues involved in focus groups, in order to protect research participants, safeguards need to be in place and most professions have guidelines to ensure that ethical principles underpinning clinical practice are adhered to in the conduct of research. According to Doyle (2000) the main ethical principles that are relevant to research with children are: first, the experience of the researcher and the project staff in the field of child cognitive development and their emotional and social needs. Secondly, research staff and participants must be informed fully about the purpose, methods and intended possible uses of the research and about any risk involved in participating in the research. The researcher must respect the child's parents and gain their agreement about their child's participation in the research and keep them informed what is going on. Gross (2010) stated that informed consent for parents and assent [verbal agreement] for children would be required for participation in the research. All these concepts need to be explained to participants at the time of gaining informed consent, which needs to be in place before any research can be carried out. The researcher also must take in to consideration the child's emotional state before recruiting them to take part in the study.

Thirdly, confidentiality of information supplied by research subjects is essential. However, confidentiality is challenging in a focus group interview as it raises the problem of the children repeating information outside the group (Lewis, 1992).

Fourthly, the anonymity of respondents must be respected and fifthly, harm to research participants must be avoided and the children must be protected from any physical or psychological hazards and harm. Sixthly, the researcher must be sure that the research topic does not put any pressure on the child and that the research topic is appropriate to the children's age. The researcher must provide a strong reason for conducting the research in a school setting, for example in this regard, before choosing the study setting the researcher must ask them if this project has any benefit to the children such as learning something by the end of the research. It is much better if the children are interviewed in the classroom and among the group rather than individually, as children may be confused by a formal interview, and in a group interview children feel more comfortable as they can stay with their friends in a class.

3.5.2 Ethical issues related to the study

In terms of this study, the following safeguards were put in place to protect the participants from harm. The University of Plymouth depend on six core principles, which are quite similar to Doyle (2000) ethical considerations of children involvement in the research, but they have added one more, which states that any conflict of interest or partiality must be made clear in order to ensure the independence of research. The manner in which these principles were applied in this study is outlined below:

1. Informed consent

Informed consent was obtained from the children's parents who had learnt of the study through the participant information sheet (Appendix 2). Care was also taken to ensure that the

parents' information sheets and consent forms for their children were arranged so they would reach them in plenty of time. The researcher should make sure that the children have the time and are freely taking part in this process even if their parents have already given consent. Children do not have the legal right to consent but they are able to give assent once they understand the procedure of data collection, and they also have the right to withdraw at any time (Bray, 2007). The language ability of each individual child was assessed as part of the study to ensure that the children could understand what they gave assent to. Through the teacher consent forms were given to the parents; the researcher and the observer attended the school on two occasions after school to answer any queries from parents and in case there were any problems in understanding the information sheet (fifteen of the families spoke English as an additional language). One week later the researcher collected the signed consent forms from the school reception. Given the number of languages spoken by the families, and the school policy to provide all written information in English only, it is acknowledged that parents who do not speak English may have excluded their children from the study. This potential source of bias was discussed with the School; however, they required the study information to comply with the school policy and be provided in English only.

2. Anonymity and confidentiality

The use of focus group interviews, rather than individual interviews, inevitably results in a loss of anonymity. Similarly, children of this age group are not likely to have a well-developed sense of confidentiality. Complete confidentiality can never be assured with focus group interviews. However, the participants (children) were not being invited to talk about their own experiences of pain hence the likelihood of discussion including content that might be considered confidential was minimal. Consistent with University ethics policies, local

safeguarding procedures were followed should a child reveal material that raises safety concerns.

There was also reassurance for the parents and teachers about anonymising of data from interviews and focus groups by using participant numbers, not names. Only the researcher was involved in transcribing data, and both data and transcripts were kept in a locked drawer or a password-protected computer file. In addition, permission was sought from the school to capture demographic data for each child (name, age, and class teacher) in order to organise data collection. Following data collection, these data were de-identified, with the names of children replaced by code numbers and the identity of children taking part in the study was not available to anyone outside of the research team. Data collected for the purposes of the study (including English language testing) were not included in the child's portfolio at the school

3. Openness and honesty

Children and parents were fully informed about the study and the nature of their involvement. Steps were taken to ensure rigour of data collection. Relating to openness and honesty, focus group interviews were conducted until the same themes were repeated and no new themes arose (saturation).

4. Prevention of harm

In this study the researcher and observer obtained a Criminal Records Bureau check prior to the ethics submission. The risk to participants was considered minimal in terms of physical harm; it was possible that they may experience distress due to unfamiliarity with interview procedures, and unfamiliarity with the researcher. They were offered the opportunity to have their 'supporter' available in case any problems should occur. Support from the school counsellor/school nurse was available for any children who appeared to be distressed by the focus group discussions.

3.6 Phase 1 Methods

During Phase 1, two methods were used in focus group interviews with groups of primary school children:

1. Use of drawings from the Pediatric Pain Inventory (PPI) to measure children's rating of situations that are likely to cause pain (Picture Placement Activity).
2. Use of a small sample of PPI drawings to trigger discussion and capture the language used by children to talk about pain (Group Discussion);

Data collection took place in the children's normal classroom setting. Children were seated around a table at the back of the classroom whilst the rest of the class carried out their usual activities. The Phase 1 methods are described in detail below.

3.6.1 Picture Placement Activity

Pain assessment consists of a clinical and systematic approach to get a picture of the individual's entire pain experience; however, pain measurement requires the quantification of pain (Hain, 1997). As noted in Chapter 2, both assessment and measurement are essential for accurate management of pain (Miller and Newton, 2006).

Drawings can be used as a projective technique with children to communicate emotions, feelings, and perceptions. However, when drawings have been used in previous pain-related studies the child has been required to draw their own pain, rather than recognise pain in others. This use of drawing own pain would not necessarily elicit language used to describe pain and so was not considered appropriate for this study. When children are shown a picture it encourages them to talk about what is happening in that picture and what that picture means to them; hence for this study the researcher used drawings taken from the Pediatric Pain Inventory (Lollar et al., 1982) to trigger discussions about pain.

Pediatric Pain Inventory

The Pediatric Pain Inventory (Lollar et al., 1982) was developed to collect data on children's perceptions of pain. The Pediatric Pain Inventory (Lollar et al., 1982) comprises a series of hand drawn pictures originally developed to collect data on hospitalised children's perceptions of pain, and which is considered to be a valid and reliable tool for this age group. The full inventory consists of 24 line drawings in four settings (medical, recreational, activities of daily living and psychosocial) (appendix 3), each depicting a potentially painful event. The drawings are intended to assess the hospitalised children's perception of the intensity and duration of pain in each drawing.

In the original development of the tool, internal consistency was computed for intensity and duration with all four types of setting (medical, recreational, activities of daily living and psychosocial), with alpha coefficients ranging from 0.41 to 0.76 for intensity and 0.49 to 0.70 for duration of pain. The lowest alpha coefficients in each case were for the drawings depicting medical pain (0.41 and 0.49). Validity was examined by the original authors in a number of ways. Firstly the dimensions of intensity and duration were examined; there was a very low correlation between these two domains, indicating discriminant validity, hence allowing Lollar and colleagues to determine that they were measuring different constructs. Secondly, Lollar and colleagues carried out analysis of variance to assess differences between the levels of pain for the four dimensions. The means were significantly different both for intensity $F(3, 1499) = 114.4, p < .001$ and for duration $F(3, 1447) = 148.9, p < .001$. In particular, psychosocial pain was perceived by the hospitalised children in Lollar's (1982) study as significantly less intense than other types of pain and medical pain was perceived to last longer. Again, this highlights the discriminant validity of the different dimensions. To explore convergent validity a correlation matrix demonstrated that all 24 items correlated most highly with the original category in which they were placed (medical, recreational,

activities of daily living and psychosocial). For this study, the drawings were used simply to encourage children to, firstly, examine whether children from different language backgrounds would make different decisions about the intensity of pain in each picture, and, secondly, to encourage children to talk about pain. Hence it was not necessary or appropriate to establish validity and reliability in the same way as Lollar and colleagues (1982) did for the original development of the tool.

In order to avoid 'leading' the participants, the drawings show blank faces to avoid emotional cues and are non-specific with respect to gender. For Lollar's original (1982) work and for the purposes of this study, this was an important consideration as it required the children to make their own judgment, without relying on facial expressions in the pictures. Further, in Lollar's original work, children responded differently to different categories of picture, for example the pictures showing a medical setting resulted in different responses from those in the psychosocial, recreational and activity of daily living settings. The published account of the authors' work in developing this instrument did not take account of the age of children, in terms of their ability to understand some of the pictures, especially the psychosocial pictures. However, for those who have a physical disability, it was identified that they might respond differently to the psychosocial pictures than physical pictures (Lollar et al., 1982). However, it is not a suitable instrument for the nonverbal population. As a consequence, this instrument is more likely to be appropriate to use for research than for clinical practice.

3.6.2 Phase 1 Sample and Recruitment

The primary school age children age 4-7 years were recruited from a local primary school. Gaining access to the study site for data collection began by seeking consent from the Head Teacher. Following this a meeting was arranged with the school Parent Support Advisor, to ensure that the parents had as many sources of information about the study as possible. Following this meeting, the study was explained to the class teachers. Through these teachers

the consent form was given to the parents, one week later the researcher collected the signed consent forms from the school reception.

Sample

The research questions were addressed through data collection with primary school aged children (aged 4-7) with English as a primary/sole language and speaking English as an Additional Language (referred to as monolingual and EAL respectively). Data collection took place in one monolingual and one EAL group for each of 3 year groups (Foundation, Year 1, and Year 2), a total of six groups. The separation of language and age groups was a deliberate attempt to reduce any dominance of English over EAL speakers (or vice versa), ensuring all the voices of children were heard.

Data collection was timed to fit in with the usual school timetable, with the agreement of the school, hence took place over a number of school days. It is important for the researcher to meet the children informally and understand the study setting before data collection. To familiarise themselves with the school environment, the researcher, and observer spent some time in the classrooms in the two weeks preceding data collection. This process assists the children to become familiar with the researcher and prepare them for the research.

3.7 Data collection procedures

3.7.1 Picture Placement Activity (PPA)

Picture selection

For this study, 17 of the 24 Pediatric Pain Inventory drawings were used; the medical drawings were omitted as the purpose of the study was to examine the language that children use to describe pain, rather than evoke memories of their own painful medical experiences. In addition, the drawing depicting a child getting an electric shock via a wall socket was omitted on advice from the teachers.

Conduct of the Picture Placement Activity

Initially, the researcher introduced herself and the observer to the children and described the whole procedure and agreed ground rules with the children. In each focus group, the children were encouraged to look at each picture and decide whether it should be placed on a red, yellow, or green paper, depending on their perception of the level of pain intensity. (red = a lot of pain, green = some pain and yellow = a little pain, see Focus Group instructions at Appendix 4).

3.7.2 Group discussion

The group discussions allowed the researchers to explore and compare how different groups described and discussed pain, and to assess whether children with EAL used different linguistic expressions to describe pain (see focus group guide at Appendix4). The group discussions used 3-4 pictures from the PPI to generate further discussion about pain. The following questions were used for each picture:

1. What would the child in the picture say?
2. What would the child in the picture tell his mummy or daddy?
3. What would mummy or daddy do?
4. What would happen then?

The first two questions elicited data relevant to the study objectives; the latter questions were added to allow the children to describe a positive outcome to the incident and to provide greater opportunity for the production of narrative. Pictures for the group discussions were selected based on the amount of narrative triggered by the drawing during the PPA. In some groups the children asked to talk about particular pictures.

This second activity took a qualitative approach using a focus group interview in order to capture the language used by children when they discuss or communicate pain, for example

after having shown the picture of bicycle fall, they began to tell a personal story. The observer was present in the focus group interviews to take notes of nonverbal communication and the dynamics of the groups (Greig et al., 2007); all focus groups were audio-recorded.

3.7.3 Demographic data

In order to interpret study findings, a number of demographic details were collected using a brief questionnaire completed by parents at the time of consent (see Appendix 5). These items were: chronological age, length of time at the school, length of residence in the UK, language spoken at home by both parents. Following the PPA and group discussions, the vocabulary of each individual child was assessed using a standardised lexical test (British Picture Vocabulary Score version II - BPVS II) (Dunn et al., 1982). These data were collected solely for the purpose of the study and were not included in the child's portfolio at the school.

Assessing language comprehension needs to be specialised for EAL children; there is very little research on assessing second language acquisition especially in terms of culturally appropriate assessment instruments (Chan and Sylva, 2006; Espinosa, 2005). BPVS II is considered to be an appropriate valid and comparable instrument to assess receptive language among this population. The test uses multiple-choice responses to standardise the assessment of encoding and decoding vocabulary and can be used with children aged 3-8 years. The test consists of a total of 168 stimulus words that are arranged in 14 sets of 12 items. The children are asked to point to the picture that they think best represents the word spoken by the tester (Dunn et al., 1982).

Each focus group interview took between 30-50 minutes and the individual BPVS II test with each child took 15-20 minutes.

3.8 Pilot work

Whilst focus groups have been used extensively with this age group as well as more generally for collecting sensitive information from children (Hoppe et al., 1995), at the time of data collection there were no previous studies specifically aiming at discussing pain concepts with non-hospitalised children. Hence, the Picture Placement Activity and interview probes (Appendix 3) were piloted with a group of children aged 5-7 from mixed linguistic backgrounds. Pilot work tested the appropriateness of the language used in the questions and the order in which they were presented. Hence at times the researcher asked: ‘do you understand this word?’ The pilot study was conducted using two activities with a mixed language group of five children.

3.9 Data analysis

3.9.1 PPA data

Simple tabulation was used to summarise the picture placement activity data. In keeping with Lollar’s original method (Lollar and colleagues, 1982), the children were not encouraged to use numerical values when placing the drawings hence the data were treated as categorical for analysis purposes.

The results were recorded for the group rather than for each individual child, therefore statistical data analysis is not appropriate. However, the observer recorded field notes during the PPA; this allowed qualitative comparison between the groups, in terms of (i) processes to reach consensus, and (ii) dynamics within the group during the PPA. Variation within and across the groups for different pictures was therefore possible.

3.9.2 Narrative data

Primary schools in England use narration to assess the linguistic abilities of monolingual and EAL children (Perez and Tager-Flusberg 1998). Therefore this study used narrative analysis

to examine the data collected during group discussions and the field notes taken by the observer during the PPA. Narrative analysis is credited with telling a story in a far more detailed and realistic way than can be captured by the isolation of themes and use of content analysis (Bochner, 1997). Narratives have a way of speaking for themselves, as they are rooted in culture and nuances of the individual (Maanen, 2011). It is generally accepted that children of school age have the capability to supply self-report assessment effectively, with Pölkki and colleagues (1999) reporting that school age children are able to describe their pain experiences. It is important for children to articulate their experiences and give their context for the use of language. Story telling has been used as a primary way to transmit past experiences and compare them with the present and the future (Schick and Melzi, 2010). Although research on the narratives of bilingual children is quite limited, findings suggest that narrative features vary consistently across languages spoken (Anstatt, 2008). There are some differences in the way of story style depending on the children's age, gender, and language of the children. In terms of age, younger children use more basic connective words (such as `and`, `then`, `so`), while older children use them in more sophisticated ways. Schick and Melzi (2010) reported that through different linguistic background the narrator can get different linguistic resources to organise the narrative. Regarding gender, as Nicolopoulou (2008) stated, narrative style is different, girls are more likely to use a network of social relationships, while boys' stories lack coherence and connection. In this study, children demonstrate their ability to describe what is happening in these pictures by telling stories. Sometimes the pictures act as a stimulus for a narrative relating a pain episode experienced by the child or someone known to the child. Sharing the children's story helps them to articulate their experience of pain (Carter, 2004).

The narrative analysis emphasises the content of text "told rather than telling" (Riessman, 2005: 2), hence focus group data were transcribed in their entirety and the transcriptions were

read and re-read during the data collection phase. Field notes taken by the observer were also transcribed and treated in the same manner. Hammersley and Atkinson (1995) described the iterative nature of analysis as involving several steps. The first step is to transcribe the entire interview. The following step is to analyse the content of the discussion for a variety of themes using a coding scheme and to identify consistencies and inconsistencies within the overall narrative. The researcher combined the interview transcripts and observer notes to identify the emphasis or intensity of the participants' comments and to differentiate between individual opinions and group agreement. Narrative analysis was used to capture the language that the children employed to talk about pain. Findings from the Picture Placement Activity were integrated with the findings of the group discussions, in line with the mixed methods model selected, in order to decrease the weakness of each of the approaches. This study gives more weight to the qualitative approach rather than quantitative so quantitative data was used to support the qualitative data in order to answer the research question.

3.9.3 BPVS II analysis

The test comprises a number of cards. The experimenter begins the test with the basal set. This is done by starting with the card item that corresponds to the child's age. If one or more error is made within a set of 12, the test is conducted backwards, set by set, until no more than one error is made; this becomes the 'basal set' for that individual child. All 12 items within each set must be administered until the researcher ends the assessment; when eight or more errors are made within a single set, this is identified as the 'ceiling set' for that individual child. A raw score is calculated on the number of items in the sets of the basal and ceiling minus the number of errors; the resulting raw score is matched to the standardized score and the percentile rank and children age equivalent, which means the percentage of children who obtained the standardized score and children's age equivalence. For example, in the case of the equivalent age the child's chronological age might be 5 years old and three

months but the equivalent age could be 3 years old and six months. All the statistical analysis of BPVS test was conducted with the help of the statistical package for social sciences software (SPSS), version 17.00. In addition to the standard BPVS II analysis, non-parametric statistics were used to identify:

1. differences between language ability (monolingual or EAL), school year and gender according to BPVS II language age and
2. relationships between BPVS II language age and length of time in the UK.

3.10 Summary

In this chapter, the aims and research questions of this study are outlined and methodological decisions are described. The ethical issues to be considered when conducting research involving children have been discussed, along with steps taken to ensure that the conduct of this study met established ethical principles. Steps taken to establish rigour for the Phase 1 methods are presented. In the following chapter, the findings of the first phase of the study are presented, namely the Picture Placement Activity, Group Discussions and BPVS data.

CHAPTER 4 PHASE 1 FINDINGS

4.1 Introduction

This chapter presents the findings from the first phase. The BPVS II data is presented in order to identify children's language comprehension skills prior to the actual data collection. Then the study findings that were produced using two methods Picture Placement Activity (PPA) and Group discussions (see table 4.1).

4.2 Research Setting and Participants

Phase 1 data collection took place in a primary school that had children with a wide range of language backgrounds, for example, Arabic, Indian, Kurdish, Spanish, Chinese, Polish, Portuguese, Filipino, and Russian. The school has in the region of 160 pupils aged 5-11 years and serves a mainly inner city community; pupil achievements by the time they leave the school in Year 6 are in line with national averages, according to the school's Ofsted report.

The study participants were children aged 4.5 years to 8 years in three different year groups (foundation, year 1 and year 2 classes total n= 37). Two focus group interviews were conducted in each of the school year cohorts, one with monolingual children, and one group with EAL children, making a total of six groups. Whilst the children are mixed in the same class (for example a class of 28 children may have 8 EAL children), for the purpose of this study each focus group was comprised solely of monolingual children or solely of children with EAL. As the goal of this phase was to capture natural conversations amongst the children, they were sampled according to school year, rather than age; hence data are presented using this nomenclature (FY, Y1, and Y2) throughout the paper.

4.2.1 Demographic data items

The demographic data items were collected using a short questionnaire which was filled in by parents with the consent of each child regarding the child's age, gender, mother's country of

origin, father's country of origin, language spoken to the child at home by the mother and language spoken to the child at home by the father, length of time at the school, and length of residence in the UK (see table 4.1)

Table 4.1 Demographic data for monolingual and EAL participants

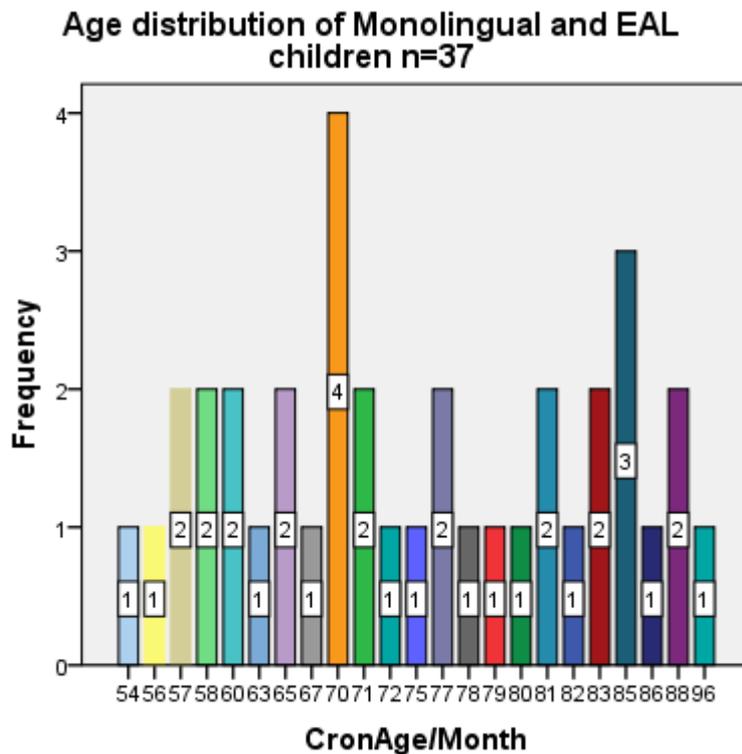
	monolingual	EAL	Total
Participants	22	15	37
Gender			
Male	11	7	18
Female	11	8	19
Mother's country of origin			
England	22	0	22
Middle East	0	8	8
Europe	0	3	3
Asia	0	4	4
Father's country of origin			
England	22	0	22
Middle East	0	9	9
Europe	0	2	2
Asia	0	4	4
Language spoken to the child by the mother			
English	22	0	22
Arabic	0	4	4
Kurdish	0	3	3
Other ¹	0	4	4
Other language combined with English ²	0	4	4
Language spoken to the child by the father			
English	22	0	22
Arabic	0	4	4
Kurdish	0	3	3
Other ¹	0	5	5
Other language combined with English ³	0	3	3
Note:			
1. One each of the following languages: Malayalam, Nepali, Polish, Russian			
2. One each of the following languages combined with English: Kurdish, Tagalog, Indonesian, Portuguese			
3. One each of the following languages combined with English: Kurdish, Tagalog, Indonesian			

These data were collected in order to describe the sample and interpret study findings. Across the whole sample, 59% were monolingual (English), around half of each sample was female

(50% of monolingual children and 47% of EAL children). For the EAL children (n=15), the language spoken to the child at home was predominantly Arabic or Kurdish (n=8 mothers and n=9 fathers).

As can be seen from the table, there was a similar gender mix in both EAL and monolingual groups. The majority of children had parents who came from the same country of origin, with exception of one child whose father is Kurdish (Middle East) and whose mother is Portuguese (Europe). This child therefore spoke two languages at home in addition to English at school.

Figure 4.1 Age distribution of monolingual and EAL children



This figure shows monolingual and EAL children age/month. Most children were aged between 5-7 years; however, the lowest age was 4.5 years (54 months) and the highest was 8 years (96 months).

4.2.2 English language scores

Table 4.2 summarises BPVS II scores for all participants according to sample group. Of note, the largest difference in language ability in these study participants was in children aged 4-5 and those aged 6-7. The separation of language and age groups was a deliberate attempt to reduce any dominance of English over EAL speakers (or vice versa), ensuring all the voices of children were heard.

Table 4.2 Mean BPVS II language age in months by school year and language background

	Foundation		Year 1		Year 2	
	M	EAL	M	EAL	M	EAL
Participants (n=34)	5	4	8	3	7	7
Mean language age in months	55	39	68	63	83	47

Notes: M = monolingual; EAL = English as an Additional Language

4.3 Picture Placement Activity (PPA)

Pilot work demonstrated that the children did not like the pictures to be black and white. Hence small items, such as the child's clothing, were coloured in each picture. This was done in such a way as to remain true to Lollar's original intention that the pictures would not depict emotion or gender. Summary results for the picture placement activity are presented at table 4.3. Some cells are blank based on the class teacher's advice regarding the ability of children in both groups to understand the picture, especially the youngest children. Regarding the psychosocial pictures, in the pilot work it was felt that the foundation and year 1 children would have difficulty in interpreting some of these pictures, therefore, some were not presented to these groups.

The Year 2 children in monolingual and EAL groups insisted on placing some of the pictures between two colors (noted as R/Y or Y/G in Table 4.3). In some instances this was a means of the group gaining consensus but for other pictures it was an immediate judgment by the whole group. The picture placement activity was completed prior to group discussions in

order to identify which pictures were more suitable for the discussions. The extent of discussion during the picture placement was recorded as a field notes by the observer. Summary results are presented at table 4.3.

There was least agreement in monolingual English children in foundation and year 2 age group, the level of disagreement being approximately 25% which shows in the following calculation rate. As illustrated in Table 4.3 some groups produced consensus about placement of the pictures whilst others did not. Data excerpts from the field notes use the following notation:

Inclusion of disagreement data

PPA/ EAL/ foundation:	9% disagreement
PPA/monolingual/foundation:	33% disagreement
PPA/ EAL/ year1:	33.3% disagreement
PPA/monolingual/year1:	25% disagreement
PPA/EAL/year2:	17.6% disagreement
PPA/monolingual/year2:	<u>29.4% disagreement</u>
	147.3\6= 24.55% average range of disagreement

4.3 Picture Placement Activity

Picture placement activity	Foundation		Year 1		Year 2	
	EAL	English	EAL	English	EAL	English
Recreation (REC)						
being hit by a baseball while batting;	G	Y	G	G	Y	R/Y
falling off a skateboard	R	Y*	R *	Y *	R	R
having a crash with a bicycle;	R *	[G]	[G] *	[R]*	R/Y *	[Y]
dropping a bowling ball on foot;	R	[R]	[Y]	[R]	[R]	[R]
run over by another football player;	R	Y	G	G	R/Y	Y
falling out of a tree ;	R *	R	[Y]	[G]	R	R/Y *
Activities of Daily Living (ADL):						
closing a finger in a door;	[Y]	G	R	R *	Y	R
getting stung by bees;	R	R *	[Y]	Y	Y	R *
cutting hand while peeling fruit ;	R	R	R *	[G]	R *	R *
pulling off a band aid;					G	Y/G
burning hand on the stove;	R *	[R] *	[Y]	Y	R	R
Psychosocial (PS):						
being scolded by a policeman;					Y	R
laughed at by schoolmates for misspelling			[G]	R	R *	[Y]
striking out in a baseball game;					[R]	[R]
reprimanded by a teacher;					Y	Y/G
fighting with another child ;	G *	[R] *	[R]	[R]	[Y] *	[G]
being excluded from a game.					Y	G *
Notes: Square brackets [R] indicates that there was initial disagreement but eventual consensus Inclusion of two colours (R/Y) indicates that the group placed the picture between two papers. * indicates selection of picture for group discussion, based on level of conversation generated						

4.3.1 Similarities and differences by language background and year group

The picture placement activity demonstrated some differences in the response to pictures depicting pain between EAL children and monolingual children and between year groups.

Recreation pictures

These differences were more noticeable with the Recreation pictures; however, none of the pictures were rated the same by all 6 groups. For the pictures illustrating activities of daily living (ADL), EAL and monolingual children displayed similar responses to the individual pictures especially in foundation and year 1. However, field notes demonstrated that there were noticeable differences between both year 1 and year 2 EAL and monolingual in terms of gender. This was marked for three pictures (*“dropping a bowling ball on foot,” “having a crash with a bicycle,” “fighting with another child”*) where girls were more likely to put these pictures on the green and boys on the red. In table 4.3 this is illustrated by the use of square brackets to indicate initial disagreement. For the remaining pictures where there was initial disagreement, this was not related to gender.

With the exception of year 1, monolingual children were less likely to discuss the reasons for picture placement. The year 1 EAL children were particularly considered in their decision-making, for example, placement of pictures was considered in relation to longer term effects: *“it would hurt a lot but it would get better soon”* (burning hand on the stove, placed on Green) *“it would hurt for a little time and then go away”* (getting hit by the baseball whilst batting, placed on Yellow). The year 1 monolingual children looked at pictures in relation to other pictures for example *“it would hurt the same as that one”* (pointing to another picture). Moreover, they gave reasons for their judgments about the degree of pain depicted, for example, presence/likelihood of blood was a factor: *“they wouldn’t bleed so it wouldn’t hurt so much”*, as was the surface onto which the child fell *“its concrete so would hurt a lot”* and the extent of the accident *“it is not very high [the tree] so should be green”*.

During the placement of the pictures with the group of year 2 EAL children, when this group were shown the first picture (falling out of a tree) these children said ‘*that’s scary*’ and immediately said it should be placed on the red paper. This immediate reaction to some pictures was more evident for those that were scored red.

Overall Year 2 monolingual children demonstrated greater understanding of the pictures but EAL children across all year groups were more likely to describe the picture then decide where to put it, and all the children in the EAL groups wanted to talk.

The monolingual children put slightly more of the recreational pictures under yellow and green paper; out of 18 pictures (6 for each of the 3 monolingual groups) they put 10 of the pictures on the yellow and green and 8 of the pictures on the red paper. However, EAL children placed 11 on red and 7 on the green and yellow.

Psychosocial pictures

Monolingual children found it easier to use language to decide on the intensity of pain illustrated by the picture, however, EAL children seemed to have far more of a problem in deciding on the amount of pain shown in the pictures. Out of 18 pictures (9 for each of the monolingual and EAL) they put 10 of the pictures on the yellow and green and 8 of the pictures on the red paper. The monolingual children put slightly more of the psychosocial pictures under red paper (5 pictures on red and 4 pictures on the green and yellow). However, EAL children placed more of the pictures on the green and yellow (3 on red and 6 on the green and yellow). This may mean that EAL children reacted in a different way emotionally to the events shown in a picture. However, this was not explored in the picture placement activity or the focus group interviews.

Activities of Daily Living pictures

Regarding the pictures illustrating daily activities, EAL and monolingual children displayed similar responses to the individual pictures especially in foundation and year 1. There was

also less initial disagreement in response to these pictures (Table 4.3). In the EAL foundation group there seemed to be some confusion between colour (Red, Yellow, Green), with sharp intake of breath when shown the picture with child burning hand on cooking pot (which they placed on the red paper) and lots of laughter when shown the picture of boy being run over by another football player (which they also placed on the red paper). However, questioning revealed that they understood the distinction between the colours but thought that the latter picture portrayed an injury that would be very painful but was also very funny.

In terms of language, monolingual children were more likely to use the word amber in their measurement of pain which may showed they were using the analogy of traffic lights. In addition they were more likely to attempt to differentiate the level of pain more precisely by placing pictures between amber and red or amber and green. On the other hand, the EAL children did not use this word and they justified their placement of the picture in order to show picture was in the `right` place.

4.4 Group Discussions

Children stayed in the same groups for the group discussions. The purpose of this part of the data collection was to examine the narrative used by participants in different age and language groups, therefore, the 4 pictures from the picture placement activity stage which had generated the most discussion were chosen. However, for the Year 1 EAL and monolingual groups, saturation was reached during discussions about the third picture (i.e. the narrative was repeated from previous pictures) hence the fourth picture was not used.

In order to encourage conversation between the children a series of questions were asked (as identified in section 3.7.2); these questions prompted a number of narratives from the children:

1. How children make a judgement about the pain assessment depicted in the individual PPI pictures by asking them during the Picture Placement Activity: *Where do you put this picture on red, yellow, or green?*
2. The children were asked: *What would mummy and daddy do?* In order to identify the children's thinking about how pain might be managed in the scenario depicted.
3. Verbal responses to pain were elicited from the children via this question: *What would he/she say?*
4. Finally, the children were asked: *What would mummy and daddy say?* to determine the child's personal stories (the stories that the children told when they thought about the picture).

In mixed methods terms, the data were mixed at the integration stage. Hence, the data were analysed in quantitative terms, for example which colour paper the children had assigned the picture and the extent of agreement, and in qualitative terms, for example what language was used to communicate their perception of pain.

4.4.1 Language used by each group

As identified in the Picture Placement Activity field notes, there was considerable difference between the languages used in the six groups. Not surprisingly, this was also evident in the group discussions. Examples of data excerpts for each of the six groups are presented at Table 4.4.

Table 4.4 Sample data excerpts from each group

<i>What would he/she say?</i>	<i>What would mummy and daddy do?</i>
F Yr EAL	
<i>Bike</i> I can't do play again My head hurts My leg is hurting	Tell him to go a bit slow Put ice on his head
<i>Fighting</i> Sorry; it was naughty We're friends now	Don't need to fight Be nice and be kind Be quiet, play nicely
<i>Tree</i>	No climbing on trees Don't do it again Put ice on back and hands Lie down in the chair Sleep
<i>Burnt hand</i> [very dramatic responses!] He won't be able to eat cos he burnt his hand	Freeze the hand in water to fix it Eat something Don't do it again Naughty boy
<i>What would he/she say?</i>	<i>What would mummy and daddy do?</i>
F Y Mono	
<i>Bee stings</i> Go away (to the bees) Sting on my hand Ow! Auuuuuuuuuuuuuuuuuu. Look at my hand	Put cream on it Put a plaster on it
<i>Skateboard</i> Bleeding so had to go home awwwwwwwww [very loudly] bawwwwwwwwwww	Mend the skateboard Take him to the doctor/hospital Take him home Put him to bed
<i>Burnt hand</i> Story: Daddy was making the tea; peas in the pot	Don't be silly
<i>Fighting</i>	Not allowed to fight Go home Go to hospital or doctor No more fighting
Yr 1 EAL	
<i>Skateboard</i> Ow! I hurt myself I burnt my back with the skateboard	Take him home to rest Take him to the doctor Get some ice
<i>Bike</i> Ow!	Tell the doctor Doctor would make him better
<i>Tree</i> Ouch!	Take him to the doctor Doctor would say "I'm going to close; come back

	later” because it’s not very important [Mum and dad would] Play with him
Yr 1 Mono	
<i>Bike</i> Ouch, that hurt really, really bad I fell off I fell off and it really hurts	Make him better Give him dinner in bed He would have a headache – they would put a cold thing on his head Pack of peas on his head
<i>Skateboard</i> I hurt my head I slipped off because I needed a bit more practice	Give him medicine to make it better They would help him
<i>Knife</i> Ouch Ow, ow, ow I hurt my finger and need to put it in some ice Can you put a plaster on it please	You would need to prove that you’ve really hurt yourself Like humpty dumpty sat on the wall

<i>What would he/she say?</i>	<i>What would mummy and daddy do?</i>
Yr 2 EAL	
<i>Bike</i> Ouch Ow, my head Would maybe scream	Put a plaster on Go to the doctor Don’t worry we’ll call the doctor The doctor would fix him
<i>Knife</i> I cut my hand	Go to your bedroom Go to sleep
<i>Spelling mistake</i> I’m useless Everyone will laugh I’m not good at spelling	They would help him to spell better Tell him how to spell everything
<i>Fighting</i> Ow Go away Me head’s not well I didn’t do nothing The green one was lying	Let’s go to the doctor Close your eyes
Yr 2 Mono	
<i>Knife</i> I’ve hurt myself It’s not my fault I would get in trouble for touching a knife	Put a plaster on Might take him to hospital Take away the pain Put it in cold water
<i>Bees</i> Ow Run away from the bees Get mum and dad	Take him to the doctors (response from 3 children) Put salt on it Put a bandage on it Take him to the hospital

<i>Boy alone in the playground</i> Please can you help me (ask him mum and dad, ask his friends) He would cry No-one played with me at school	Tell the teachers
<i>Tree</i> I fell out and it hurts Ow I'm sore	Take him to hospital (response from 3 children) Put a bandage on it

A number of fuller stories were narrated by the children, for example:

“no he saw him honey and then he put hand on it and then the bees come out and he is going away-----”(FY Mono/Bee sting)

“he was dad he was cut , no, his dad was making him tea and then he was doing that [pointing to the saucepan] , he was make him peas and then he [the boy] burnt his hand” (FY Mono/burnt hand)

with the children often building the story between them as illustrated in this conversation:

P4: *“if you go to park and play on skate board and if you go down stair and mummy will hold it for you ,*

P1: *... and mummy says ‘go to daddy, sit office take a rest’ he need it to be not fast on his sky board, help him, give him medicine make him better,*

P4: *they think he hold his hand, and then, and if I need to ride my bike and I ask mummy to let go and she let’s go and I keep going.” (Yr1 Mono/skateboard)*

Further examples are presented in the narrative analysis at section 4.5.

4.5 Themes and coding

Content analysis of the interviews and field notes recorded during the picture placement activity revealed four types of narrative: the words used to describe pain in the pictures; the children’s suggestions for how pain would be managed for specific scenarios; judgments about the scenarios depicted and personal stories triggered by the individual picture. Data excerpts for these themes are presented below, with notation indicating the group and picture that elicited the conversation (e.g. FY EAL/Bike crash). Where the excerpt relates to a conversation between groups members, participant numbers are noted (e.g. P2, P3, P7).

4.5.1 Words used to describe pain

When asked how the child in the picture would describe their pain (“*What would the child say to their mummy or daddy?*”), vowel sounds (“*eee*”, “*oooh*”, “*ouch*”, “*owww*”) were used by all groups, regardless of the rating given to the picture, for example year 1 monolingual and EAL groups used the word “*oww*” for all pictures but placed them on different coloured sheets. The word ‘*hurt*’ was used to describe pictures across year groups:

“*Ouch that hurt really, really bad*” (Yr1 Mono/Bike)

“*...that one hurt*, (FY Mono/Burn)

“*.....Ow, hurt me*” (Yr2 EAL/ Fighting)

The narratives also described the impact of the injury, for example “*I hurt my head*” (FY Mono/Skateboard). Across all three year groups, the EAL children gave more dramatic responses and referred to broken bones as indicated in this conversation between participants:

“*I broke my head.....my arm.....my palm*” (FY EAL/Bike/P3, P5, P2). Some of the children also talked about this in terms of outcome: “*mummy and daddy look at my hand; I have big blood cut on my hand I will get bruise on it*” (FY Mono/cut hand).

4.5.2 Managing pain

When asked ‘*what mummy or daddy would do*’ participants related two types of narrative: description of practical measures to relieve the pain and sanctions imposed because of the child’s actions. Measures to reduce pain included those administered by parents “*put plaster on it.*” (Yr 2 Mono/cut finger);

“*mummy and daddy would play with him*” (Yr1 EAL/Bike);

“*They would help him to spell better; ... he tell his mummy and dad ‘can you learn me how to write cat’, write it down lots of time*” (Yr2/EAL/Spelling mistake).

“*go back home and then it would be better, you have to go jump like*

ok [mimics jumping in pain], 'I banged my hand, I hurt my finger and need to put it in some ice, Can you put a plaster on it please'." (Yr1 Mono/finger caught in door)

Participants also often went on to answer all the questions in response to the first question ('what would he tell mummy or daddy?'):

"Daddy and mummy I hurt my, my, my, is myis hand' and then daddy and mummy do him a sticker [plaster] and then, and then he got him to bed in bed room and he sleep [with] him and it all better the next day" (Yr2 EAL/cut finger).

The use of ice packs (one of the first aid treatments used at the school) also featured in other narratives:

P8: *pack of peas on his head..*

P5: *get him in bed....*

P2: *he might be needing ice to put on his head to cool it"* (Yr 1 Mono/Bike)

For other scenarios, the children suggested involvement of the doctor "*the doctor will fix him...*" (Yr2 EAL/Bike), "*the doctor will make him all better and he can go on his bike again and then they said 'thank you'*" (Yr 1 EAL/Bike) or hospital "*they might take him to hospital*" (FY Mono/Skateboard), and for one group, involving the teacher "*ask the teacher because it's the teacher that helps the kids*" (Yr2 Mono/child excluded from game). The younger children were more likely to describe some form of sanction such as "*mummy would take the back wheel off*" (FY Mono/Skateboard); "*he wouldn't be allowed to ride again*" (FY EAL/Bike).

4.5.3 Judgments about the scenario depicted

The implication that some of the injuries might be self-inflicted ran through all the group discussions with the phrase "*that's naughty*" used by most groups, for example "*that is naughty if you're climbing trees*" (FY/EAL). In some instances the judgment of bad behaviour was implied, for example "*You know that bees sting and they make honey, yellow. And he was sure he would get the honey, and the bees stinging him*" (Yr2 Mono/ Bee stings).

In particular the FY EAL group used the term *'naughty'* for all four of the pictures discussed. By contrast the Year 2 Monolingual group identified that someone else might be to blame for one of the scenarios: *"someone left the knife there."* (Yr2 Mono/cut finger).

The notion of personal responsibility was also evident in the response to the picture showing a child being laughed at by schoolmates for misspelling a word, with the group suggesting that the child would say: *"I am useless"* (Yr2 EAL/spelling mistake); this was illuminated by other group members:

P1: *Everyone will laugh 'I'm not good at spelling', ...*

P2: *um, he say 'no, he was bein' naughty*

(Yr2 EAL/spelling mistake)

The need for the child to legitimise the pain to parents, the doctor or the hospital was also raised in some of the groups:

"you would need to prove to your mummy and daddy that you've really hurt yourself" (Yr1 Mono/Finger in door)

"the doctor would say 'I'm going to close; come back later' because he's not really sick" (Yr1 EAL/Skateboard)

"the hospital will say 'you have to go home'..." (FY Mono/Burnt hand)

The consequences of the child's behaviour was a recurrent point of discussion across the focus groups, ranging from *"wake him"* (FY Mono/Bee stings), implying that they were aware that bee stings could be dangerous to *"little fights can lead to big fights"* (Yr 2 EAL/children fighting).

The pictures that generated most interaction between the year 2 children were the *child alone in the playground* and *children fighting* pictures:

"P9: 'Please can you help me' he would ask his mum and dad, ask his friends. He is upset

P3: 'Mummy and daddy; all of his friends are nasty' No-one of his friends...

P2: 'Mummy and daddy, help me, no one would like to play with me at school' ...

P7: Tell the teacher that helps the kids (Yr 2 Mono/child alone in playground)

" P7: he said 'punch his head' and he said 'way' and he came fight

P3: *and everyone came saw him when they fight and the blue boy punch his head and the green boy got lots of friends and he bring the friend.*

P7: *The blue (boy) get run and they fight all and everyone was bleeding and sad and angry.*

P6: *Little fight can turn to big fight”.. (Yr 2 EAL/children fighting)*

The potential involvement of parents in the scenario was more evident in the narratives from the Year 2 EAL group:

P3: *“the blue jumper tell daddy and mummy ‘am, am oww, oww’ and then, and then say mummy and daddy ‘where is him?’ and then daddy and mummy go....*

P8: *they [mum and dad] said ‘why you bleeding?’; they were angry with that blue boy and the blue boy said ‘it wasn’t me; a green boy hit me on the head’.*

P3: *The green one said to mum ‘I didn’t do nothing, someone punch my head the green one was lying’ ” (Yr 2 EAL/children fighting).*

4.5.4 Personal narratives

The younger monolingual group were keen to share stories of their own painful experiences and older EAL children were more likely to ‘story’ their experiences of pain than the younger EAL children “*I burnt my back when I was doing skateboarding*” (Yr 1 EAL/ skateboard fall). When shown the picture of the child excluded from a game the year 2 monolingual group all wanted to share similar experiences: “*It happens to me when I was at school.... I always cry...*” (Yr 2 Mono/child excluded from game/P4, P5). Some groups were also keen to share stories about situations in which they didn’t come to harm: “*I have a nice skateboard, I did nice skating and I didn’t fall over*”. Then another child said “*no I was doing skating and it’s easy, it’s fun that skating*” (FY Mono/ skateboard fall). In some instances the pictures triggered discussion about acceptable rules, for example “*We not allowed fighting at school*” (FY Mono/ children fighting).

Some children also changed the emphasis of the story from the picture to the personal:

P3 I told mummy I get graze on it, , , [she] would say ‘never mind go back to school’, [put on] cream and then a plaster

P5 Does that all your mummy probably do; would say ‘never mind go back to school’? (FY/Mono/Bee Sting)

I walking and I don’t looked and is water and I slipped over. (Yr 2 EAL/ PPA).

4.6 BPVS II Results

4.6.1 Foundation Year monolingual and EAL

The total number of children who participated from this year group was nine, which are classified to five monolingual and four EAL. The results are presented in table 4.5 and 4.6.

Table 4.5 Foundation monolingual BPVS II result

Gender	Child's Age	Language spoken	school/year	BPVS Raw	BPVS SS	BPVS language age
Male	4.10(58)	English	Foundation	59	111	70 (05:10)
Female	5.5 (65)	English	Foundation	48	94	56 (04:08)
Female	4.6 (54)	English	Foundation	45	98	52 (04:04)
Female	5.3 (63)	English	Foundation	34	82	40 (03:04)
Male	4.8 (56)	English	Foundation	48	101	56 (04:08)

Table 4.6 Foundation EAL BPVS II result

Gender	Child's Age	Language spoken	school/year	BPVS Raw	BPVS SS	BPVS language age
Female	5.5 (65)	EAL	Foundation	31	79	38 (03:02)
Male	4.9 (57)	EAL	Foundation	11	53	28 (02:04)
Male	5 (60)	EAL	Foundation	43	92	50 (04:02)
Male	4.10(58)	EAL	Foundation	31	82	38 (03:02)

Mean scores on language age of lexical comprehension are shown in this table. The differences in average BPVS language age in the foundation group between monolingual and EAL children are presented above. The average language age for monolingual children= 55 months (4.7) while EAL = 39 months (3.3). The mean language age of all foundation year children (monolingual and EAL) was 47.56 and SD= 12.72.

4.6.2 Year 1 monolingual and EAL

The total number of participants in this year group was eleven children. There were eight monolingual and three EAL children. The results are presented in table 4.7 and 4.8.

Table 4.7 Year1 monolingual BPVS II result

Gender	Child's Age	Language spoken	school/ year	BPVS Raw	BPVS SS	BPVS language age
Female	5.10(70)	English	1	71	112	84 (07:00)
Male	6.6 (78)	English	1	70	103	82 (06:10)
Male	5.11(71)	English	1	34	78	40 (03:04)
Male	5.11(71)	English	1	70	111	82 (06:10)
Female	6.00(72)	English	1	44	85	51 (04:03)
Female	6.03(75)	English	1	47	86	55 (04:07)
Male	5.10(70)	English	1	42	85	48 (04:00)
Female	6.5 (77)	English	1	84	119	98 (8.02)

Table 4.8 Year1 EAL BPVS result

Gender	Child's Age	Language spoken	school/ year	BPVS Raw	BPVS SS	BPVS language age
Male	05.10 (70)	EAL	1	64	105	76 (06:04)
Female	05.10 (70)	EAL	1	49	93	58 (04:10)
Male	05.07 (67)	EAL	1	49	92	56 (04:08)

This table presents year1 chronological age, BPVS raw score; BPVS standardized score and BPVS equivalence score. The average monolinguals BPVS language age was 5.8 months and BPVS language age /months = 68 months. While, the EAL language age (BPVS age) was 5.3 months and BPVS language age by month= 63 months. The mean language age of all children year 1 (monolingual and EAL) was 66.36 and SD= 18.62.

4.6.3 Year 2 monolingual and EAL

The total number of participant in this year group was 14 children. There were seven monolingual children and seven EAL. The results are presented in table 4.9 and 4.10

Table 4.9 Year2 monolingual BPVS II result

Gender	Child's Age	Language spoken	school/year	BPVS Raw	BPVS SS	BPVS language age
Female	07:01 (85)	English	2	63	92	74 (6.02)
Male	06:08 (80)	English	2	71	104	84 (7.00)
Female	07:01 (85)	English	2	72	100	85 (7.01)
Male	06:09 (81)	English	2	65	96	77 (6.05)
Male	07:04 (88)	English	2	56	85	65 (5.06)
Female	07:01 (85)	English	2	83	111	97 (8.01)
Female	06:09 (81)	English	2	86	116	101 (8.05)

Table 4.10 Year2 EAL BPVS II result

Gender	Child's Age	Language spoken	school/year	BPVS Raw	BPVS SS	BPVS language age
Female	06:11 (83)	EAL	2	23	59	34 (02:10)
Female	07:04 (88)	EAL	2	33	66	39 (03:03)
Female	06:11 (83)	EAL	2	19	53	32 (02:08)
Female	06:05 (77)	EAL	2	52	90	61 (05:01)
Female	06:07 (79)	EAL	2	36	75	42 (03:06)
Male	07:02 (86)	EAL	2	45	79	52 (04:04)
Male	08:00 (96)	EAL	2	57	80	67 (05:07)

This table presents Year 2 monolingual and EAL BPVS raw scores, BPVS standardised scores (SS), and BPVS language age. The average year 2 monolinguals language age was = 83 months (6:11 months) and EAL = 47 months (3:11months). The mean language age of all children year 2 (monolingual and EAL) was 65.00 and SD= 22.79.

4.7 Relationship between demographic data and BPVS II scores

Raw scores were used to compare the performance on the test of EAL and monolingual children. As can be seen in table 4.11, the mean and standard deviation of EAL children were lower (M= 47.93 SD= 14.32), than those of the monolingual English children (M=69.85 SD=19.269).

Table 4.11 Mean and SD of monolingual and EAL result in relation to BPVS II language age

Group Statistics					
	Language	N	Mean	Std. Deviation	Std. Error Mean
BPVS language age/ month	Monolingual	20	69.85	19.269	4.309
	EAL	14	47.93	14.323	3.828

The data group can fit well with the norm data that were made in purpose for EAL sample of normative data. Hence, there is key strong evidence that the mean BPVS age in months is higher for the monolingual group of children using the EAL normative data for BPVS II. With the help of the conversion norms table for monolingual standardized score in p. 40-47 of the test book manual and p. 48-49 for monolingual age equivalent (Dunn et al., 1997). The study found that 67.64% of standard scores for children in our sample were in the normal range of (85–115).

Table 4.12 Independent sample *t* test (P- value) analysis between all monolingual and EAL children language in relation to BPVS language age

Independent Samples Test						
		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	<i>t</i>	df	Sig.(2tailed)
BPVS language age/ month	Equal variances assumed	2.426	.129	3.609	32	.001
	Equal variances not assumed			3.803	31.839	.001

Independent sample *t*- test analysis was used to explore the differences between monolingual and EAL children’s level of language comprehension and child’s language. It can be concluded that the calculated language age of English lexical comprehension of monolingual children is significantly higher than the bilingual children. This difference is statistically significant at [*t* (32) = 3.60, 0.001], depended on the effect size calculator (Cohen's *d* Calculator for *t* test) through using *t* and *df* the size of the differences is equal 0.53, which means that there is a medium effect of child’s language in terms of BPVS language age.

Table 4.13 Mann-Whitney U analysis (p- value) between foundation monolingual and EAL children in relation to BPVS language age

BPVS Language age/month	N	Mean Rank	Sum of Ranks
1= monolingual	5	6.80	34.00
2= EAL	4	2.75	11.00
Total	9		

Statistics	BPVS language/ month
Mann-Whitney U	1.000
Wilcoxon W	11.000
Z	-2.223
Asymp. Sig. (2-tailed)	.026
Exact Sig. [2*(1-tailed Sig.)]	.032

According to the results of the Mann- Whitney test (table 4.13), it can be concluded that there is a significant difference- between foundation BPVS language age and children’s language. This is statistically significant at $p < 0.5$. It also showed that increased level of language abilities is different with increased level of BPVS language age.

Table 4.14 Mann-Whitney U analysis (p- value) between year 1 monolingual and EAL children in relation to BPVS language age

BPVS Language age/month	N	Mean Rank	Sum of Ranks
1= Monolingual	8	6.00	48.00
2= EAL	3	6.00	18.00
Total	11		

Statistics	BPVS language/ month
Mann-Whitney U	12.000
Wilcoxon W	18.000
Z	.000
Asymp. Sig. (2-tailed)	1.000
Exact Sig. [2*(1-tailed Sig.)]	1.000

To explore the impact of language on the level of BPVS score, a non-parametric/ Mann-Whitney U test was used in order to determine the differences between year 1 children’s language (monolingual and EAL) and the level of BPVS test. There were no significant differences between them.

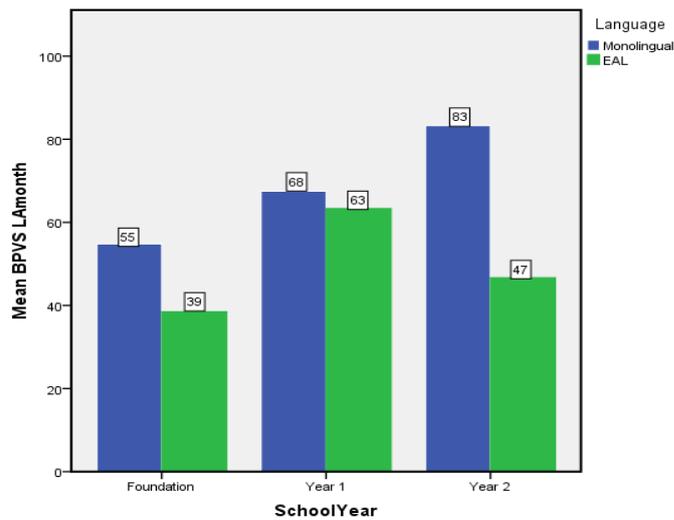
Table 4.15 Mann-Whitney U analysis (p-value) between year 2 monolingual and EAL children in relation to BPVS language age

BPVS Language age/month	N	Mean Rank	Sum of Ranks
1= Monolingual	7	10.86	76.00
2= EAL	7	4.14	29.00
Total	14		

Statistics	BPVS LA month
Mann-Whitney U	1.000
Wilcoxon W	29.000
Z	-3.003
Asymp. Sig. (2-tailed)	.003
Exact Sig. [2*(1-tailed Sig.)]	.001

To explore the impact of language on the assessment of year 2 monolingual and EAL children’s language comprehension in the BPVS test, a Mann-Whitney U non- parametric test was used to determine the significant differences between them. This result is statistically significant at $p < 0.5$.

Figure 4.2 Monolingual and EAL BPVS language age in relation to school years



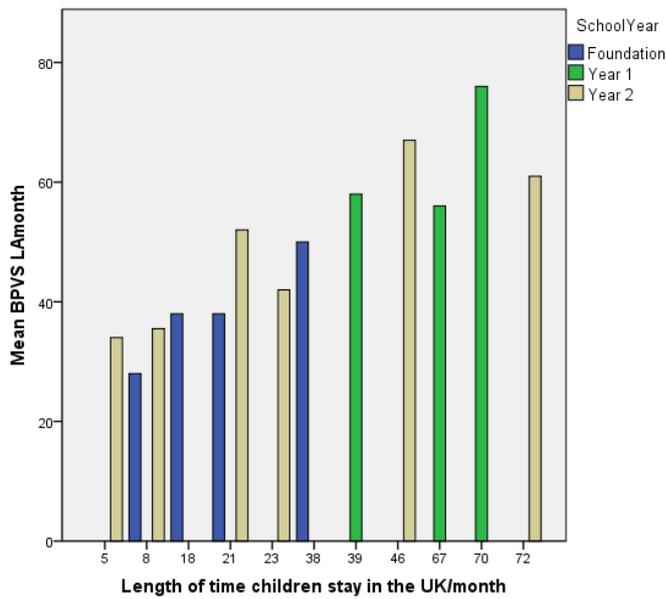
This graph shows the difference between BPVS language age and language spoken by monolingual and EAL children. There is a small difference between BPVS language scores for monolingual and EAL children in year 1. This may be because two of the EAL children were born in the UK, and one scored 72 months higher than the monolingual children. However, the lower scores of the other participants diluted this effect.

Table 4.16 Independent sample *t* test (P- value) analysis between all Mono and EAL children school year in relation to BPVS language age

One-Sample Test			
	Test Value = 0		
	<i>t</i>	Df	Sig. (2-tailed)
BPVS language age/month	17.420	33	.0001
School year	8.143	33	.0001

According to the results of one sample *t* test (table 4.16) analysis was used to explore the differences between monolingual and EAL children’s level of calculated language age of English lexical comprehension and child’s school year. It can be concluded that there is a significant difference between them. The differences is statistically significant at [*t* (33) = 17.420, *p*<0.01] for the BPVS language age and [*t* (33) =8.143, *p*<0.01] for the school year.

Figure 4.3 Mean BPVS language age for EAL children in Foundation, Year 1 and Year2 in relation to the length stay in the UK



This graph shows that the BPVS language/month in relation to the length of time in the UK and child's year can have a positive effect on BPVS skills. This can be seen in a case of year 1 child who has a higher BPVS language score (76 months) than several year 2 children who have been in the UK for a shorter period of time. However, the lowest BPVS score can be seen in foundation (28 months) which is a child who has lived in the UK for just 6 months.

Table 4.17 Spearman's rank order correlation (p value) between all the EAL children in terms of length of time staying in the UK

Test	Variables	Correlation Coefficient	Sig. (2-tailed)
Spearman's rho	EAL BPVS language age/ month	1.000	.033
	Length of time the child stays in the UK/month	0.749	
	Number	14	

Spearman's rank order correlation analysis was used to explore the relationships between EAL language comprehension age and length of stay in the UK. It can be concluded that there is a significant correlation between them. The association is statistically significant at $p < 0.05$.

Table 4.18 Spearman’s rank order correlation (p value) between foundation EAL children’s BPVS scores and length of stay in the UK.

Test	Variables	Correlation Coefficient	Sig. (2-tailed)
Spearman's rho	Foundation EAL BPVS language/ month	1.000	.0051
	Length of time the child stay in the UK/month	0.949	
	Number	4	

To explore the relationships between foundation level of language comprehension and length of stay in the UK, Spearman's rank order correlation analysis was used. It can be concluded that there is a significant correlation between the level of language comprehension among foundation EAL children and the length of stay in the UK. This correlation is statistically significant at $p=0.051$.

Table 4.19 Spearman’s rank order correlation (p value) between year 1 EAL children’s BPVS scores and the length of stay in the UK.

Test	Variables	Correlation Coefficient	Sig. (2-tailed)
Spearman's rho	BPVS language/ month	1.000	0.667
	Length of time the year 1 child stay in the UK/month	0.500	
	Number	3	

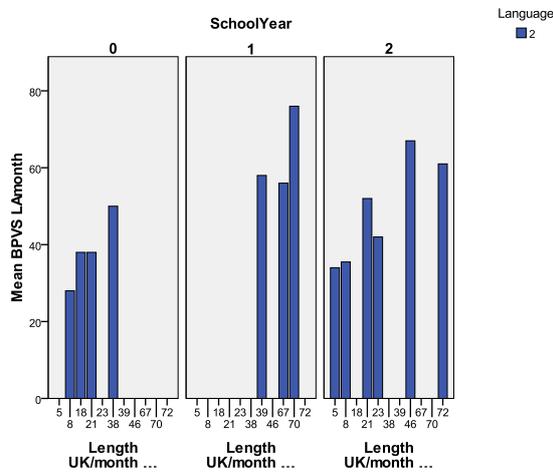
Spearman's rank order correlation analysis was used to explore the relationships between year1 level of language comprehension and length of stay in the UK, it can be concluded that there is no significant correlation between them.

Table 4.20 Spearman’s rank order correlation (p value) between year 2 EAL children’s BPVS scores and length of stay in UK.

Test	Variables	Correlation Coefficient	Sig. (2-tailed)
Spearman's rho	BPVS language/ month	1.000	.0012
	Length of time the year 1 child stay in the UK/month	0.865	
	Number	7	

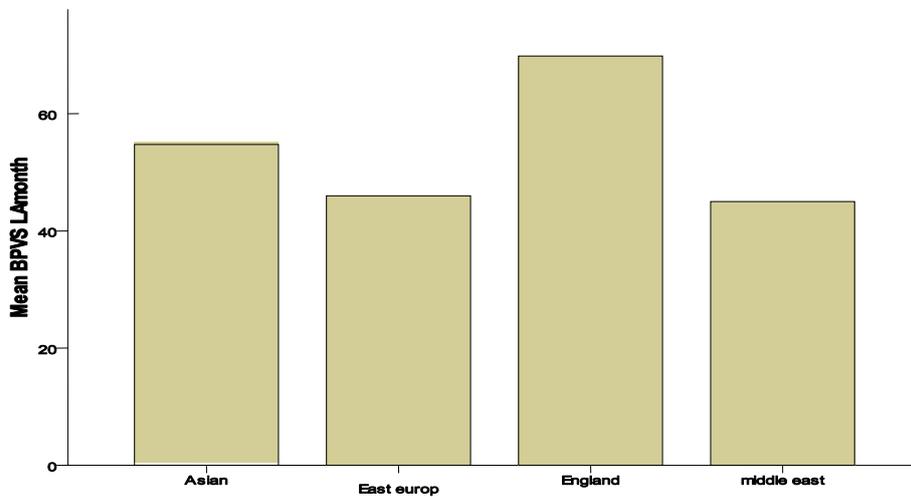
Spearman's rank order correlation analysis was used to explore the relationships between year 2 level of language age comprehension and length of stay in the UK. It can be concluded that there is a significant correlation between them. The association is statistically significant at $p < 0.05$.

Figure 4.4 BPVS language age for EAL children in relation to the length of stay in the UK in terms of school years separately



The relationship between BPVS and length of stay in the UK can be seen in the case of year 1 EAL child's who has a higher BPVS language score (76 months) than several year 2 children who have been in the UK for a shorter period of time. However, the lowest BPVS score can be seen in foundation (28 months) which is a child who has lived in the UK for just 6 months. Regarding year 2 the average monolinguals language age = 83 months (6.11) and EAL = 47 months (3.11), after the Mann-Whitney U nonparametric test, the significant differences are still evident within the subgroups of Early Years at $p < .5$ present in table 4.13, and Year2 children significantly at $p < 0.5$ presented in table 4.15. However, there were no significant variations presented in table 4.14 with the year 1 children.

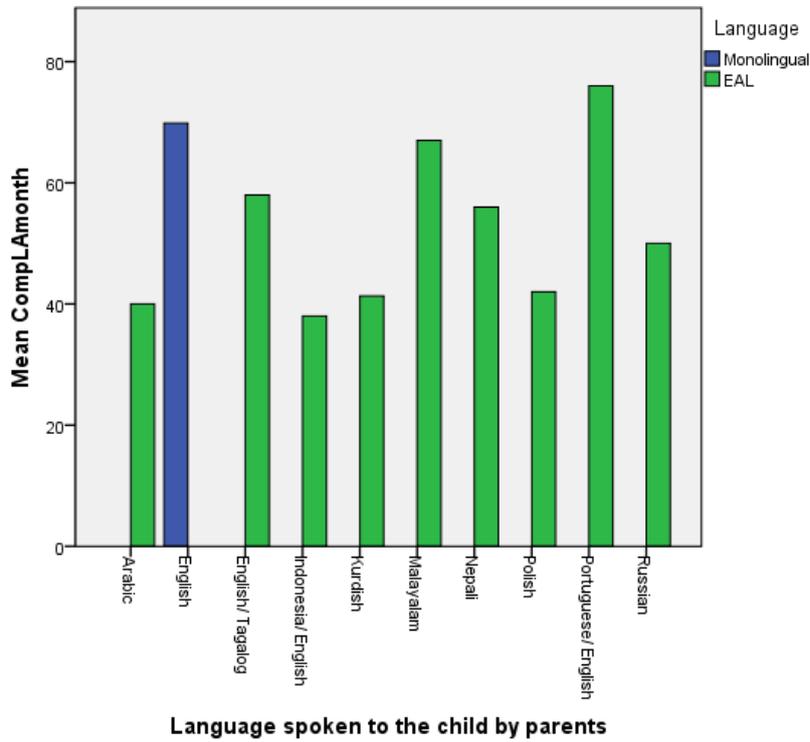
Figure 4.5 Monolingual and EAL children’s parents’ country of origin and BPVS language age



Country of origin

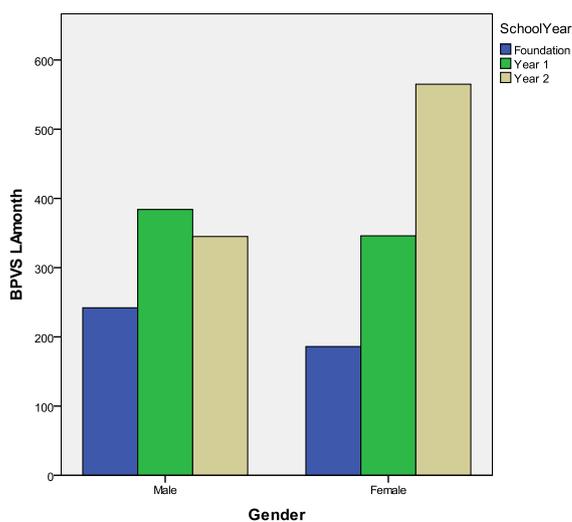
Parent’s country of origin has an effect on the BPVS score of their children. Having English parents produced the highest BPVS score among both groups of children. Children with parents from Eastern Europe and the Middle East produced similar BPVS scores, whereas, children with Asian parents scored slightly higher.

Figure 4.6 Monolingual and EAL children’s language spoken to the child by parents and BPVS language age



The highest level of BPVS was scored by a trilingual child who spoke English at home and at school, and the lowest level was scored by a bilingual child who spoke Indonesian at home and English at school.

Figure 4.7 Gender differences and BPVS results



The results indicate that there is little evidence of gender differences for monolingual and EAL children in relation to BPVS language score and children’s school year.

Table 4.21 Gender differences between monolingual and EAL children in Foundation, year1, and year2

Gender	Mean	N	St Deviation
Male	60.69	16	17.327
Female	60.94	18	23.232
Total	60.82	34	20.360

BPVS language and gender		F	Sig.	<i>t</i>	df	Sig. (2-tailed)
BPVS language/ month	Equal variances assumed	1.602	.215	.036	32	.971
	Equal variances not assumed			.037	31.12	.971

As can be seen in (table 4.21) the mean and standard deviation of boys were slightly lower (M= 60.69 SD= 17.32), than girls (M=69.94 SD=23.23).

Independent sample *t* test analysis was used to explore the differences between monolingual and EAL children’s level of language comprehension and child’s gender. It can be concluded that there is no significant differences between them. The differences is statistically not significant [$t(32) = 0.036, p > 0.05$].

4.8 Limitation of the study

Across monolingual and EAL children, the youngest children were less likely to have the capability to address the level of pain intensity in the PPI drawings because of inadequate linguistic cognitive abilities. The largest difference in language ability in these study participants, as measured by the BPVS II, was in children aged 4-5 and those aged 6-7. However, given the smaller number of children in the 5-6 age groups, the possibility of a Type II error cannot be ruled out. The EAL children were from different linguistic backgrounds; it is possible that consensus may have been achieved for more pictures had the children spoken the same (non-English) language.

4.9 Conclusions

Findings from the two activities conducted in Phase 1 demonstrated that the children's placement of pain drawings and discussions about pain varied according to language background and age. In addition, placement of pain drawings varied according to gender.

It is not possible to extrapolate from these findings how variation in language would apply if children were reporting their own pain. However, the findings emphasise the need for sufficient time to be allocated for pain assessment to allow an individualised approach. Study findings suggest several factors that may be important in assessing pain with EAL children; these should be explored in the context of clinicians' assessment of pain.

In this chapter, the findings from focus group interviews with primary school age children age between 4-7 years monolingual and EAL have been presented. In the following chapter, the relevance and limitations of theories to the study will be discussed in order to build a conceptual framework for the study.

CHAPTER 5 THEORETICAL CONTEXT

5.1 Introduction

In this chapter the outline of existing theories that are related to the research topic are presented and their application to this study is discussed. Chin and Kramer (1995: 21) generally defined theory as “ a systematic abstraction of reality that implies an organisation of words (or other symbols) that represent perceptual experience of object properties or event”. Linking the structured concepts in a manner that combines them in one map so that can be easily related to each other is a conceptual framework and is used to describe specific variables in the study. A conceptual framework uses the links between concepts to explore a phenomenon that has yet to be articulated as a theory. A theoretical framework brings together more than one theory and is a logically structured representation of the concepts, variables and relationships involved in the study. This allows the researcher to determine what will be explored, examined, measured and described, and which also describes the broader relationships between variables (Lieher and Smith, 1999).

It is important to acknowledge that theories have often been developed over a period of time. Theory development in nursing has been categorised into three groups, depending on the level of abstraction: grand theory, middle- range theory, and micro- range theory. Grand theory has a broader range, which covers a major area of discipline in order to provide a knowledge base for the discipline grounded in practice and research (Smith and Lieher, 2008). Many theories of nursing are grand theories. For instance, Orem (1991) designed Orem’s self-care deficit theory of nursing, as it is one of the grand theories, which is a culmination of three overlapping theories: theory of self, theory of self-care defect and theory of nursing systems (Timmins and Horan, 2007). Middle range theory is narrower in scope than grand theory; it gives prescriptive power to observed data because it is based on knowledge of the practical setting, guidelines and protocol for nursing interventions. Further, it contains

concepts that relate closely to the measured data, as can be seen in the middle range theory of acute pain management in infants and children, designed specifically to represent pain experiences in this particular group of patients (Huth and Moore, 1998). Micro-range theory articulates at the level of hypothesis-testing in order to determine the relationship between health care provider and patient interaction related to the patient's condition.

The ladder of abstraction is one way of approaching and conceptualising theory (Lieher and Smith, 1999). Grand theory is located at the top of the ladder because it is more about the abstract level (world view of the researcher) of the theory. Middle range theory is in the middle of the ladder and it is in the lower level of abstraction than grand theory because it is in the level of conceptual structure (Lieher and Smith, 1999). Finally, micro range theory is located in the lower level of abstraction because it is combining the concrete concepts to the main statement through examining these concepts in practice-based research (Chinn and Kramer, 1999).

In chapter 2, a number of theories were identified that distinguished between dimensions of pain (sensory, emotional and intensity). However, it is wise to also look for a framework which can guide the design of the study. This chapter introduces some existing theories that have relevance to this study. However, some of these theories are designed for the general population rather a particular group of people, such as the study sample, which is primary school age children age 4-7 years, some of whom have English as an Additional Language. When researchers use theoretical frameworks to guide their studies, it is important to find a system of ideas, synthesised for the purpose of organizing thinking, that will provide direction for the study. The theories used to inform this study and presented in this chapter are: gate control theory, socio-communication model of pain and theory for the treatment of acute pain in infants and children.

In this chapter these theoretical frameworks will be reviewed and critiqued, explaining their limitations and relevance to this study. It is important to critically appraise a framework for research, because some models are still being developed. When the framework is identified, it is important to consider its relevance for the subject area. The framework does not have to be one created specifically for a nursing context but the importance of its content needs to be clear for nursing.

5.2 Theories relevant to the study

5.2.1 Gate Control theory

Development of Gate Control Theory

Gate control theory evolved out of pattern theories, proposed as a challenge to Descartes theory of specificity, which had dominated for over three centuries (Melzack and Wall, 1965) see figure 5.1. Descartes had argued that a specific pain system carried a message from the specific pain receptor (injured skin) direct to the brain. Melzack (1996) argues this was presented as fact rather than a theory, with the brain described as a passive receiver of pain and pain acting as a specific modulator like the other special senses such as vision and hearing (Melzack, 1996).

In the late 19th and early 20th century Muller introduced some changes to Descartes theory to involve physiological sensations as pain experiences in order to search for a specific receiver or a terminal centre of pain in the brain and also to provide support for specificity theory (Muller, 1842 cited in Melzack and Wall, 1965). Muller argued that it was only through sensory nerves that the brain can receive information about physical stimulus. This led to a search for cortical centres which were believed to be the receptors for sensory information. For Muller, touch incorporated all the physical stimuli experienced by the body. Muller's ideas motivated Von Frey to expand and classify the sense of touch into four cutaneous modalities: touch, warmth, cold and pain, each with a special terminal pain centre in the brain.

Furthermore, he focused on the receptor rather than the specific fibre and pathways to the brain. Pattern theory challenged the assumption in specificity theory that there is no specific pain receptor and fibre, while pain is presented through the intensity of the stimuli. Goldschider (1894) proposed that the critical determinant of pain is presented through both intensity stimulus and the central summation. He was influenced by Naunyan experiments on patients suffering from tabes, which is characterised by a degeneration of the dorsal spinal cord, which demonstrated that pain is experienced in different ways. A warm test tube was applied to the skin; at first it was felt only as warm but during each subsequent application it felt increasingly hot until the patient cried out in pain. Therefore, the pattern of pain is produced by the intense stimulation of nonspecific receptors. This theory focused more on pathological pain syndromes rather than the physiological experience of pain .

Limitations

Although, Specificity and Descartes theories were inadequate, they were valuable in that they began to acknowledge the function of the nervous system and gave Melzack and Wall a basis on which to develop a gate control theory. This theory acknowledged that pain experiences are complex and that there are many factors which influence pain perception, including thought and emotion. Therefore, any stress and tension and thinking about pain can open the gate and increase the intensity of pain. There are two sensory receptors, one is the pain receptor which activates when there is a stimuli on the small nerve fibres that leads the gate to open because it decreases the activation of the neuron inhibitor, as a result it sends the signal of pain to the brain. Second, the normal receptor, which means that any stimulation on the large nerve fibres can activate the neuron inhibitory in the brain then the gate is closed.

Furthermore, Melzack and Wall demonstrated that observing pain physiologically is not enough to determine pain therapy. Therefore, the weakness in the psychological assumption in the specificity theory is that there was no room for psychological experiences. This was examined by Melzack and Wall in 1962 and 1965 when they discovered emotional behaviour in dogs by replicating Pavlov's experiment. These dogs received an electrical shock then were presented with food; the dogs only responded to the signal for food and gave no response to the pain stimuli. As a result they found that in addition to the sensory input there was a strong relationship between perception of pain and psychological variables of pain. Therefore, gate theory identified that a patient's psychological condition can raise the level of pain and open the gate and vice versa (Melzack and Wall, 1996). This theory emphasised both the input of modulation to the spinal dorsal horn and the role of the brain in pain processing and pain dynamically. For example, there has been another unexpected effect of this theory on the role of acupuncture in relieving some types of pain, acupuncture needles close the gate which leads to the inhibition of pain impulses (Audette and Ryan, 2004;

Kaufman, 2008). Conversely, small fibre activation leads to pain receptors being activated, by the gate being opened. As gate control theory showed, any activation in the large fibre can close the gate, while any activation on the small fibre can stimulate the transmission of pain and open the gate (Melzack, 1996). However, there are many authors who have argued that there are gaps in this theory, and they have attempted to investigate new aspects that do not appear in gate control theory. Some of them applied gate theory to clinical practice (Turk and Flor, 1987; Turk and Rudy, 1992; Daniele and MacDermott, 2009), whereas, others looked more closely at key factors such as depression, emotional disturbance, and other psychological components of chronic pain (Gamsa and Vikis- Freibergs, 1991; Rudy et al., 1988).

In conclusion, this theory led doctors and nurses to understand that pain is a complex processing and gating system. Pain transmission can be gated and blocked in many ways, for example by helping the patients to change their attitude towards pain and to be less fearful of what the pain means even when treatment is on-going. Therefore, the patient understanding pain in a very clinical way helps them to understand how they think about and conceptualise pain, and their beliefs about their condition will certainly affect their pain experiences. There are strategies and tools which can be used to teach the patient how to deal with their social situation, mood, anxiety and occupational stress in relation to pain. All of these can help close the gate. Understanding and interpreting their perception of pain is a very effective way for the doctor to think about their condition. However, this process may not be successful among EAL patients because they cannot express their pain adequately in English, leading to misunderstanding and misinterpreting of their pain. This may lead the doctor to misunderstand how the patient feels pain and how they think about pain. This may also cause shame and frustration for the patient, which might increase the activation of inhibitory neurones and open the gate. Linguistic problems are a factor that gate control theory fails to

take in to consideration, which may impact on a patient's psychological condition and cause distress and open the gate.

Relevance to this study

The term 'theories of pain' is a focused conceptual structure, which is used in a very broad sense and is used in many contexts, one of these is to describe the interrelationship between physiological, emotional, sensory and psychological factors responses and qualities. Of this type of theory, the theoretical framework most relevant for this project is the 'gate control theory', that was developed by Melzack and Wall (1965). This theory supported that misunderstanding of pain can cause anxiety, which can lead to the gate opening. Therefore, the gate control theory is relevant to the present study because the study is concerned with physiological and psychological responses to pain and it looks at the pain from a clinician point of view.

5.2.2 Prescriptive theories of acute pain management

Development of Prescriptive theories of acute pain management

Mechanisms of pain, sensory and experiential pain components have been documented through previous pain theories in the chapter, however, a description of physiological, sensory and emotional pain is not enough. Over the last 20 years, poor pain relief has been well recorded (Brunier and colleagues, 1995), for this reason Huth and Moore (1998) introduced a middle-range theory for the description and alleviation of acute pain in infants and children. As previously described, this was a method of prescriptive theory that linked theory, practice and research because it moved from an empirical to a conceptual framework (theory).

This guideline was proposed to address the experiences of a particular patient population (children aged between 6 months-12 years) because adequate treatment was not always

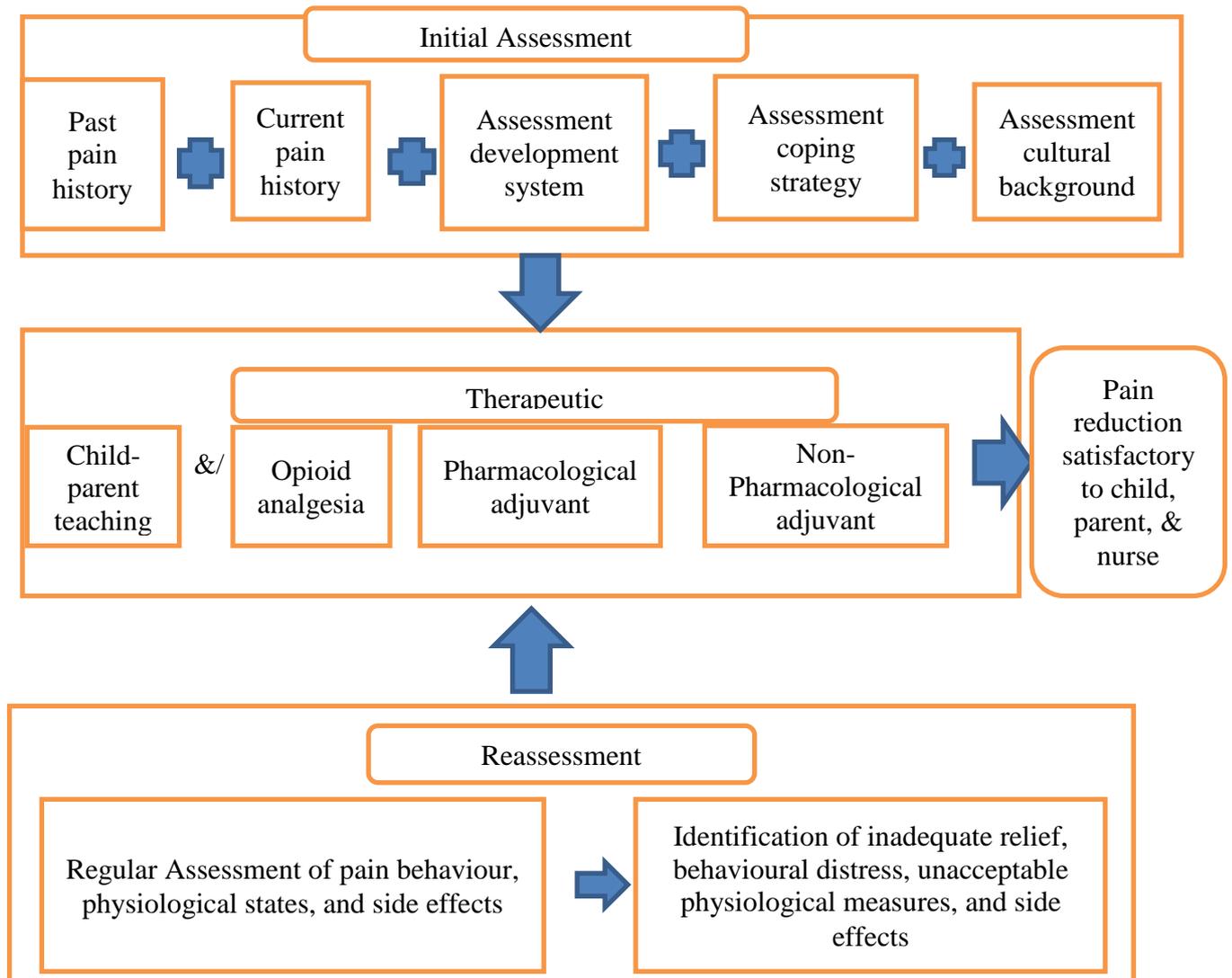
available for children with acute pain (Schechte, 1989). It was also designed to help nurses expand their knowledge in order to reduce pain and conceptualise an appropriate basis for pain intervention in the clinic (Huth and Moore, 1998). This theory was generated through nursing interventions and clinical practice based on the guidelines on acute pain management from the Agency for Health Care Policy and Research (AHCPR, Good and Moore, 1996). These guidelines were based on research in the field of acute pain management in infants and children and were introduced in order to improve patient outcomes. This guideline identified the most useful concepts to examine acute pain management in infants and children referred to by transcultures as a theoretical statements (Acute Pain Management Guideline Panel, 1992). Further, this theory is based on three components which are quite similar to the nursing process strategies:

- Initial assessment, which requires the nurse to assess the child's previous pain history and current pain history as a priority, then obtaining the initial assessment of pain, level of development, coping strategies and cultural background as a second step.
- Therapeutic intervention, which consists of a teaching process for both children and parents regarding pharmacological and non-pharmacological technique (such as administering opioid analgesia).
- Reassessment, which consists of reviewing both previous statements which includes the self report of pain by the child (or parent report), and observing of any physiological and behavioural distress which might contribute to the therapeutic interventions, in order to identify unacceptable drug side effects and the pain measurement tools that were used in the first statement.

In addition to this guideline, the clinician needs to interpret any pain reduction satisfactorily to child, parent and nurses alongside the physiological, behavioural symptoms and subjective

feeling of pain (Huth and Moore, 1998). As the nurses may be nearest person to the patient (McCaffery, 1990), therefore, the vital role of nursing in this theory is to manage the environment for the infant and child in order to have an active interrelationship between physical, psychological, developmental, and sociocultural components (Huth and Moore, 1998) (see figure 5.2).

Figure 5.2 Prescriptive Theory of Acute Pain Management in Infants and Children: Huth and Moree (1998: 26)



Limitations

This theory may not be relevant for the treatment of acute pain in premature babies, children with learning disabilities, and children with chronic pain (Huth and Moore, 1998). This

model does not make any room for children to encode their pain especially in the first component. However, the responsibility for this component (initial assessment) lies with the nurse to assess and seek the relevant information. Further, it does not naturally invite parents to be involved in their children's clinical judgement or participate in encoding their children's information to the nurses.

Children's understanding and response to past experience requires taking the child's age, cognitive development, behaviour, and emotional status into account. However, older children may have the capacity to give the history of their pain without the aid of parents, as children have good memories and remember previous incidents (Baeyer et al., 2004). On the other hand, an infant may not be able to provide their pain history verbally because they are part of the nonverbal populations (Herr and colleagues, 2006). In order to understand and respond to the pain stimuli, it is important for children to be developmentally ready (American Medical Association, 2010).

The last step in the initial assessment is the assessment of cultural background. This is valuable for recognising pain, but there are no clear indications of a tool that nurses can use to determine the child's cultural background, or the child's ability to use pain words to describe the pain events. Gaston-Johansson and colleagues (1990) reported that there are various meanings of pain depending on the specific words used by Hispanics, American Indians, blacks, and whites, and it may be affected by culture. For example, the word `pain` is used for more severe pain, the word `hurt` is used for less intense pain than the pain word, while the word `ache` is used for least severe pain. This concern is edited in the literature review conducted for this study (see chapter 2). This theory cannot necessarily be applied to large groups of children, for example children from infancy period to puberty are all included in the same model. It could be divided into smaller age groups from infancy to preschool age (6 months-5 years) in one model and school age children (6 years- 12 years) in another model

because this would allow clinicians to apply this theory to the different developmental levels of children. On the other hand, this theory does not refer to children with inadequate language proficiency.

Relevance to this study

Despite these limitations this theory does have relevance to this study:

1. The theory incorporates explicit assessment of cultural background, although the process to achieve this is not described.
2. This theory emphasised re-assessment when undertaking therapeutic interventions to alleviate pain.
3. The outcome includes managing pain to the satisfaction of the child, the nurse, and the patient.

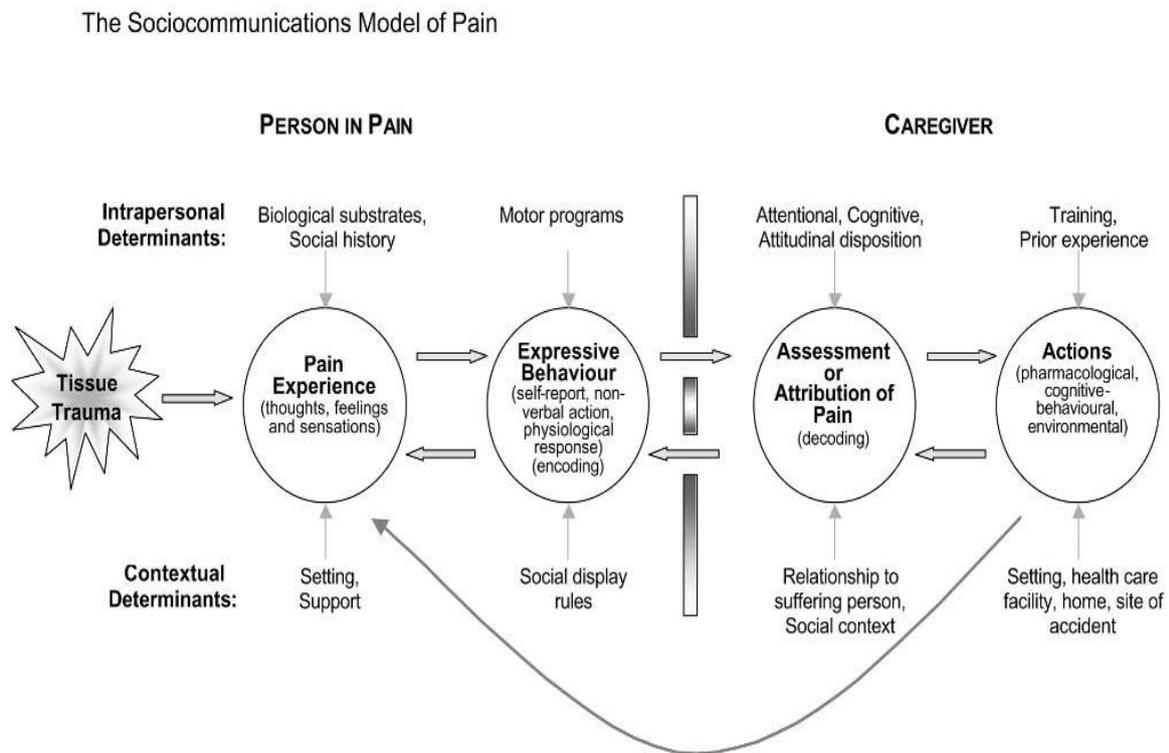
5.2.3 Socio-communication model of pain

Development of the socio-communication model of pain

The socio-communication model of pain is a conceptual model that combines biological, psychological and social factors which affect the level of interaction between the person in pain and the caregiver (Hadjistavropoulos and Craig 2004, Craig, 2009) (see figure 5.3). This model provides detailed information, which can be used to understand the biopsychosocial dimensions of pain. It includes the patient's perception, experience and expression of the manifestation of pain (self report of pain) and the clinical implications for best practice for the caregiver (observer responses) through determining the level of empathy for pain, which means understanding the other person's feelings (Craig and Versloot, 2010). In this model, the nature of pain and the process of controlling pain include a social perspective. Therefore, social factors may present a challenge in interpersonal communication and the delivery of care for a person in pain (Craig, 2009).

There is an active interaction between the encoding of pain, which comes from the patient, and the decoding of pain by health professionals, which requires an understanding of how pain is perceived and expressed in order to communicate pain effectively (Craig, 2004). Verbal communication of pain (Self report of pain) is more likely to reflect the intensity of pain rather than non verbal communication (facial expression) and cognitive and emotional control are more likely to be deliberate in verbal communication (Cano and William, 2010). Further, underestimation of a patient’s pain because of a lack of verbal expression might reflect negatively on pain management (Versloot and Craig, 2009). Therefore, an active relationship is necessary between the person in pain and the caregiver (Hadjistavropoulos and Craig 2004, Craig, 2009), as illustrated in Figure 5.3.

Figure 5.3 Socio-Communications model of pain: Hadjistavropoulos and Craig (2004: 92)



Limitations

Language can be seen to be the primary means by which pain is expressed. Therefore, accurate pain assessment is likely to be affected by communication barriers for example, the way children describe (encode) pain will affect the way nurses assess (decode) it. The importance of language is emphasised in the socio-communication model of pain (Hadjistavropoulos and Craig, 2004). Language is used by children to express (encode) their pain; however, clinicians need to understand the language used in order to assess (decode) pain. This model also helps to explain how the use of interpreters adds an extra layer to the language transmission, increasing the opportunities for misunderstanding (Endacott et al., 2010)

The socio-communication model of pain is more general and is used for the whole population without considering age of development and language variations. It means that it is not designed especially for children in general and in particular for children with English as an additional language. Further it only focusses on the person in pain and the caregiver's perception of children's behaviour. Hence, to adapt this model to the sample population of this study, it is important to involve parents and interpreters in addition to the person in pain and the caregiver, as it is known that children often require the aid of parents to make judgement for them when they cannot provide a self report of pain (Versloot and Craig, 2009). Children's pain expression can be interpreted more accurately if it is observed by parents because of the strong social interaction between them (Vervoort and colleagues, 2008). Further, access to a clinician speaking the same language as the patient is important in this model because EAL children require access to language in order to encode information to health professionals correctly and decode it.

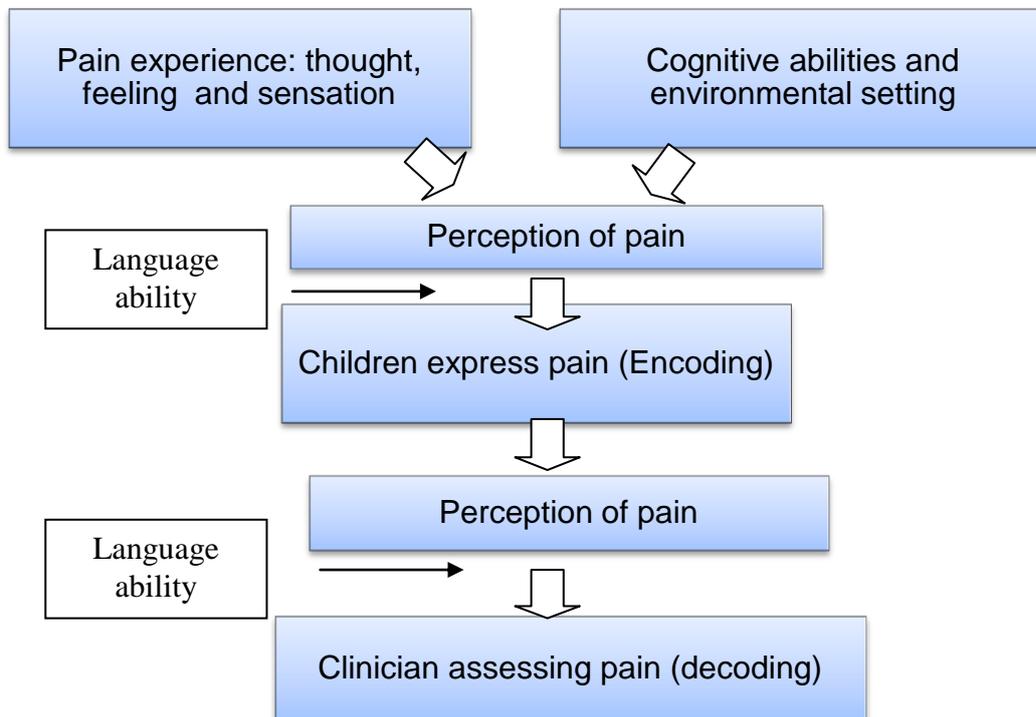
Relevance to this study

Although, the content of this framework is relevant for this study, it needs some modification in order to be more suitable for the children in the target population and to help answer this study's research questions. In the first phase of this study, the researcher examined children's capacity to communicate pain (encode pain) and took children's linguistic abilities into consideration in order to identify the level of comprehension. Moreover, the second phase of this study examined the difficulties nurses face when using their clinical judgement to decode children's pain in the health setting (decode pain). Therefore, the conceptual framework was adapted in order to guide the data collection in first phase, then amended after the second phase data collection.

5.3 Conceptual framework

An adapted version of the socio-communications model (Figure 5.4) was used to guide data collection for Phase 1 (see Chapter 2); this was an important first step to build on existing knowledge about pain communication.

Figure 5.4 Socio-communication model of pain (Azize et al., 2011:240)



As a result of critiquing the three theoretical frameworks in this chapter and data collection for Phase 1 of this study (presented in the preceding chapter), a new framework is presented in this study (see figure 5.5). The key components of these theories are those relevant to the impact of language on assessment of pain in primary school age children age 4-7 years. These are presented in the next sections.

5.3.1 Socio- linguistic communication of pain in children

Communication is one of the most important nursing skills which might help the patient to understand the way that the health professional describes the procedure. Therefore, it is not only about which words have been used in the conversation, it is more about understanding the words that are being used through the socio-linguistic components of the interaction (Major and Holmes, 2008). Social and linguistic components are both valuable in examining the communication strategies used by nurses in order to seek out the patient's problems and assess them effectively. Evidently, the same communication strategies could be used with

children; however, in practice this would be more complicated because the conversation requires understanding on both sides.

5.3.2 Requirements of encoding pain by children

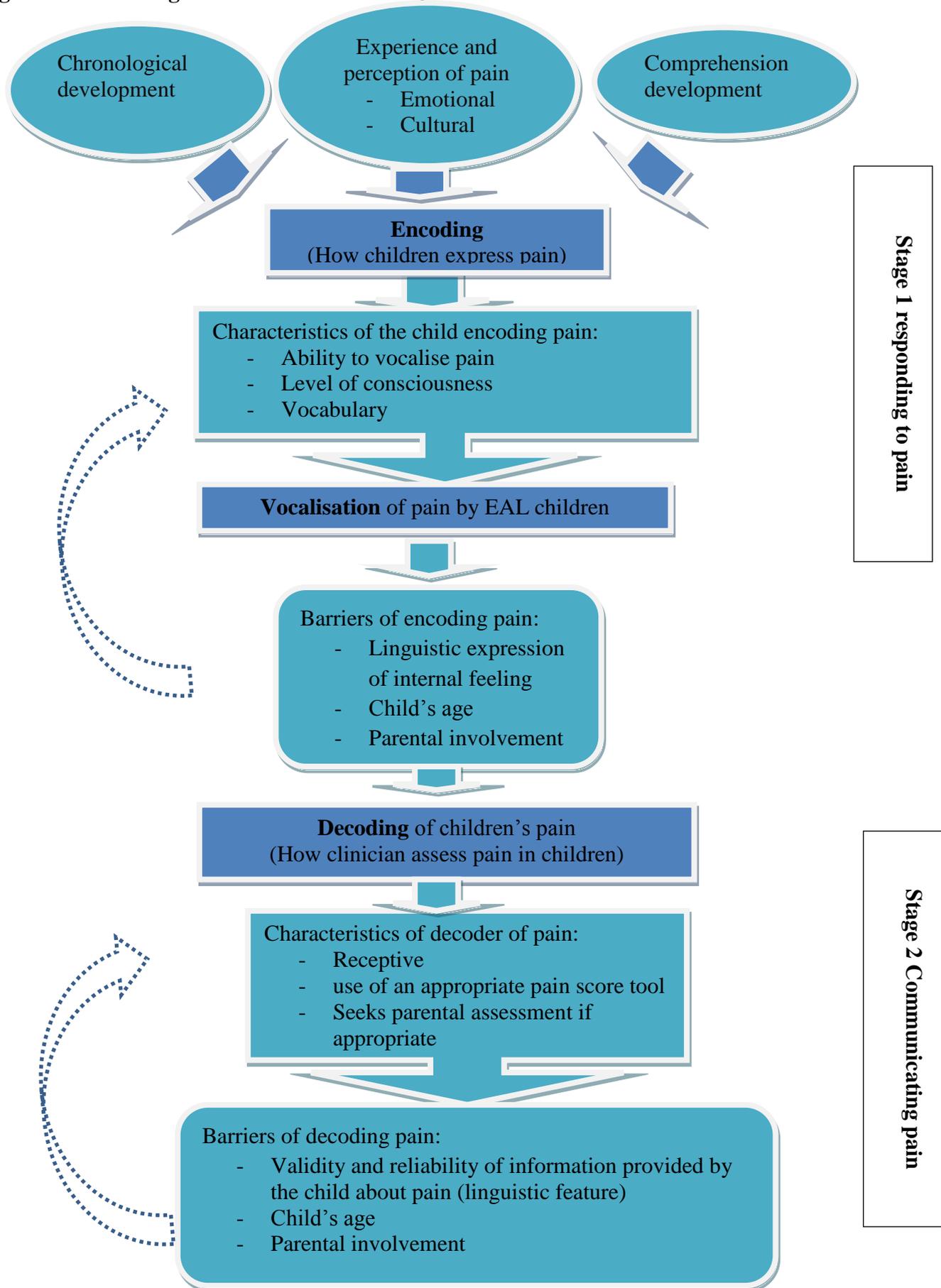
- Vocalisation of pain has a vital role in assessing pain in children effectively, otherwise observing the child's behaviour such as facial expression have been found to be a major determinant of pain, which helps health professionals to judge children's pain especially in the nonverbal population (Herr et al., 2006; Ekman, 1993).
- The level of comprehension is necessary for children because it enables them to be conscious about their surroundings. Otherwise, it can influence and break down communication. Further, there are differences in the level of understanding among children; which depend on the level of mental, social, psychological, and linguistic factors. For instance, EAL children without a good level of English language may not have the ability to understand even if they are socially, mentally and psychologically well. Cognitive development in EAL children plays an active role in language ability (Herr et al., 2006)
- Chronological age development of children as mentioned in the literature review. Children experienced pain differently depending on the different developmental stage. Older children inevitably experience and express their pain differently to young children because of the maturity of their cognitive abilities (American Medical Association, 2010).

Decoding pain: is an interpretation of pain by caregivers through observation of the verbal and nonverbal reactions to pain among children who are suffering from pain (Hadjistavropoulos and Craig, 2004). There are some factors which relate to children as mentioned before, and some to the caregiver.

5.3.3 Requirements of decoding pain by the clinician in this conceptual model

- Understanding children's feelings, it is important for children to express their feelings by using reliable, valid and clear language (metaphorical language), which might help health professionals to assess their pain accurately. Health professional prefer to put observing the patient's behaviour as a priority in recognising pain especially among patients who are unable to Self-report their pain (Herr et al., 2011).
- Children's age as mentioned in the literature review chapter. It is important as it may help them to be able to express their feeling of pain, as well as it aiding the care giver to assess and manage pain effectively (Deyo et al., 2004).
- Parent involvement in clinical decision making as mentioned in the literature review, it is human right to involve parents in clinical judgments whether children and parents have a good or poor language.

Figure 5.5 Socio-linguistic communication of pain in children: a theoretical framework



CHAPTER 6 PHASE 2 METHODS

6.1 Introduction

In this Phase, factorial survey was used to identify factors that influence how MIU nurses and CHN students make decisions about the assessment of a child following a minor injury (part1). Factorial survey was also designed to further our understanding of the difficulties that nurses face while assessing pain among primary school age children aged 4-7 years (monolingual and EAL children) through an open ended question (part 2).

Based on the Phase 1 findings, these factors are likely to include the age, gender and language ability for both children and parents, injury mechanism, and verbal and non-verbal reaction to the injury. These factors were used to construct vignettes describing hypothetical care situations that may be faced by Minor Injury Unit (MIU) nurses. Demographical data on relevant respondent characteristics (e.g. age, gender, length of time working in hospital and professional background) were collected via an accompanying questionnaire. The survey conducted, which includes vignettes and a questionnaire were presented using a laptop.

This chapter begins with consideration of the principles underpinning design of a factorial survey, including the advantage and disadvantage of the factorial survey as it was used in the second phase of this study. First the factorial survey is introduced and secondly the design of applying a factorial survey is explored, finally the factorial survey is justified in the context of the study aim and research questions. Methods used for Phase 2 data collection are then presented along with a rationale for decision made.

6.2 What is a factorial survey?

The factorial survey approach was developed more than three decades ago. The first study example, which measured household social standing, was published in 1974 by Rossi and colleagues (Wallander, 2008; Jasso and Opp, 1997). A factorial survey is an experimental

design for investigating decision making using “true- to life vignettes,” and is increasingly becoming a central feature of social science research (Taylor, 2006:1187). It has been used to examine human judgement through responses to written descriptions of scenarios (fictive descriptions or vignettes) (Shlay et al., 2005). Therefore, the main element of analysis in the factorial survey is the vignette (Wallander and Blomqvist, 2009). Depending on the aim of the study, survey respondents are requested to make different forms of judgement: first, normative judgement such as recommendation for action, denoting responsibility, and identifying seriousness of a situation; second, predictive judgment which includes estimation of outcome, and, third, intended action, which can allow the respondent to covers feelings and thought. Further, a factorial survey captures the real life complexity of human judgements (Rossi and Anderson, 1982). It also takes into consideration the separate influence of many factors on judgement and choices (Müller et al., 2008). This method has been successfully used to investigate sensitive topics and identify the decision- making process of healthcare professionals such as nurses and psychologists (Ludwick et al., 2004).

The researcher may obtain real life data (judgement) from survey respondents through the number of vignettes, which emphasise the social components of this judgement and create a different combination of dimensions (variables), each with different levels (values) (Rossi and Anderson, 1982). Therefore, the number of vignettes that each respondent will rate is based on the number of factors to be included. Efforts are made, however, to strike a balance between the complexity of the scenarios and the number of vignettes to be rated by each respondent. The vignettes are constructed from either practice knowledge, previous research or preliminary qualitative research in order to identify relevant factors (dimensions) (Taylor, 2006). The level of each dimension is selected randomly in order to combine them in the scenario as independent variables (Hennessey, 1993).

Research questions

The study aim was to examine the impact of language on the expression and assessment of pain in primary school aged children. For Phase 2, the study aim generated one major question and four sub questions which guided the study, as indicated below,

Does language influence the assessment of pain in simulated minor injury scenarios involving primary school aged children?

- a. What judgments do final year child health nursing (CHN) students and nurses working in a Minor Injuries Unit make about the assessment of pain for children with different language abilities?
- b. Does the language of the parents affect decisions made about assessment of the child?
- c. Are there differences in the judgments about pain assessment made by CHN students and MIU nurses?
- d. What difficulties do CHN students and MIU nurses identify in assessing pain for EAL children?

6.3 Advantages of factorial surveys

A factorial survey combines the advantages of experimental design and research surveys. Thus, a factorial survey includes a wide range of different dimensions and levels which reflect more accurately the complex mix of influences that affect decisions in clinical practice. It uses a hybrid technique which combines the dimensions and orthogonal levels, which means including all the dimensions in a vignette but with various levels (Rattray et al., 2011). Wallander and Blomqvist (2009) found that in order to explain the contexts and conditions that affect judgements, it is important to present respondents with concrete and detailed descriptions of the factors believed to have influenced the decision. Thus either the number of vignettes that need to be completed by respondents needs to be increased or the size of

confidence intervals needs to be increased, which means increasing the range of the sample mean (Charlton 2002).

It is suggested that factorial survey overcomes the following problems that may arise during a research study:

- 1- Clinical and work setting problems Factorial survey removes the need for direct contact with patients, although it is a true to life vignette. Further, the relative anonymity of data entry (usually undertaken electronically) should make the method more successful when seeking judgements about sensitive issues.
- 2- Time required for data collection The cooperation required of healthcare professionals to provide a comparable amount of detail during an interview might impact on respondent recruitment or retention. Factorial survey can gain cooperation because it presents respondents with 10-30 vignettes that can usually be completed in 30-40 minutes, depending on the complexity of the decisions required.
- 3- Respondent confidentiality. In factorial survey there is no direct interview with the respondent, therefore, their answer would be more confidential because data is collected and saved on a password-protected file on the lap top instead of on the paper.
- 4- Accuracy and reliability of information. The respondents have to respond to the vignettes without any prompting (or introduction of bias) by the researcher.
- 5- Limitations of traditional experimental designs. There are a limited number of variables with a few levels and it is difficult to separate the confounding variables like race, age, educational level, but with a factorial survey the researcher has opportunity to incorporate many variables and levels in the vignettes and statistically identify the impact of each variable (independent variable) on the dependent variable in the vignette through using regression analysis.

6- Validity. In traditional experimental design internal and external validity are mostly achieved in factorial surveys. Internal validity is increased because of randomised and orthogonal nature of the independent variables or factors presented in each vignette (Ludwick et al., 2004). This means that the selection of each factor to be presented in a vignette is independent of the other factors already chosen. External validity is also high due to the large sample size, with each vignette representing a unit of analysis (Pike, 2012).

6.4 Recruitment of Respondents

Twenty respondents were Registered Nurses and Nurse Practitioners working in a Minor Injuries Unit (MIU). The clinical manager of the unit was approached by the researcher in order to publicise the study. Copies of the information sheet and consent form were left at the MIU. The second group of respondents were CHN students. CHN students were identified as an appropriate sample for the factorial survey because they had recently completed their final undergraduate modules, including assessment of pain, and were about to commence work as Registered Nurses working in the child health field. Hence this group were most likely to have knowledge of up-to-date policy and evidence regarding pain assessment in children. The study was publicised via the programme lead and twenty students were recruited, data collection for these two groups of respondents took place at the MIU and on the University campus, respectively.

Inclusion criteria:

MIU nurses were eligible for the study if they met the following criteria:

- Experience of working in a Minor Injuries Unit or similar (for example Emergency Department) for at least two years.
- Assessing children on at least a weekly basis.

- English is their first language.

CHN students were eligible for recruitment if they met the following criteria:

- In the final year of the programme
- Completed clinical placements

Exclusion criteria:

MIU nurses were excluded for the following reasons:

- Less than 2 years' experience in a MIU or Emergency Department. Nurses without adequate experience may not have encountered some of the scenarios presented in the survey.
- English not spoken as a primary language: as language is also a reflection of culture, nurses who do not speak English as their primary language may have a different approach to the assessment of pain. Whilst this is an inexact relationship, previous study Zatzick and Dimsdale (1990) has demonstrated different approaches to pain management by doctors from different cultures. Whilst this is an interesting area to explore, it is beyond the scope of this study.

CHN students were excluded if English was not their primary language and if they still had theoretical or placement components of the programme to complete. CHN students at this stage of their programme were considered as close to 'newly qualified' as it was feasible to achieve. This also allowed the researcher to examine if completing a child health nursing programme but no specific MIU experience led to different judgments about the children portrayed in the vignettes, as reflected in the research questions.

6.5 Sample size

Wallander (2008) points out that in factorial survey the vignette is the unit of analysis, therefore, the respondent number, and the number of vignettes each respondent were asked to judge provides the statistical power of the analysis. As factorial survey studies usually require respondents to rate more than one vignette, the survey does not require as many respondents as general social survey research. The sample size, or number of vignettes was 20 MIU nurses and 20 CHN students at University of Plymouth each completing 12 vignette judgements.

6.6 Independent variables

The vignettes were constructed using findings from Phase 1; this allows identification of Independent and Dependent Variables. The Vignette Attributes (dimensions and levels) were developed with expert clinicians to ensure the scenarios presented were as realistic as possible.

6.6.1 Respondent characteristics

The following respondent characteristics (explanatory variables) were collected for all respondents via a survey questionnaire: age, gender, job title and, for MIU nurses only, length of time working in the MIU.

6.6.2 Vignette attributes

The factors included in the vignettes were: child's age, child's gender, child's language ability, child's country of origin, parent's language ability, which brought the child to the MIU (mother or father), mechanism of injury and verbal and non-verbal reaction to pain.

The number of potential vignettes that could be randomly presented to the respondents is obtained by using the product set, i.e. multiplying the number of levels together; so for

example if there were 5 dimensions (factors) with between 2-4 levels in each vignette, there would be $4 \times 2 \times 2 \times 3 \times 3 = 144$ potential vignettes. Review of previous studies revealed the number of potential vignettes to be as high as 1680 (arising from 84 variables with 20 vignettes presented to each respondent) (Rattray et al., 2011); however, this number is not always reported. The number of vignettes presented to a respondent (the sample size) does not appear to relate to the number of respondents or the total number of potential vignettes. To take just two examples, Wallander and Blomqvist (2009) surveyed 106 respondents with a sample size of 4860 vignettes, whereas Schwappach and Koeck (2004) surveyed 1017 respondents with a sample size of 2289 vignettes. Using the general principles of power calculations it would be expected that a higher number of potential vignettes should demand a larger sample of obtained vignettes to a point, but no rationale supporting or disputing this sampling principle is provided in previous studies or methodology texts. Hence multiple regression analysis formulae seem to be the most appropriate method to calculate sample size.

In this study each generated vignette was made of fixed text with eight 'gaps' (not visible to the respondents) which were filled by a text representing a level from the dimensions. Therefore, each vignette contained 8 dimensions with between 2-4 levels. From these eight dimensions, seven of them are categorical variables and 'child's age' is the only continuous variable. See Table 6.1 for a list of dimensions broken down by the list of levels.

Table 6.1 Coding level dimensions for each dimension

Dimension	Levels of dimension	Type of coding level	Number of levels *=randomised	Model
Child's Age	4 5 6 7	Continuous	*4	R
Child's Gender	Boy Girl	Categorical	*2	R
Child's language	Native English speaker Speaks English well Speaks English poorly	Categorical	3 *2	M
Child's country of origin	UK Middle East Eastern Europe Asia	Categorical	4	F
Parents' language abilities	Speaks English as a first language Speaks English well but as a second language Speaks English poorly as a second language	Categorical	3	F
Brought the child's to MIU	Mother Father	Categorical	2	F
Mechanism of injury	Fell from a 3 foot high climbing frame Tripped over and grazed his knee Was hit in the leg by a football	Categorical	*3	R
Verbal and Non Verbal Reaction to pain	Sitting quietly Crying Playing with toys in the waiting room	Categorical	*3	R
Total vignettes (multiplication of randomised levels : 4 x 2 x 2 x 3 x 3 =144)				
R: randomised F: fixed; M: mixed;				

As identified in Table 6.1, the five dimensions that were randomised resulted in 144 potential vignettes that could have been presented to the respondents. Each respondent (n=40) was

presented with twelve vignettes, resulting in a sample size of 480 vignettes. Two of the responses provided by the CHN students were inconsistent, indicating that they had not read the vignette correctly. Hence these were removed from the sample, leaving a final sample for analysis of 478 vignettes.

Fixed dimensions

In order to avoid the creation of unrealistic vignettes, three dimensions - the parent (mother or father) that brought the child to the MIU, the country of origin of the child: (UK, Middle East, Eastern Europe, Asia) and the language of the parent (native English speaker, speaks English well and speak English poorly) - were fixed. This was managed in the following way:

1. The first six vignettes included the mother as the accompanying parent and the following six vignettes the father accompanied the child.
2. The country of the child was ordered for the first four vignettes in the above order and then repeated three times.
3. The language of the parent was ordered for the first three vignettes in the above order and then repeated again four times.

Randomised dimensions

The levels of 4 dimensions (child's age, child's gender, mechanism of injury, and child's reaction to pain) were all randomised.

Mixed dimension

One dimension (the child's language) was mixed with one level that was fixed in order to create the scenario of a perfect monolingual child case (i.e. 'a child from the UK who is a native English speaker, is brought to the MIU by the mother who *is a native English speaker*'). These fixed levels were included in the first, fifth and ninth vignette presented to

the respondents. The other two levels of these three dimensions were randomised for the remaining vignettes to create the scenario of the variability of bilingual children. Therefore, 34% of vignettes were fixed and 66% were randomised.

6.7 Dependent variables

In a factorial survey up to three dependent variables are normally selected in order to investigate an issue (Ludwick et al., 2004). In this study, three questions were constructed to investigate the respondent's clinical judgments. The responses to the first and second questions were multiple choices with four or three categorical options, which only one option can be selected. The third question was an open ended question (see table 6.2). For clarity of analysis, responses to these questions are identified as Judgements A, B and C respectively.

Table 6.2 Dependent variables with three and four categories

Judgement	Questions	Levels	Codes
A	Q1. Which of the following actions is most important when assessing this child's pain (please tick just one):	Observe the child's behaviour	1
		Assess active and passive limb movement	2
		Use a visual analogue scale (score of 1-10)	3
		Record vital sign	4
B	Q2. Would you ask the parent to help you assess the child's pain?	Yes	1
		No	2
		Yes but with interpreter	3
C	Q3/ Does anything make it difficult to assess this child's pain? If yes, please explain.		

6.8 The MediaLab software

MediaLab is software that creates experimental programs in the psychology sector (Hennessey, 1993). For this study, a program of vignettes and questions with a questionnaire survey were constructed using the programs Excel and MediaLab and were presented to respondents on a laptop.

MediaLab is not an internet based program; however, it does allow the researcher to automatically save the results on an Excel and SPSS sheet when the respondent finishes the

survey without requiring any transcription of the data. For this study, Media Lab version 3 (2010) was used.

6.8.1 Preparation of the survey

The survey was conducted using MediaLab (<http://www.empirisoft.com/medialab.aspx>) for all stages in the process. This software can accept a whole range of file formats including Microsoft Word, SPSS, Excel, and PowerPoint. For this study the researcher created a number of additional files, which were loaded into MediaLab in advance. The vignettes were presented in large, black font on a purple background to facilitate accessibility. This procedure is outlined below:

1. The experimental file was developed (.exp file), which instructed Media Lab regarding the order in which the various files are presented to the respondents (see appendix 6).
2. A power point file (.ppt file) was produced as an introduction to the survey. This contained information about the aims of the study, characteristics of the questionnaire and factors (see appendix 7).
3. The survey questionnaire was developed; this is also produced with the vignette in the same file underneath each vignette (.que file). The vignettes were presented in large, black font on a purple background to facilitate accessibility. There were two multiple choice questions and one open-ended question related to each vignette (see appendix 8).
4. The vignettes (response.xls) were constructed in the excel spread sheet named. The researcher fed the formula for all dimensions and their levels into the software and also instructed the software to either randomise the dimension level or fix the variable

to the vignettes. For example, the following formula is for one of the randomised variables (child's age) to randomise the levels.

```
=LOOKUP(B2,{1,2,3,4},{ "4 year-old", "5 year-old", "6 year-old", "7 year-old" })  
=IF(AND(B240<>-99, B241=-99),(INT(RAND()*4))+1,B2)
```

A sample of the MediaLab response file is presented at Appendix 9.

6.9 Producing vignettes

The vignettes were generated through combining dimension levels randomly in order to include an equal probability of independent variables and dimensions which are orthogonal to each other (Dülmer, 2007). See two sample vignettes one at figure 6.1: example 1 and example 2, these illustrate the need to `fix some of the dimensions in order for the vignettes to be realistic`. Each level of dimension is varied independently in order to be coherent and internally consistent (Sauer et al., 2009; Ludwick et al., 2004). The brackets shown in figures 6.1 identified the dimensions but are not visible to respondents. These illustrate the range of text that was constant across the 12 vignettes and the text that was variable with text that was randomly drawn from a specified dimension.

Figure 6.1 Samples of vignettes presented to respondents

Example 1

A <6 year-old> <girl> who is from Middle East and <speaks English poorly as a second language> is brought to the MIU by his father who speaks English poorly. <the child was playing in the park and was hit in the leg by a football. There are no breaks in the skin and the leg is not swollen>. Following the accident, she was <playing with toys in the waiting room>.

Q1. Which of the following actions is most important when assessing this child's pain (please tick just one):

1-Observe the child's behaviour

2-Assess active and passive limb movement

3-Use a visual analogue scale (score of 1-10)

4-Record vital signs

Q2. Would you ask the parent to help you assess the child's pain?

Yes No

Q3. Does anything make it difficult to assess this child's pain? Please explain

Example 2

A <4 year-old> <boy> who is from the UK and <speaks English as his first language> is brought to the MIU by his mother who is also a native English speaker. <The child was walking home from school and tripped over resulting in a grazed knee, the graze is oozing slightly but not swollen or restricting limb movement>. Following the accident, he was <crying>.

Q1. Which of the following actions is most important when assessing this child's pain (please tick just one):

1. Observe the child's behaviour

2. Assess active and passive limb movements

3. Use a visual analogue scale (score of 1-10)

4. Record vital signs

Q2. Would you ask the parent to help you assess the child's pain?

Yes No

Q3. Does anything make it difficult to assess this child's pain? Please explain

6.10 Establishing reliability and validity for the use of factorial survey in this study

The factorial survey is a valid and reliable method to gain the nurse's judgments (Ruth et al., 2004). In terms of internal validity, factorial survey has a higher validity compared with other experimental designs because of the randomised combination of factors within the vignettes, which are then randomly allocated to the respondents. This gives the factorial survey the capability to investigate the effect of multiple factors in a complex decision. Further, it has also the high external validity especially when the decision made in relation to a life situation (Lauder et al., 2001). Regarding statistical robustness, the vignette is the unit of analysis, therefore, a large number of vignettes presented to the respondents, increases the statistical robustness. The decisions can be combined with the other factors, demographical data and sometimes can be combined with other similar studies using a meta-analysis (Taylor, 2006).

In order to minimise the introduction of bias, which may affect the respondent's judgement and give unrealistic results, it was important to consider the orthogonal of each level in dimension, which means assessing the extent to which dimension levels appeared with equal frequency to the other levels in all other dimensions (Rossi and Anderson, 1982). The vignettes are generated based on computer program software, which produces them in a random order and presents them to the respondent. The researcher has no control over the randomisation process, beyond identifying which dimensions are to be randomised. This underpins the rigour for this method.

Internal validity of vignettes used in this study was established because the vignettes were generated through factors identified through analysis of the Phase 1 data. The survey was piloted with academics and students who matched the inclusion criteria for MIU nurses or CHN students. In order to identify the content validity and internal consistency of the vignette variables; and to determine how long the questionnaire took to complete. The respondent information sheet was adjusted accordingly. The pilot study also helped the

researcher to check the order of the vignettes presented to the respondent and ensure that the MediaLab reported all the results and captured the presented vignettes in the Excel report file.

After introducing the study and the process of data collection, the researcher did not interrupt the respondents to avoid introduction of bias and did not enter into discussion with the respondents about expected findings.

6.11 Phase 2 ethical considerations

As the study was conducted in a health setting, the proposal was approved by an NHS research ethics committee and University of Plymouth (see appendix 10-1 and 10-2). The main ethical issues considered in the design and conducts of the factorial survey were:

1. Informed consent:

All potential respondents were provided with a detailed information sheet (see MIU Nurses information sheet at appendix 11 and CHN student information sheet at appendix 12) outlining what participation in the study would involve and how data would be used. Respondents were asked to sign the consent form. Consent is generally implied by completion of a questionnaire; however, as this survey was administered to respondents individually in their workplace, it was considered important to gain written consent.

2. Openness and honesty:

MIU nurses and CHN students were fully informed about the study and the nature of their involvement. There were no direct benefits for the study respondents; however, completion of the study vignettes provided an opportunity for respondents to review their own decision-making regarding the management of children who sustain a minor injury.

3. Right to withdraw (Autonomy)

All respondents had the right to refuse participation in the study and the right to have their data withdrawn, up to the point of anonymisation, without it having any adverse impact. Their inclusion in the study (or refusal) was not made known by the researcher to their employer (or to the programme lead for the CHN students). Permission from the manager to approach staff working in the individual Minor Injury Unit or students undertaking the CHN programme did not constitute consent from the respondents. A statement to this effect was included in the information sheet.

4. Protection from harm:

There was no foreseeable harm that might arise from MIU nurses and CHN students participating in the study. The vignettes represented minor injuries and so were not considered likely to trigger psychological distress. However, MIU nurses were able to contact the NHS Trust Employee Assistance programme, (PPC Online) and CHN students were provided with details of University student counselling services. All study respondents were encouraged to contact any member of the research team if they wish to debrief.

5. Confidentiality:

No personal data that may make the respondents identifiable were collected or stored; however, all study data were kept in a locked drawer in the researcher's office. Computer files were stored on a password-protected computer. Only non -identifiable information were used in the data analysis, and the data were anonymised by solely using respondent numbers.

6.12 Data collection procedures

The process of data collection was administered through using laptop based MediaLab secure software. The data collection was undertaken face to face and the researcher was on hand to

assist with the IT if needed. In contrast to usual survey methods, data collection took a long time because the software licensing agreement limited its' use to a single laptop computer. The researcher arranged time for the data collection with the MIU assistant manager and CHN programme lead for each respondent depending on the respondent's diary. In total the study took each person 30 minutes. Hence data collection took place over several days at the MIU. Data collection for the CHN students took place over a shorter timeframe at the University as there were no shift patterns or off duty rotas to be accommodated.

Prior to the data collection, the researcher welcomed respondents to the survey and provided the following information:

When you log on you will be given the opportunity to read this information sheet again and to contact the researcher to ask any questions. If you agree to take part, we will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. Your employer will not be aware of your participation in the study hence refusal or withdrawal will not have any consequences for your employment and not disadvantaged in any way in relation to your education and learning. The survey has three types of questions: some questions will require you to select one answer from a range of options (multiple choices). Other questions will take the form of open ended questions, which will give you the opportunity to provide more detailed responses regarding the factors that you take into account when assessing a child who sustains a minor injury. Biographical data items will be collected, which will assist us to interpret the study results. However, we will not collect any information that would identify you. The time taken to complete the survey is approximately 30 minutes

The information was also contained in the participant information sheet agreed with the NHS Ethics Committee but was repeated for each respondent to ensure that a standardised introduction was used throughout, minimising risk of introducing bias.

The researcher gave each respondent a code number. A mouse and the keyboard were used to navigate through the program. In addition to the above instructions, the experiment began with the first (ppt) file, which gave details about the study and technical instructions. Secondly, the demographical information was presented to be completed by the respondents. Thirdly, the vignettes were presented (vig.que file) with each question presented on a separate screen alongside the vignette so that the respondents did not need to click back through the screen to remind themselves of the detail presented in the vignette. Each respondent reviewed a set of 12 vignettes presented on the screen of a laptop, each representing a case scenario with a minor injury that happened to a young child. Respondents were asked to respond to two fixed choice questions regarding: a) the assessment of pain following the injury of a child and b) their likelihood of involving the accompanying parent in the assessment. Respondents were also given opportunity to answer an open-ended question by typing on a three-line blank space provided. Finally, another power point file was presented to thank the respondents.

Following the completion of the computer-based task, respondents were thanked for their time and asked for their feedback on the process through the message presented in the final slide. They were also reassured and reminded that there were no right or wrong answers.

6.13 Data management and statistical analysis

6.13.1 Factorial survey analysis

Factorial survey analysis is usually undertaken using a “multilevel program” (Dulmer, 2007: 382). Furthermore, it analyses the effect of individual vignette factors (Independent Variables) on the decisions made by the respondents (Dependent Variables) and allows calculation of the impact of each factor on the vignette decision. For this reason multiple regressions is used to determine the relationship between each factor and the vignette judgement (Taylor, 2006). There are many arguments about using multiple regressions in measuring how much factors

affect vignette decision (Hennessy, 1993; Degenholtz et al., 1999; Bland, 2000). However, there is general agreement that the most suitable analytical method to determine the size effects is the “fraction of variation in decision outcomes” (Cohen, 2001: 508; Keppel et al., 1992: 178; Roter et al., 1998).

In terms of the analysis of this study, multinomial logistic regression was used as a statistical tool to analyse the categorical polytomous variables. Further, a chi-square test was used prior to the regression to determine the first order interaction effect of the variables. As identified previously, the unit of analysis is the vignette judgment rather than the respondent (Rossi and Andereson 1982). The sample size was adequate to allow multinomial logistic regression using demographic data items (experience, age, gender, type of professional) as explanatory variables. This allowed the primary research question to be answered.

6.13.2 Open ended question analysis

Responses to the open ended question were analysed using thematic analysis, a process comprising five stages: familiarisation, defining a thematic framework, indexing, charting, and mapping/interpretation. Framework analysis is particularly useful for applied or policy-related qualitative data (Srivastava and Thomson, 2009); in this study the policies being examined relate to assessment of pain. Thematic analysis was used to analyse all lexical items, sentences, and paragraphs in order to extract themes regarding difficulties that respondents face when assessing pain. The thematic framework derived initially from Phase 1 findings (examination of how primary school aged children talk about pain) and refined using themes emerging from the Phase 2 survey data.

6.14 Limitation of using factorial survey related to the study

A number of limitations were identified during review of the literature and development of the survey. The manner in which these were addressed for this study are identified below

1. The vignettes had some similarities, which led the researcher to observe some signs of fatigue in some respondents. However, review of the responses did not reveal any patterns in the data that might be attributable to fatigue. Responses to question 3 (the open question) did not reveal any difference in the quality or quantity of response towards the end of the survey for any of the participants. Hence this fatigue was not considered to impact on decisions made by the respondents. To minimise fatigue, respondents had been asked to complete only 12 vignettes.
2. Working with Media Lab was an exhausting process for this study because it took a long time for the researcher to develop the technical skills and knowledge needed to create a factorial survey. This was largely due to the complexities of the software and manner in which the individual file types needed to 'speak' to each other.
3. For the MIU nurses, the data were collected in the very busy centre of the Minor Injuries Unit; two of the respondents asked the researcher to stop the survey because they had been called by the manager for an urgent clinical problem. As Media Lab cannot save previous answers, these respondents had to re-start the survey from the beginning. This did not appear to affect the responses given by these respondents but may be a consideration for future use of this method with busy clinicians.
4. Most of the study variables are categorical; there were lengthy discussions with the statistician during study design and study analysis to decide the most valid statistical method for categorical data.
5. Unrealistic vignettes presented to the respondent will affect their respondent's judgment and decision as the responses to the vignette should reflect responses to real life situations (Rossi and Anderson, 1982). This problem may be increased through unrealistic combinations of the factors in the vignette (Orthogonal of factors) Wallander (2008). In this study the researcher tried to decrease the number of

unrealistic vignettes by fixing the level of some dimensions. Whilst this was tedious for the respondents, again it did not seem to have any impact on the responses.

6. There is debate in the literature about whether the order of question responses which are presented to respondents should be randomised. The MediaLab software did not allow this; hence the order of the question responses was fixed.

6.15 Summary

In this chapter, steps taken to address the Phase 2 research questions have been presented and the factorial survey method critiqued in terms of the advantages, issues of rigour, design and conduct of a factorial survey and how vignettes were produced. The ethical issues to be considered when conducting this type of survey research were described. Finally the limitations of using factorial survey were outlined as they relate to this study.

In the next chapter, the findings of Phase 2 will be presented, which includes factorial survey data, open ended question responses, and integration of both sets of data.

CHAPTER 7 PHASE 2 FINDINGS

7.1 Introduction

This chapter presents the findings from Phase 2. The first part of the chapter details the analysis of the factorial survey judgements: *'which of the following actions are most important when assessing this child's pain?'* (Judgement A) and *'would you ask the parent to help you assess the child's pain?'* (Judgement B). The second part of the chapter presents the analysis of the open question *'does anything make it difficult to assess this child's pain?'*

The chapter concludes with an integration of the findings from the three questions.

7.2 Characteristics of respondents

Probability sampling was used in this study to recruit 40 respondents: 20 respondents were registered nurses working in a minor injury unit (MIU nurses) and 20 respondents were final year students from the child health nursing field (CHN students). Before respondents were presented with the first vignette, they responded to a set of questions requesting demographic details: respondent age, gender, and a job title, length of time working in the MIU (for MIU nurse respondents) and sample group (MIU nurse or CHN student; see table 7.1). The majority of respondents in both groups were under 35 years of age (57.5%) and 37 out the 40 respondents were female (92.5%). Further, 70% of the MIU Nurse respondents had worked at the MIU for over 5 years. Demographic data are presented at table 7.1 overleaf.

Table 7.1 Frequency distribution for respondent demographic data items

	CHN students (n=20)	MIU nurses (n=20)	TOTAL
Age			
<35 years	20	3	23
35-50 years	0	9	9
>50 years	0	8	8
Gender			
Male	1	2	3
Female	19	18	37
Length of time working in MIU			
<2 years		3	9
2-5 years		3	17
6-10 years		4	4
>10 years		10	10
Job title			
RN		17	17
Nurse Practitioner		3	3
Child Health Nursing student	20		20

7.3 Data presentation for Judgments A and B

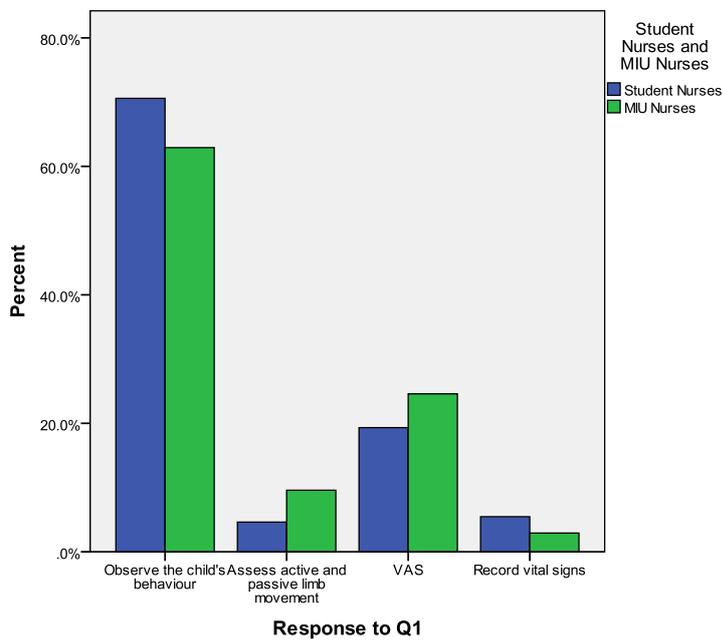
The analyses of Judgement A (i.e. judgement on ‘most important actions when assessing the pain of the child’) are presented first followed by the analyses of Judgement B (judgement on ‘deciding to seek or not the help of the parent’). To test the effects of the MIU nurses and

CHN students' judgment and the vignette factors on the response choices around the assessment of pain of the child, crosstab analyses assessed the differences between the observed and expected frequencies among the choices of the answers given by the respondents and the levels of the factors. The first crosstabs analysis was performed on the MIU nurses and CHN students (section 7.4); then, the crosstabs analyses were performed separately for the factors of the vignettes (section 7.4.1). These preliminary analyses served as preparatory base to select the significant factors to be subsequently entered in the regression model. The same procedure was repeated for the Judgement B.

7.4 Judgment A with MIU nurses and CHN students

The first crosstabs chi-square Pearson analysis performed on the MIU nurses and CHN students evidenced a significant difference between the two groups, $\chi^2(df\ 3, N = 478) = 8.543, p < 0.05$, on the frequency distribution of the response categories (see Figure 7.1). Notably, despite the great overall accordance on the "Observe the child's behaviour" response, this differed across the two groups with 63% for MIU nurses and further high proportion of 71% for CHN students.

Figure 7.1 Judgment A with MIU nurses and CHN students



Chi-square results of the judgment A and the vignette attributes

The outcome of the eight crosstabs analyses with Pearson chi-square were performed for the factors of the vignettes on Judgement A is presented in Table 7.2. The analyses revealed significant difference only for the two factors: child’s language abilities and injury mechanism.

Table 7.2 Chi-square results of the judgment A and the vignette attributes

No.	Dimensions	Levels				Chi-square	Sig
1	Child's age	4 years	5 years	6 years	7 years	$\chi^2(df 9, N = 478) = 8.057, p > 0.05$	-
2	Child's gender	Male	Female			$\chi^2(df 3, N = 478) = 1.809, p > 0.05$	-
3	Child's language	Speaks English well			Speaks English poorly	$\chi^2(df 3, N = 478) = 11.098, p < 0.05$	*
4	Child's country of origin	England	Middle East	Eastern Europe	Asia	$\chi^2(df 9, N = 478) = 5.545, p > 0.05$	-
5	Brought the child to MIU	Mother	Father			$\chi^2(df 3, N = 478) = 2.006, p > 0.05$	-
6	Injury Mechanism	The child was playing at the local playground and fell from a 3 foot high climbing frame.	The child was walking home from school and tripped over resulting in a grazed knee.	The child was playing in the park and was hit in the leg by a football.		$\chi^2(df 6, N = 478) = 22.760, p = 0.001$	**
7	Parent's language	Speaks English as L1	Speaks English well as a second language	Speaks English poorly as a second language		$\chi^2(df 6, N = 478) = 5.437, p > 0.05$	-
8	Verbal and Non Verbal Reaction to pain	Sitting quietly	Crying	Playing with toys in the waiting room		$\chi^2(df 6, N = 478) = 8.794, p > 0.05$	-

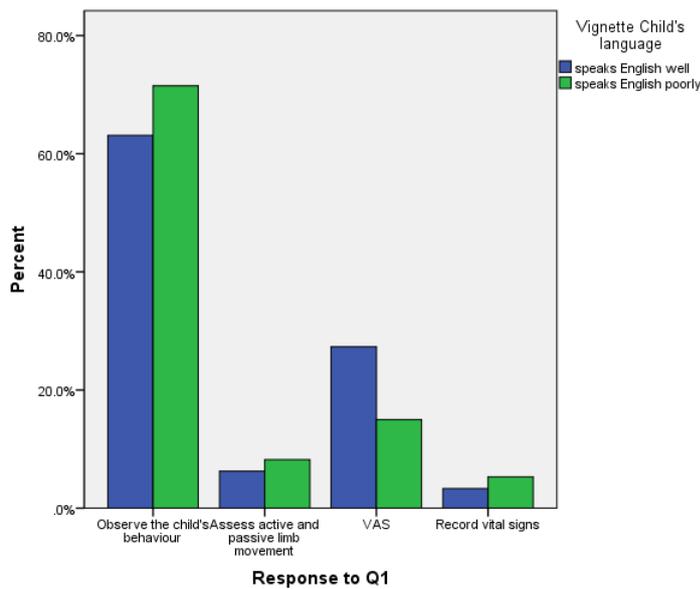
Note i: The Child's Language factor includes two levels: the first is the merged level of children who are English native speakers and the children who master well the English language, the second category of children who speak English poorly remain unchanged. This was reduced to two categories for simplicity to better represent the child's ability to speak English. However, the analyses performed on three levels produced the same statistically significant results.
 p* value<0.05, p** <0.001, - not significant

Child's language and judgment A

The analysis of Child's language factor, $\chi^2(df 3, N = 478) = 11.098, p < 0.05$, evidenced that there was disparity across the response categories; therefore, figure 7.2 shows greater

proportion of respondents responding in “observed the child’s behaviour,” particularly for the children with poor use of English. Also the “visual analogue scale” was selected more often for children who master a good level of English (27%) compared with children with poor English ability (15%).

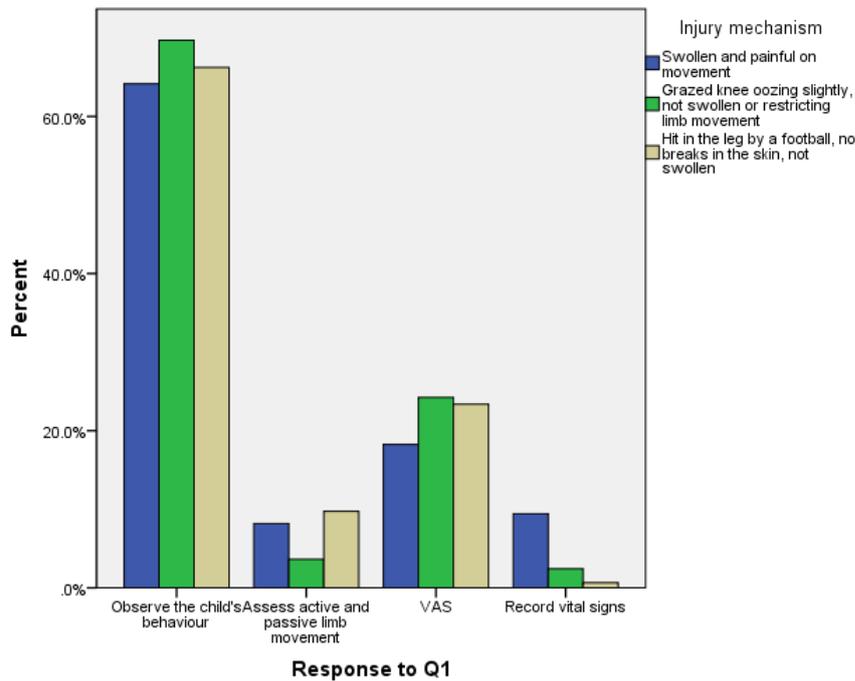
Figure 7.2 Child’s language and judgment A



Injury mechanism and judgment A

The Injury mechanism factor included three levels of minor accidents that were comparable to the different degrees of seriousness of the injury, which are mild (i.e. hit in the leg by a football), moderate (i.e. tripped over resulting in a grazed knee) and severe (i.e. fell from a 3 foot high climbing frame) injury mechanisms. The highly significant crosstabs chi-square Pearson analysis evidenced a disparity of frequency distributions across the response categories, $\chi^2 (df\ 6, N = 478) = 22.760, p = 0.001$. As figure 7.3 evidenced, greater proportions of respondents selected the “observed the child’s behaviour” with highest (70%) response for the moderate injury but lowest (62%) for the severe injury. On the other hand, despite the near to zero percentage for the mild and moderate type of injury of the “record vital sign” response, this was most selected for the severe type of injury (9%).

Figure 7.3 Injury mechanism and judgment A



7.5 Multinomial logistic regression for judgment A

Factorial survey analysis is usually undertaken using a multilevel program (Dulmer, 2007: 382) and the statistical approach that is commonly used to analyse factorial survey is multiple regression (Ludwick et al 2004). Further, vignette variables are generally used as a predictor on the judgments outcome (Schwappach and Koeck, 2004).

In terms of the analysis of this study, multinomial logistic regression was used with dummy coding as a statistical tool to analyse the categorical polytomous variables. Further, a chi-square test was used prior to the regression to determine the first order interaction effect of the variable. The unit of analysis is the vignette judgment rather than the subject (Rossi and Anderson, 1982). The SPSS procedure of the multinomial logistic regression was achieved through complex sample logistic regression to prepare the software with a preparation analysis, the plan has been created by given a weight of 1 and assigned the sample for 40 respondents instead of 478 observations. After the plan preparation, the multinomial complex sample logistic regression was submitted to the SPSS for Judgment A with the CHN students

and MIU nurses, and the vignette attributes that resulted significant in the preliminary chi-square analyses (Child’s language and Injury mechanism) as independent variables. Finally, prior to submitting the regression model, the category response “observe the child’s behaviour” (which is the most neutral item and the most frequent type of pain assessment by respondents) was selected as reference category for comparisons with the other category responses. Table 7.3 shows the Pseudo R square values. This test is used to determine the variability of dependent variables to the model with how much it varies from the mean. The more variability the better goodness of fit of the dependent variables to the model, and a model with good fit should have a value of 0.1 or above in at least on one of the three values (Cameron and Windmeijer, 1995). In our model, for example, looking at the Cox and Snell value, the pseudo R square has an explained 9.1% `goodness of fit` (Cox and Snell, 1989).

Table 7.3 Pseudo R square values for Judgement A

Cox and Snell	.091
Nagelkerke	.107
McFadden	.051

Table 7.4 Test of corrected model effect through Wald chi-square test for Judgement A.

Source	Df	Wald chi-square	Significant
CHN students and MIU nurses	3	2.454	-
Child’s language	3	9.719	*
Injury mechanism	6	16.737	**

p* value<0.05, p** <0.001, - not significant

The Wald statistic is commonly used to test a significance of individual logistic regression coefficient for each independent variable. This table shows whether CHN students and MIU nurses, child’s language and injury mechanism give adequate predictions of the response to

Q1 compared to the intercept (null model). The Wald chi-square tests evidenced that the variables child's language and injury mechanism have a significant effect on Judgement A, while CHN students and MIU nurses did not produce significant effect.

Table 7.5 The proportion of variation for Judgement A

Observed	Predicted				
	Observe the child's behaviour	Assess active and passive limb movement	VAS	Record vital signs	Percent Correct
Observe the child's behaviour	319.000	.000	.000	.000	100.0%
Assess active and passive limb movement	34.000	.000	.000	.000	.0%
VAS	105.000	.000	.000	.000	.0%
Record vital signs	20.000	.000	.000	.000	.0%
Overall Percent	100.0%	.0%	.0%	.0%	66.7%

There is a 66.7% of correct predicted response although there is big discrepancy between the predicted and observed frequencies.

Details of the multinomial logistic regression results are found in table 7.6. Results are presented as Odd Ratio (OR), which are the Exponential Beta, and the OR result comes from the Odds of the responses to the higher outcome versus the Odds of responses to the lowest outcome of the independent variables. This table is the most important outcome for the study because it shows the multinomial logistic first between the reference category (Observe the child's behaviour) versus the other categories (Assess active and passive movement, VAS, Record vital signs, respectively), then the impact size of the included independent variables on the judgments.

Table 7.6 Parameter estimate of multinomial logistic regression of Judgement A

Dependent variables	Independent Variables	Multinomial logistic regression		
		B (estimated parameter)	Standard Error	OR Exp(B)
Response to Q1 <i>Which of the following actions is most important when assessing this child's pain</i>				
Assess active and passive limb movement	Intercept	-1.427	.527	.240*
	CHN students	-.874	.753	.417
	MIU nurses	.000	.	1.000
	Child's language (Speak English well)	-.147	.459	.863
	Child's language (Speak English poorly)	.000	.	1.000
	Injury mechanism type 1	-.219	.469	.803
	Injury mechanism type 2	-1.100	.706	.333
	Injury mechanism type 3	.000	.	1.000
VAS	Intercept	-1.301	.484	.272*
	CHN students	-.384	.592	.681
	MIU nurses	.000	.	1.000
	Child's language (Speak English well)	.744	.295	2.105*
	Child's language (Speak English poorly)	.000	.	1.000
	Injury mechanism type 1	-.269	.339	.764
	Injury mechanism type 2	-.021	.235	.979
	Injury mechanism type 3	.000	.	1.000
Record vital signs	Intercept	-4.836	1.233	.008**
	CHN students	.662	.971	1.939
	MIU nurses	.000	.	1.000
	Child's language (Speak English well)	-.472	.394	.624
	Child's language (Speak English poorly)	.000a	.	1.000
	Injury mechanism type 1	2.790	1.003	16.284*
	Injury mechanism type 2	1.296	1.277	3.656
	Injury mechanism type 3	.000	.	1.000

Note:

Injury mechanism type 1 “The child was playing at the local playground and fell from a 3 foot high climbing frame. There are no breaks in the skin but one ankle is swollen and painful on movement” (Severe injury)

Injury mechanism type 2 “The child was walking home from school and tripped over resulting in a grazed knee. The graze is oozing slightly but not swollen or restricting limb movement” (Moderate injury)

Injury mechanism type 3 “The child was playing in the park and was hit in the leg by a football. There are no breaks in the skin and the leg is not swollen” (Mild injury)

“Observe the child's behaviour” was the reference (or base) category.

p* value<0.05 ; p** <0.001

Assess active and passive limb movement versus Observe the child's behaviour

There were no significant predictions of the independent variables on the dependent variable *Assess active and passive movement over Observe child's behaviour* in assessing children's pain at $p \text{ value} < 0.05$.

VAS versus Observe the child's behaviour

The important outcome was that respondents were more likely to choose VAS as a tool in assessing their pain over using *Observe behaviour* in children who speak English well, than children who speak English poorly in estimated parameter $B = 0.744$ and $OR = 2.105$.

However, there were no significant predictions for CHN students and MIU nurses or Injury mechanism on the use VAS over *Observe behaviour* in assessing pain of children presented.

Record vital signs versus Observe the child's behaviour

For the first type of injury mechanism presented in the scenario (see table 7.6), respondents were more likely to assess their pain using *Record vital signs over Observe behaviour* than other types of injury mechanism in estimated parameter $B = 2.790$, and $OR = 16.284$.

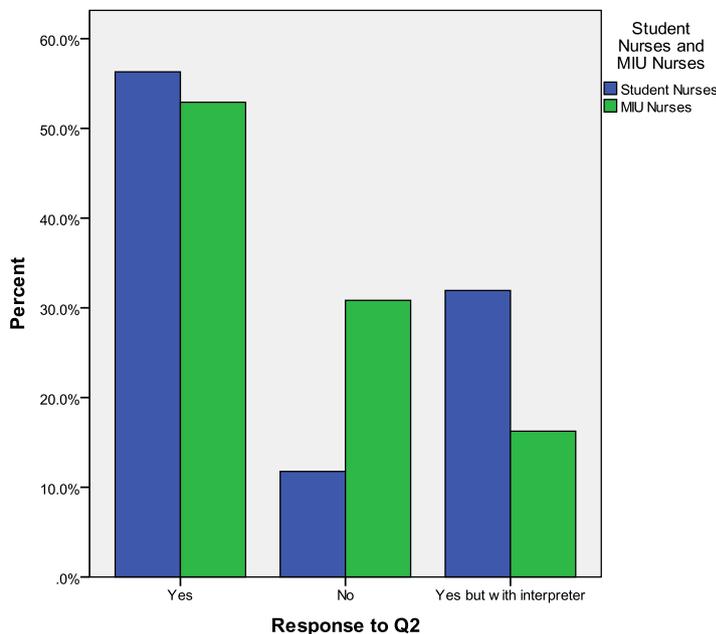
In summary, only the first type of the injury mechanism is statistically significant on $p \text{ value} < 0.05$ ". This means that for most severe type of injury presented in the vignette "The child was playing at the local playground and fell from a 3 foot high climbing frame. There are no breaks in the skin but one ankle is swollen and painful on movement", nurses were more likely to use *Record vital signs over Observe behaviour* as a pain assessment scale than the other injury mechanism types. However, there were no significant predictions for CHN students and MIU nurses and the child's language on the use of *Record vital signs over Observe behaviour*.

7.6 Judgment B with MIU nurses and CHN students

Difference between the two groups

The crosstabs chi-square Pearson analysis performed on the MIU nurses and CHN students evidenced a significant difference between the two groups, $\chi^2(df\ 2, N = 478) = 32.829, p < 0.001$, on the frequency distribution of the response categories (see Figure 7.4). The graph shows firstly that just over half of the respondents (regardless of the group) would ask the parent to participate in the clinical judgement (56% for Child health students and 53% for MIU nurses, respectively) but a double dissociation was evidenced by the fact that CHN students would also seek the additional help of an interpreter (32% of CHN students) whilst on the contrary the MIU nurses didn't feel the need of the interpreter presence (16% of the interpreter presence) preferring to deal with the assessment independently (31% for MIU nurses).

Figure 7.4 Judgment B with MIU nurses and CHN students



Chi-square results of judgment B and the vignettes attributes

The outcome of the eight crosstabs analyses with Pearson chi-square were performed for the factors of the vignettes on Judgement B is presented in Table 7.7. The three highly significant

factors which included the ability of language of the child and the accompanying parent and the country of origin of the family are scrutinised in detail in the next sections.

Table 7.7 Summary of outcome Chi-square analysis with significant variables (Judgment B and Vignettes dimensions and levels)

No	Dimensions	Levels				Chi-square	Sig
1	Child's age	4 years	5 years	6 years	7 years	χ^2 (df 6, N = 478) = 3.695, p > 0.05	-
2	Child's gender	Male		Female		χ^2 (df 2, N = 478) = 1.691, p > 0.05	-
3	Child's language ⁱ	Speaks English well		Speaks English poorly		χ^2 (df 2, N = 478) = 35.36, p < 0.0001	**
4	Child's country of origin	England	Middle East	Eastern Europe	Asia	χ^2 (df 6, N = 478) = 60.440, p < 0.0001	**
5	Brought the child to MIU	Mother		Father		χ^2 (df 2, N = 478) = 8.175, p > 0.05	-
6	Parent's language	Speaks English as L1	Speaks English well as a second language	Speaks English poorly as a second language		χ^2 (df 4, N = 478) = 194.203, p < 0.0001	**
7	Injury Mechanism	The child was playing at the local playground and fell from a 3 foot high climbing frame.	The child was walking home from school and tripped over resulting in a grazed knee.	The child was playing in the park and was hit in the leg by a football.		χ^2 (df 4, N = 478) = 5.613, p > 0.05	-
8	Verbal and Non Verbal Reaction to pain	Sitting quietly	Crying	Playing with toys in the waiting room		χ^2 (df 4, N = 478) = 1.199, p > 0.05	-

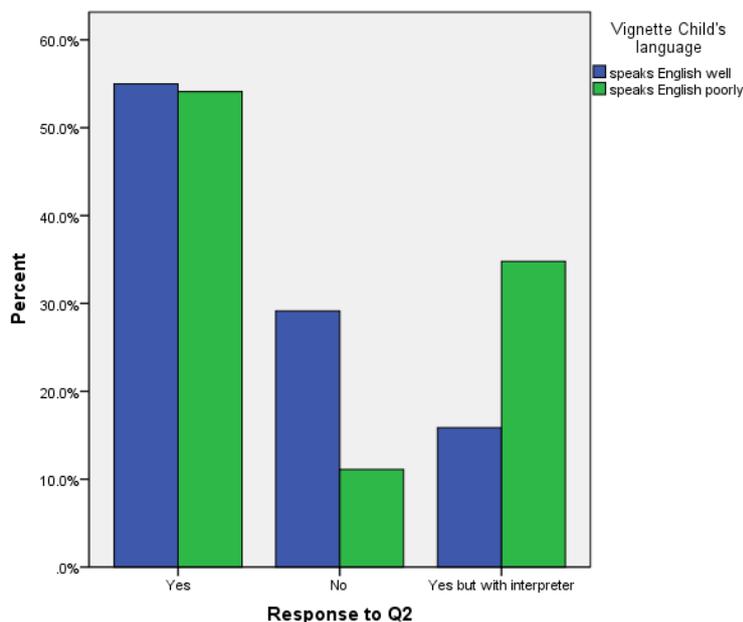
Note i: The Child's language factor include two levels: the first is the merged level of children who are English native speakers and the children who master well the English language, the second category of children who speak English poorly remain unchanged. This was reduced to two categories for simplicity to better represent the child ability to speak English. However, the analyses performed on three levels produced the same statistically significant results.

p* value < 0.05, p** < 0.001, - not significant

Judgment B and child's language

As with judgment B, the language ability of the child influenced the decisions of the respondents, $\chi^2(df\ 2, N = 478) = 35.36, p < 0.001$. As figure 7.4 shows, just over half of the respondents (regardless of the English skill of the child) would ask the parent to participate in the clinical judgement (56% for CHN students and 53% for MIU nurses, respectively), but a greater proportion of respondents said that they would not seek the help of the parent when children master good English skills compared to the children with poor English skills (29% vs. 11%). On the other hand, the proportion of respondents who would chose to seek the additional help of an interpreter (16% vs. 35%) was higher for children with poor English skills than children who master the English language well.

Figure 7.5 Judgment B and child's language

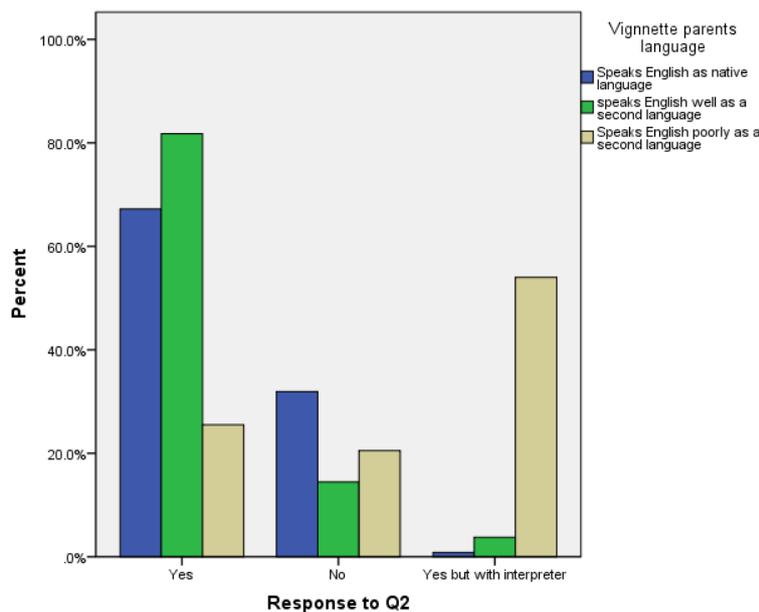


Judgment B and children's parent language abilities

The language skill of the parent influenced the decision of the respondents for Judgment B, $\chi^2(df 2, N = 478) = 194.203, p < 0.0001$.

As figure 7.6 clearly shows, the respondents were dependent on the English language ability of the parent to ask the parent to help in the assessment of the child's pain. To clarify, in the case scenarios with a parent who speaks English poorly, the respondents selected to seek the additional help of an interpreter (54% Speaks English poorly vs. 3% Speaks English well as second language and 0% Speaks English as native language) more often than when the assessment involved the parent with good English skills. In turn, in the case of a parent who speaks English well or is a native language speaker, the respondents selected to seek the help of the parent with higher language proportion than when the parent had poor English skills (82% Speaks English well as second language and 67 % speaks English as native language vs.26 % speaks English poorly).

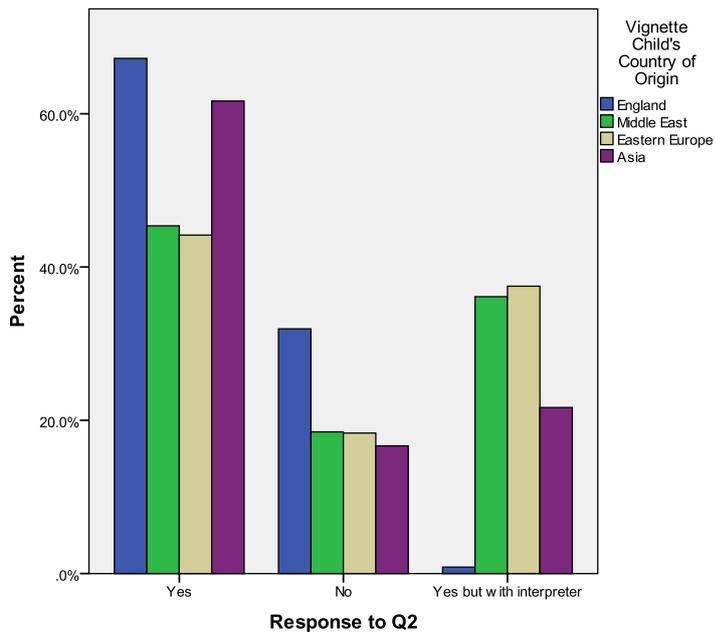
Figure 7.6 Judgment B and children's parent language abilities



Judgment B and children's country of origin

As figure 7.7 shows, the child's country of origin also had an impact on judgment B. Chi square analysis demonstrated a significant impact of the country of child's origin on the decision of the respondents for Judgment B, $\chi^2(df 6, N = 478) = 60.440, p < 0.0001$.

Figure 7.7 Judgment B and children's country of origin



7.7 Multinomial logistic regression for Judgment B

The same preparation plan for the SPSS procedure for Judgment B through multinomial complex sample logistic regression described earlier was followed. The regression analysis was submitted to the SPSS for Judgment B with the CHN students and MIU nurses, and the vignette attributes that resulted significant in the preliminary chi-square analyses (Child's language, Parent's language and Country of origin) as independent variables. Finally, prior to submitting the regression model, the category response "Yes" (which is the most neutral item) was selected as reference category for comparisons with the other category responses. However, on the regression analysis the data issue were encountered, which violated a mathematical assumption to the multinomial logistic regression because the design-based covariance was singular, which undermined the validity of the results. The warning occurred

because the levels of the fixed dimensions of some vignettes were repeated within and across participants causing the reduction of the variability of the dimensions of the vignettes (for example, this was particularly true to represent the vignette of monolingual English children, which represented around 25% of the total vignettes). To solve the warning issue of singularity of covariance, it was therefore decided that the Country of Origin was excluded from the multinomial regression analysis.

The Pseudo R square values presented in table 7.8 were very good indicating high fit of the model. For example, looking at the Cox and Snell value, the pseudo R square has an explained 43.4% of `goodness of fit` (Cox and Snell, 1989).

Table 7.8 Pseudo R squares values for Judgement B

Cox and Snell	.434
Nagelkerke	.501
McFadden	.283

The Wald chi-square tests evidenced that the CHN students and MIU nurses and the variables of child's and parent's language ability had a significant effect on Judgement B. (see Table 7.9).

Table 7.9 Tests of model effects

Source	Df	Wald chi-square	Sig.
CHN students and MIU nurses	2.000	8.833	*
Child's language	2.000	7.608	*
Parent's language	4.000	59.022	**

p* value<0.05 ; p** <0.001

In addition to have high goodness of fit, the model had an overall 67% of correct predicted responses over the observed data (see Table 7.10).

Table 7.10 The Proportion of variation for Judgement B

Observed	Predicted			
	Yes	No	Yes but with interpreter	Percent Correct
Yes	210	12	39	80.5%
No	61	17	24	16.7%
Yes but with interpreter	7	13	95	82.6%
Overall Percent	58.2%	8.8%	33.1%	67.4%

This table (7.11) shows the multinomial logistic regression coefficients for this model. The multinomial logit estimated choosing *No* which means the nurse would not want the parent to participate in the process of assessing their children’s pain over choosing *Yes* when the predictor variables of the model are evaluated at zero. As a consequence, it was chosen that the multinomial logit had *Yes* as reference category.

Table 7.11 Parameter estimate of the multinomial logistic regression for Judgement B

Dependent variables	Independent variables	Multinomial logistic regression		
		B (estimated parameter)	Standard Error	OR Exp(B)
Response to Q2/ would you ask the parent to help you assess the child's pain	Parameter			
No	Intercept	-.498	.505	.608
	CHN students	-1.021	.532	.360
	MIU nurses	.000	.	1.000
	Child's language (Speak English well)	1.207	.439	3.342*
	Child's language (Speak English poorly)	.000	.	1.000
	Parent's language (Native English speaker)	-.996	.324	.369*
	Parent's language (speak English well as a second language)	-1.454	.396	.234*
	Parent's language (speak English poorly as a second language)	.000	.	1.000
Yes but with interpreter	Intercept	.203	.469	1.226
	CHN students	1.021	.524	2.775
	MIU nurses	.000	.	1.000
	Child's language (Speak English well)	.012	.336	1.012
	Child's language (speak English poorly)	.000	.	1.000
	Parent's language (Native English speaker)	-5.299	1.224	.005**
	Parent's language (Speak English well as a second language)	-3.937	.561	.020**
	Parent's language (Speak English poorly as a second language).	.000	.	1.000

Note:
 Injury mechanism type 1 “The child was playing at the local playground and fell from a 3 foot high climbing frame. There are no breaks in the skin but one ankle is swollen and painful on movement” (Severe injury)
 Injury mechanism type 2 “The child was walking home from school and tripped over resulting in a grazed knee. The graze is oozing slightly but not swollen or restricting limb movement” (Moderate injury)
 Injury mechanism type 3 “The child was playing in the park and was hit in the leg by a football. There are no breaks in the skin and the leg is not swollen” (Mild injury)
 “Yes” was the reference (or base) category.
 p* value<0.05 ; p** <0.001

'No' versus 'Yes'

For children who speak English well, respondents were more likely not to involve their parent in the clinical pain assessment than those children who speak English language poorly (estimated parameter B = 1.207 and OR = 3.342).

For parents who speak English as native language, respondents were less likely to respond *NO* than for those parents who speak English poorly as a second language (estimated parameter B = 0.996 and OR = 0.369). Further, for parents who speak English well as a second language, respondents were less likely to respond *No* than for those parents who speak English poorly as a second language (estimated parameter B = -1.454 and OR = 0.234). In either cases, given the negative sign of the beta, as already evidenced by the chi-square test and Figure 7.6, these data indicate that respondents were more likely to ask the parent with good mastery of English to assess the pain of the child than the parent with poor level of English skills.

However, there were not significant responses for the variables CHN students and MIU nurses.

'Yes with interpreter' Versus 'Yes'

For the parents who speak English as a native language, respondents were less likely to involve an interpreter in their children's clinical judgment over than those parents who speak English poorly as a second language in estimated parameter B = - 5.299 and OR = 0.005. Similarly, for the parents who speak English well but as a second language, respondents were less likely to involve the interpreter in the children's clinical judgment than those parents who speak English poorly as a second language in estimated parameter B = - 3.937 and OR = 0.020.

In summary, the parent's good language skills were statistically highly significant on p value < 0.0001 for both category responses. This means that parents' good language skill is a strong

predictor on nurse's decisions to involve them in assessing their child's pain. For parents who speak English poorly as a second language, respondents were more likely to prefer to involve the interpreter in the clinical judgment over involving them without interpreter than those parents of children who speak English as a native and well as a second language. However, there were no significant predictions on the CHN students and MIU nurses.

7.8 Factors influencing the assessment of pain

In addition to the two multiple choice questions responses, in the factorial survey respondents were asked an open question: *Does anything make it difficult to assess this child's pain?* If the response was *yes*, which was given by 84% of respondents, they were also asked to explain in order to provide deep and broad information about the effect of some factors presented in the scenarios on assessing children's pain in general, and EAL children in particular. Only 10 vignettes were left blank. As a consequence, thematic analysis was used to analyse all lexical items, sentences, and paragraphs in order to extract themes regarding barriers that respondents face. Six themes were developed as effective factors that affected assessment of pain among those children who presented in the vignettes:

- 1- the child's age,
- 2- language barrier and level of comprehension,
- 3- parent involvement and culture
- 4- using interpreter,
- 5- the child's reaction to pain
- 6- gender.

In the data excerpts presented below, the notation CHS16, Vig 12 is used to denote Child Health Nursing Student 16, in response to Vignette 12. The respondents were answering a question; hence the excerpts often start with a factor such as 'age' or 'language' and often do not appear as full sentences. Additional text is inserted where necessary to make sense of the

data excerpt. Due to the randomisation process, the vignette numbers cannot be compared across the respondents; they are included here as part of the audit trail to demonstrate that the data excerpts are drawn from different vignettes and different respondents.

7.8.1 Child age

As identified in Chapter 2, a child's cognitive development is one of the factors that can affect a child's understanding of what is happening around them in relation to scoring their pain and using pain scoring tools. Possible effects of a child's age on the children's comprehension were described by respondents, particularly in relation to using a pain score:

Age 4 yr old may not understand the pain scoring system and just guess a number or give a score of what they were then when the injury first occurred rather than the pain at the time of asking (MIU8, Vig5)

He is quite young so use of an appropriate pain score tool (CHS 18, Vig8)

Maybe age may make a pain score difficult to understand (MIU16, Vig1)

Language and age barrier and may not understand a pain score (MIU 16, Vig12)

4 year olds can have limited language skills but this child should be able to indicate pain on our faces scale or we can assess using Wong Baker/ FLACC (MIU 20, Vig5)

The child's age as 4 yr olds tend to report a lot of pain as they may not understand the pain score (MIU8, Vig12)

Sometimes a child's age can influence the means of assessment, for example using observing the child's behaviour instead of verbal communication; several respondents articulated the effect of the child's age which impacts on the assessment of children's pain:

Age; distress; Poor ability to find out "normal" behaviour (CHS12, Vig5)

Age: Can observe behaviour but child may not verbalise pain to you (CHS12, Vig,6)

His age, different terminology of pain e.g. thudding, stingy, tickly. May not understand our questions (CHS 15, Vig5)

The child is young and is crying; may be difficult to console and therefore difficult to obtain verbal communication (CHS 15, Vig9)

A child's age can affect the value parents' place on communication; one of the respondents felt that family involvement would be affected by the age of the child, even if the child speaks English well:

The child's age language barrier influence of the father as he speaks English and can communicate more easily expressing his views if he thinks the child is in pain (CHS16, Vig10).

Respondents also saw the importance of the family involvement when the child is young as benefiting the nurses and parents at the same time in order to provide some information and assistance. One respondent commented:

child quite young and dad able to communicate with nurses so would not provide interpreter to speak to child to assess pain score. Would ask father and use observation to assess child (CHS19, Vig8)

7.8.2 Language barrier

As touched on above, language barriers are one of the common factors that affect pain assessment in terms of impact on linguistic communication. Some respondents noted that limited English language can have a negative impact on the children's understanding and they provided some clinical solutions to overcome this barrier for example:

The limited English language can affect the boy's understanding. However vital signs could be recorded which could indicate pain through increased heart rate (CHS1, Vig 10)

Vital signs can be used alongside observation using behavioural pain tools (CHS1, Vig11)

Both [child and parent] unable to speak English very well would lead to problems as pain assessment may not be exact. However you could make your own assumptions based on a FLACC score perhaps (CHS13, VIG 4)

When the child has language difficulty and there is no non-verbal reaction to the pain, it can exacerbate the problem. Some respondents seemed to sense the need to provide a perfect language even when they assessed pain through observing children's behaviour among those

who speak English poorly. As one respondent outlined, some form of verbal communication is important:

Language barrier – [the child is] sitting quietly so behaviour is hard to assess (CHS 4, Vig6)

Respondents raised an issue regarding the effect of language obstacles of both child and parent on the management of pain. One respondent spoke about it in relation to receiving analgesia:

Yes the child speaks English as a second language poorly as does his mother which makes it difficult to assess the pain and [the impact of] any analgesia given (CHS 6, Vig2)

Whilst others indicated the potential adverse impact on the whole assessment process if both child and parent had difficulty understanding and/or communicating:

Parents' misunderstanding/anxiety if mother cannot understand what is being discussed (CHS 11, Vig6)

Again the mother does not understand English well this could have a negative impact on the assessment of the "normal" child (CHS 11, Vig4).

However, if the parents speak English well, this would help the child:

I would be concerned the patient [child] would not understand the [pain scoring] system so may ask Dad to discuss this with his son (MIU 5, Vig12)

His mum should hopefully be able to interpret for him (CHS 13, Vig3).

The individuality of pain expression and language barriers in EAL children with poor language was mentioned in line with the McCaffery (1979) definition of pain:

Yes the child speaks English poorly and the "gold standard" of pain assessment is to assess pain from the child's point of view as they are the only one feeling the pain. (CHS 6, Vig3).

Some respondents therefore suggested that parents may not give an accurate report of the child's pain:

Dad should be able to help but as pain is a subjective experience it is difficult to say whether his account would be accurate (CHS13, Vig6),

Pain is subjective so, although the child's father can translate, it would be difficult to ascertain whether or not it was a true reflection of the boy's feelings (CHS15, Vig8)

I would be aware that the mother could over/underestimate her sons pain so would use it [the mother's assessment] alongside visual observations (CHS 19, Vig4)

Perhaps father is not so empathic with child's needs (MIU14, Vig,8)

Interpretation via dad may not give accurate information; child may be nervous of nurse who does not speak her language (MIU 13,Vig 10).

Speaking to the parent may not give accurate translation of symptoms. Mum may interpret the level of pain to her own estimation (MIU13, Vig3)

Yes [there would be difficulty] if the parent tries to tell us of the child's pain instead of asking the child direct (MIU19, Vig2)

However, these views weren't shared by all respondents

The father would need to potentially translate for me regarding how much pain the patient [child] is in (MIU 5, Vig8)

Father speaks English well so may not necessarily need an interpreter however if language becomes a barrier for effective assessment of pain then it is important to have an interpreter present to ensure understanding (CHS 19, Vig12)

As the mother speaks good English I would not call an interpreter as I don't think they would be able to get more communication (CHS 20, Vig3).

The differences in the experience of pain among children are highlighted, as illustrated by the following data excerpt:

As with all patients, everyone experiences pain differently and deals with it differently (MIU18, Vig2).

This particular vignette presented a child who was not English and spoke English poorly, indicating that language was considered by some respondents to have an impact on the perception of pain.

Taking a history from the child also requires intercultural communication as culture plays an active role in perception of pain:

Yes behaviour can be observed but the language barrier will mean that it is not possible to obtain an accurate history there may also be cultural differences in pain response (MIU 20, Vig4)

Non-verbal communication was as important as verbal communication. Respondents spoke of the nonverbal cues that provided them with supporting information:

You can overcome language/communication barriers by looking at behaviour and nonverbal communication (CHS9, Vig2)

[There would be] language barriers but [observing] behaviour and movement would be ways of assessing pain (CHS 14, Vig4)

Another solution that can assist the assessment process when the child and parents were experiencing language difficulties was identified:

There would be a possible language problem; the 'Look, feel, move' approach is usually effective in pain assessment alongside play therapy and visual techniques and establishing rapport.(MIU3, Vig12)

It would be more difficult to engage with this child due to language barriers but visual observation should give an indication of level of pain (MIU13,Vig2)

The parent's language level was also identified as a potential problem for the health professional, who might need to spend more time with EAL children in order to assess their pain. Respondents highlighted the issue of language barriers as time-consuming process:

The mother does not speak English well and therefore time may be taken to get a translator etc. (CHS 11, Vig2).

Sometimes respondents described their awareness about the communication between child and parent with a slightly different role for the interpreter:

If I was concerned I would get an interpreter to ensure the mother is communicating with the child. The child's lack of English understanding could make this assessment difficult (CHS 17, Vig3).

Another respondent stated that the relationship between health professional and the child is more important than between the parents and the health professional:

Communication between the parent and professional should not have an impact on the child assessment of her pain. The mother is unable to communicate the child's normal behaviour to the professional without an interpreter (CHS 7, Vig2).

The difficulties in assessing pain as part of a 'new' consultation, where the nurse does not know the child and family, was also emphasised. If the child was brought to the hospital by the father, the respondents wanted to be sure who was the first caregiver at home, for example: *Ensure father is primary care giver or knows child well (CHS18, Vig9)*. If the vignette depicted a child who was quiet, the respondent might consider other possible reasons:

He is sitting quietly this is unusual for a six year old. I would be assessing for another injury and looking for the interaction between him and the person who brought him to MIU. It would possibly be more difficult if the patient was with a person they were not comfortable with (MIU3, Vig1)

Language: as [the child] has poor English and might not understand the questions you are asking. Also religion, or due to not wanting to communicate with you for different reasons. [Religion as a communication barrier with the health professional] (MIU8, Vig12)

However, some nurses were totally dependent on the parents:

The details will not be directly from the patient but the father should be able to communicate on his behalf (MIU20, Vig8)

particularly for younger children:

This depends on how well the 4 year old is able to communicate himself but it is useful to ask parents how the child normally reacts to pain (MIU20, Vig9)

Although this may not be accurate for other reasons:

Language barriers - perhaps not able to explain clearly to child what pain scales mean. Would use mother to explain but open to misinterpretation child telling mother what mother might want to hear perhaps not willing to tell truth or exaggerate pain (MIU10, Vig4)

Some nurses stated that language barriers can lead to these difficulties:

language barrier, cultural difference and subjective response to pain (MIU7, Vig5).

7.8.3 Language barrier and level of comprehension

Some respondents mentioned the effect of language barriers on the level of children and parents understanding of what are going on and in particular their understanding of how to use the pain scales.

Language barrier in getting them to understand how to use a pain score scale (CHS8, Vig4).

Language barriers will make the consultation difficult. It is difficult to use a pain score if it cannot be explained clearly to both child and parent (MIU4, Vig4).

However, in this excerpt the respondent emphasised the importance of understanding the process: *If the understanding is good then there is no problem with the child's and family's ability to communicate (CHS17, Vig12).* Otherwise, there was a perception that misunderstanding might cause a child to feel frightened: *child may feel intimidated as he may not understand what you are saying (CHS11, Vig10).* Therefore, this might cause underestimation of pain:

She may be crying because of shock so as distressed may not be able to report a true pain score (CHS13, Vig1).

One of the respondents indicated that she would not use VAS without the child and parent understanding it:

I would not use a visual tool for pain in this case as i would not be confident of the child's and mother understands. The assessment of the injury is also an important part of the pain assessment (MIU1, Vig4)

A proposed solution to overcome this barrier might be:

The fact that English is difficult for mother and child may require an interpreter. However if understanding is good using body language and common understanding this type of consultation is much the same as any other. Play therapy is important as she may have different responses to pain and injury it depends on their previous experiences which can make the consultation more difficult (MIU3, Vig2)

Level of understanding due to potential language barriers however this could be overcome by using the interpreter (CHS1, Vig2)

As the child speaks poor English it may be difficult for them to understand that you're asking them about pain (CHS5, Vig2)

The child's ability to understand how to use the pain score scale (CHS8, Vig12)

...understanding the pain scale that we use in the MIU; is he able to understand the pain scale system that we use (MIU6, Vig1).

There was also concern for the parents:

Parents misunderstanding/anxiety if mother cannot understand what is being discussed (CHS15, Vig5)

Therefore, it is important for the respondents to ascertain the child and parent's understanding of the process:

If I am confident of the child and mother's understanding of my questions/situation I may not use interpreter. My assessment of patients begins by observing them in waiting room - I have found that there is a difference between children's coping skills and pain threshold. I would not rely on obtaining information from just the parent or just the child (it is easy to fall into this trap when child has a better knowledge of English (MIU11, Vig3)

7.8.4 Culture

There were a number of responses relating to cultural barriers that may make it difficult to achieve an accurate pain assessment. These related to their religion, customs and family relationship norms:

Culturally the father may be seen as head of the family therefore they attend with the child. The child may act differently with the father than they would with the mother ie: they may not complain or show emotion in front of the father (MIU9, Vig8)

Child could be trying not to show pain in front of father - not wanting to show weakness (MIU9, Vig8)

[More difficult with] boys with their father - wanting to be more brave (MIU12, Vig7)

Child being frightened about not understanding language and wanting to be brave for father (MIU12, Vig10)

Language, as has poor English might not understand the questions you are asking. Religion due to not wanting to communicate with you for different reasons (MIU8, Vig12)

Yes [difficult to assess because you need] accurate information regarding all aspects of history and the incident itself and therefore the likely resulting injury. Because of the language barrier there may also be cultural factors that affect his behaviour that may give the impression that he is in less pain than he actually is. To be sure of his actual level of pain good communication is necessary (MIU20, Vig2)

Language barrier to accurate history and therefore detail regarding the injury and there may be cultural differences in reaction to pain (MIU20, Vig6).

Another reason for misunderstanding in addition to language barriers was suggested:

religion of the child and parent may not feel comfortable around male or female staff (MIU8, Vig10),

religion due to not wanting to communicate with you [the nurse] for different reasons (MIU8, Vig12).

7.8.5 The effect of using an interpreter

Some participants provided an explanation for using or not using an interpreter, as noted earlier. One of the respondents suggested using interpreter as it aids them to treat children's pain properly:

Hopefully the interpreter would be useful so that the nurse will be able to assess the child fully and ensure that the child's pain is observed and treated appropriately (CHS20, Vig4)

However, another respondent suggested that using an interpreter requires huge time with impact on timely pain management:

[difficulties would be] language child's behaviour mothers language Time for interpretation service to respond will delay effective pain management (MIU1, Vig4)

Management delayed due to interpretation service (MIU1, Vig11)

Therefore one respondent proposed an alternative

I would use the Red Cross translation book first before calling an interpreter (MIU2, Vig4).

Using the parents to interpret was not necessarily considered wise:

If using the parent as an interpreter the parent may understand what is being asked as well and may not understand the importance. The information is being passed not directly from health professional (MIU12, Vig2).

Alternatively the respondent may require the child to interpret for their parents:

The mother not understanding what is being asked by the child can make it difficult to assess- the child will probably have to translate to the mother if he is will to interact with you (MIU12, Vig6).

7.8.6 The child's reaction to pain

In this theme the CHN students gave slightly different responses to the MIU nurses, perhaps because of their differing levels of experience with assessing pain. As an example, one CHN student found it difficult to assess if the child was 'sitting quietly' or 'crying':

Graze is oozing. Sitting quietly so no signs of pain or being well. Behaviour is hard to assess (CHS 4, Vig2)

Sitting quietly, so hard to assess pain (CHS4, Vig10)

Crying, so hard to assess if in pain or upset nervous (CHS 4, Vig11)

The presence of a 'normal activity' such as playing with toys was seen by respondents from both groups as an indicator that all was well:

No difficulties [the child is] playing with toys and speaks English so they can tell you if they are in pain (CHS 4, Vig8),

The fact that the child is observed playing with toys is positive. The parent will be able to explain to the child what is happening so will be important to the assessment (MIU4, Vig8)

No [difficulties]; playing well so pain is easy to score (CHS4, Vig12)

Although there may be a graze the child is acting "normal" playing along but you may ask how the child is feeling (CHS11, Vig1)

Although there was still an element of suspicion for some respondents:

If she is playing happily it is likely that she has no significant pain but children do not always conform to expected standards and can have significant injuries while appearing undistressed (MIU13, Vig1)

This respondent also focused on the type of injury, especially observing for head injury, following local policy:

As with all injuries of this nature it is important to record ALL vital signs ASAP - however my assessment would commence whilst the child was being booked in observing interactions/mobility etc. and any concerns voiced by receptionist/HCA. If I am confident that mother and child has FULL understanding of my questions I would not use interpreter. I am unsure if this child would be able to use a visual tool for pain score but would try one but would not rely on it (MIU11, Vig3)

The importance of assessing injury as a part of pain assessment was mentioned by one of the respondents: *assessment of injury would also be part of pain assessment (MIU11, Vig9).*

Most of the respondents made observing the child's behaviour a priority especially when the children do not understand the process:

Again start observation of child when booking in/waiting area vital signs a priority due to mechanism of injury. Not confident of child understands with visual pain tool assessment of injury plus questions (via interpreter) would form pain assessment. Discharge advice would be via interpreter (plus written) (MIU11, Vig11)

A solution for making the child comfortable in order to interact with the respondent was suggested:

[the child is] crying and upset [so she is] either scared or in pain- therefore if difficulty speaking language, assume pain and try and get child to communicate through play (MIU12, Vig12)

Respondents were less likely to articulate the effect of gender on the assessment of pain among children presented in the scenario, although it was evident in a small number of the responses:

Should be no problem for the girl to articulate pain score (CHS13,Vig10)

Gender: girls can sometimes be quieter than boys and too shy to talk to you (MIU8, Vig9)

4 yr old girls are quieter than 4 yr old boys (MIU8, Vig12)

Boys can potentially be more difficult to treat as pain levels at times are assessed differently to those of girls(MIU9,Vig6).

7.9 Integration of findings across Judgments A, B and C

The factorial survey responses were influenced by the language proficiency of the child and the injury mechanism (Judgement A – *Which of the following actions is most important when assessing this child's pain? (please tick just one)*): Observing the child's behaviour is the most important assessment method and the most frequent type of pain assessment scale preferred against the others (see table 7.5), and by the language spoken by the child, the child's country of origin and the language spoken by the parents (Judgement B – *Would you involve the parents in assessing the child's pain.?* (See table 7.10).

The language of the child and parents was also identified as an influencing factor in the responses to the open question '*what makes it difficult to assess this child's pain?*' However, these responses also revealed a number of other factors that were deemed to be important. The integration of the factorial survey judgments and responses to the open questions are now considered in relation to the phase 2 research questions.

7.9.1 What judgments do final year child health nursing students and nurses working in a Minor Injuries Unit make about the assessment of pain for children with different language abilities?

Final year child health nursing students made significantly different judgements about the assessment of pain for children with different language abilities. Respondents in the responses to the open ended question represents reported that observing the child's behaviour is one of the solutions that might overcome the language barrier, saying:

You can overcome language/communication barriers by looking at behaviour and nonverbal communication (CHS9, Vig2).

Respondents highlighted the importance of understanding the pain tool before using it *If the understanding is good then there is no problem the child's and families ability to communicate (CHS17, Vig12)* and they raised the issue of limited English language, which

might cause an impact on understanding the tool *language barrier in getting them to understand how to use a pain score scale* (CHS8, Vig4).

There is no difference in prediction for assessing children's pain using *assessing movements* over *observe behaviour*. Further, there was no difference in prediction between assessing movement and behaviour. The respondents mentioned both observing behaviour and movement to a similar extent. However, when the child is crying and upset, one of the minor injury nurses suggested assessing this child's pain through play therapy to observe the child movement while playing. Some minor injury nurses reported the importance of observing children's movement saying:

Possible language problem the 'Look, feel, move' approach usually effective in pain assessment alongside play therapy and visual techniques and establishing rapport. (MIU3, Vig12)

Respondents preferred to assess pain among those children who speak English poorly through observing their behaviour over VAS. Respondents indicated that scoring pain is difficult among EAL children as most of the respondents would not be confident to use visual tool without EAL children understanding it saying: *I would not use a visual tool for pain in this case as i would not be confident of the child's and mother understands* (MIU1, Vig4). Most of them reported the importance of every nurse being sure that the child and their parents understood the pain scale system used in the Minor Injury Unit.

In terms of children's language ability, there are no significant differences in assessing pain between those children who speak English well and poorly using *Record vital signs* over *Observe behaviour* (see table 7.6). Moreover, they also reported that they can record vital sign alongside with observing behaviour in order to make the pain assessment effective and easier for the health professional; saying *vital signs can be used alongside observation using behavioural pain tools* (CHS1, Vig11).

Assessment of injury is also an important part of the pain assessment. The injury mechanism type 1 and 2 are the most severe injuries presented in the scenario, nurses were more likely to assess these types of severe injuries using *Record vital signs* over *Observe behaviour* (see table 7.6). They also reported that recording vital signs would be the priority when assessing severe injuries. One respondent said *vital signs a priority due to mechanism of injury* (MIU11, VIG11).

7.9.2 Does the language of the parents affect decisions made about assessment of the child?

The language of the parents did not affect decisions made about the most important assessment approach for the child (judgement A, table 7.6) but it did affect whether parents would be involved in assessment of the child's pain (judgement B, table 7.11).

Regarding respondents' decisions in responses to the open question, final year child nursing students observed that involving parents with a poor English language can lead parents to be anxious about their children's condition. This might cause distress to the children and affect their ability to express their pain effectively; and this might be reflected in the accuracy of pain assessment. Further, they confirmed that parents' involvement may exaggerate the seriousness of the injury, especially as the mother might overestimate their children's pain. Thus, they reported the importance of the person who brought the child to the hospital as stated thus: *Ensure father is primary care giver or knows child well* (CHS18, VIG9). However, Minor injury nurses were slightly more inclined to include parents in the clinical judgements in general and especially when they can understand and speak English well as they said: *yes do they understand the pain scale system that we use in the MIU does the mother understand what I am talking about* (MIU6, VIG6). Therefore, they wanted to make sure that both child and parent understand the questions they were asked as one of the nurses said:

If I am confident of the child and mothers understanding of my questions/the situation I may not use interpreter. I would not rely on obtaining information from just the parent or just the child (easy to fall into this trap when child has a better knowledge of English) (MIU11, VIG3)

Similarly, child nursing students said that the mother might over or under exaggerate their children's pain:

language barriers perhaps not able to explain clearly to child what pain scales mean would use mother to explain but open to mis interpretation child telling mother what mother might want to hear perhaps not willing to tell truth or exaggerate pain (MIU10, VIG3).

There was a significant difference between the involvement of parents who speak English poorly and use an interpreter and those who speak English well. This means that the parents' language was a strong predictor of nurses' decisions to involve them in assessing their child's pain. For parents who speak English poorly as a second language, respondents are more likely to involve them in the clinical judgment with an interpreter over involving them without interpreter than those parents of children who speak English as a first language or well as a second language. Most of the MIU nurses were more likely to use parents who can understand English language well as the interpreter rather than calling for an outside interpreter saying *I would ask the mother to interpret for the child if necessary so that I could understand.* (MIU15, VIG3).

7.9.3 Are there differences in the judgments about pain assessment made by students and MIU nurses?

There are no significant differences in the factorial survey judgments between both final year students and minor injury nurses. However, in response to the open ended question, there are some different responses. Many child health students reported facing some difficulty when they observe the child's behaviour and said that it is hard to assess pain among those children who do not speak English well; however, they suggested using a behaviour pain tool (FLACC) alongside observing behaviour or checking vital signs in order to overcome this

problem. In addition they wanted to be sure of the children's understanding of the pain tools and they also suggested using an age appropriate tool *Ensure use of an appropriate pain score tool for his level of understanding* (CHS 19, vig5). Some of them reported the difficulty of observing behaviour if there is no positive reaction to pain *Graze is oozing. Sitting quietly so no signs of pain or being well. Behaviour is hard to assess* (CHS 4, vig2). The parent's interpretation of the pain might be another barrier particularly when the child is not able to verbalise pain. On the other hand, Minor injury nurses talked about using observed behaviour more confidently than child health students even if the child's language is poor saying *if his English is poor by observing his facial features this could* (MIU2, Vig8). They emphasised the understanding of the tool even if it is by the parents: *as the parent speaks English well her input would be most important. I would be able to use a pain score providing that the parent understands the concept* (MIU4, VIG3). However, they said that they are not confident of using VAS if the child and their parents do not understand:

Explanations about assessment starting with observation booking in/waiting room. I would not use a visual tool for pain in this case as I would not be confident of the child's and mother's understanding (MIU 11, vig5).

In their decisions, MIU nurses were focused more on the differences of children in terms of pain threshold, coping, skill and cultural differences:

My assessment of patients do begin observing them in waiting room - I have found that there is a difference between children's coping skills and pain threshold (MIU11, vig3)

On the other hand, these differences between children in terms of pain experiences were perceived less strongly by child health students, one of them said that *difficult with all scenarios as although I would initially look at the child's behaviour naturally some children may be in pain and not express it so I would always follow with a visual analogue scale dependent on the age* (CHS 5, vig12).

Minor injury nurses rationalised pain clinically more than child health students for example, they would observe whilst the child booked in, but they considered the importance of checking vital signs as a priority obligation for all children who were suffering from an injury. They said that poor English language may impact on taking an accurate history from the patients but nurses would use their clinical experience: *As with all injuries sustained by a fall - I would check head/neck for injuries* (MIU11, VIG7). However, child health students demonstrated more academic awareness and were concerned about assessing pain among those who could not be able to verbalise pain. They were not happy to rely on parents interpretation as pain is a subjective feeling, saying: *Child ability to express pain as pain is a very subjective experience. Also whether the child is co-operative makes a big difference.* (CHS1, vig1)

Dad should be able to help but as pain is a subjective experience it is difficult to say whether his account would be accurate (CHS3, vig8)

Pain is subjective so although the child's father can translate it would be difficult to ascertain whether or not it was a true reflection of the boy's feelings (CHS15, VIG8).

They decided that self-report of pain is a `gold standard` for pain assessment. While MIU nurses were less likely to highlight this point as one of them said *yes if the parent tries to tell us of the child's pain instead of asking the child direct* (MIU19, vig1).

7.9.4 What difficulties do students and MIU nurses identify in assessing pain for EAL children?

According to the respondent's judgments, there was a significant prediction of the effect of child language and injury mechanism in terms of judgment A (see table 7.6). In addition to the inclusion of the child language and injury mechanism, parental language was also included, as there was also a significant difference of the effect of parent's language on the assessment of pain in judgment B (see table 7.11).

However, in the responses to the open question ‘*what makes it difficult to assess this child’s pain?*’ respondents identified some difficulties in more details in section 7.8. They reported that a child’s age can have an impact on the assessment of pain as they said young children are not mature enough to understand the pain tool, for example:

Age 4 yr old may not understand the pain scoring system and just guess a number or give a score of what they were then when the injury first occurred rather than the pain at the time of asking (MIUN8, Vig5).

Child nursing students suggested especially using an age appropriate tool. Child’s age does not only affect the clinical decision of the health professional, also it affects the communication between parents and their children. Therefore, respondents decided to involve the family when the child is very young.

The common factor that mainly affects the assessment of pain is the child’s language, for those children who speak English poorly. The child’s language is one of the most significant factors that guided the respondents to choose the pain assessment tool. Respondents of this study decided to go with ‘observe behaviour’ over ‘VAS’ in assessing pain among those children who speak English poorly, as VAS is one of the analogue pain scales that needs good English language to understand it.

Another difficulty that respondents face is the parent’s language; there is a significant prediction of the parent’s language and their level of involvement in their children care. Respondent’s decision to involve parents in their children’s clinical judgment or as an interpreter depended on the parent’s ability to communicate linguistically with the health professional. However, they reported that if the child and their parents were not able to speak English well, it would be a big barrier for them in assessing the children’s pain accurately saying:

Both unable to speak English very well would lead to problems as pain assessment may not be exact. However you could make your own assumptions based on a FLACC score perhaps (CHS13, VIG 4).

The injury mechanism is another factor that affects the respondents' decisions in terms of choosing which assessment tools would be better to assess children's pain. As there is a significant relationship between type 1 (The child was playing at the local playground and fell from a 3 foot high climbing frame) and type two of the injury (The child was walking home from school and tripped over resulting in a grazed knee) and judgment A and B, which reflected the more severe injuries presented in the scenario. They gave more weight to recording vital signs along with observing the child's behaviour in order to check for any major injury like head injury:

Recording of vital signs would be a priority (head injury) and because of this (and age) would not be confident to rely on a visual tool for pain assessment - it would be used as part of assessment (MIU11, VIG10).

There were also some decisions around the effects of the verbal and non-verbal reaction to pain upon the assessment of pain. In both situations (crying and sitting quietly) they need to be aware of which assessment scale to choose. For example they said if the children are crying this might affect the process, while if they are sitting quietly can also cause problems because there is not any sign of pain. Especially for those children whose pain is being assessed through observing their behaviour saying:

Sitting quietly so hard to assess pain (CHS4, Vig10)

Crying so hard to assess if in pain or upset nervous (CHS 4, Vig11)

Regarding the use of interpreter, there was a strong predictor of the parental language on their involvement of their children's pain. They only suggested calling for interpreter when the parents speak English poorly. Few respondents noted that calling for interpreter is necessary only when both the child and parents are not able to speak English well.

Hopefully the interpreter would be useful so that the nurse will be able to assess the child fully and ensure that the child's pain is observed and treated appropriately (CHS 20, Vig4)

However, if the parent can speak English well, some respondents decided to use them as an interpreter. Most of respondents, especially Minor Injury nurses indicated that using an interpreter is a time consuming process, which might delay the pain management:

[difficulties would include] *Language; child's behaviour; mothers language; Time for interpretation service to respond will delay effective pain management* (MIU1, Vig4).

Some respondents reported the effect of culture on the assessment of pain especially among those who came from different cultures. They said that some children hide their pain in order to show their bravery in front of their dad. Therefore, as some said, this might affect the children's behaviour and be reflected in their management of pain. This can cause barriers to the care giver and children's family as well.

There was no significant relationship between a child's gender and judgment A, and B. However, there was little reference in the open question about the effect of gender on the assessment of pain. A very small number of respondents reported that girls are quieter than boys and girls can report pain better than boys. One minor injury nurses reported that pain can be assessed differently for boys and girls said that boy might be crying, which would be hard to assess while, girls are quieter.

7.10 Summary

Phase 2 findings demonstrated that *observing the child's behaviour* is the most significant assessment process that is used to assess EAL children, rather than the Visual Analogue Scale (VAS), which was more likely to be used with non-EAL children. MIU nurses and child health nursing students were more likely to involve parents who speak English well than those who speak English poorly in the pain assessment but would ask for an interpreter if their involvement was necessary. The respondents reported that language and age of children are the most common difficulties they faced during assessment of pain. Therefore, they suggested some solutions, like using an age appropriate tool for assessing younger children.

They also identified that using an interpreter is a time consuming process, which might delay the management of pain. In the next chapter, these findings are discussed in the light of wider research evidence.

CHAPTER 8 STUDY DISCUSSION

8.1 Introduction

In this chapter, the study findings are set in the context of relevant literature, addressing each phase of the study in turn. Discussion is structured by addressing each of the research questions (see section 1.2); where appropriate, discussion draws on findings from across the two phases, in order to set the scene for chapter 9 (Conclusions and Recommendations). In common with the approach used in Chapters 4 and 7, the term ‘participants’ is used to refer to Phase 1 findings and ‘respondents’ for Phase 2.

8.2 Language used to talk about pain

Children’s pain is often under-treated (Stalnikowicz et al., 2005), which might cause anxiety and distress for the caregiver (Subhashini et al., 2009). Arguably, depending on their cultural background, not all children may experience the same level of pain (Bates et al., 1993); the impact of family and cultural beliefs on how children learn to react to pain has been debated (Edwards et al., 2001). However, race and ethnicity have been identified as risk factors for under-use of analgesia (Bonham 2001), with Green and colleagues identifying that Hispanic children tend to be under-treated for pain when compared with their non-Hispanic peers (Green et al., 2003). In this phase of the study drawings from the Pediatric Pain Inventory (PPI) (Lollar et al., 1982) used to encourage children to talk about pain ; Kortessluoma and Nikkonen (2006) found that it is important to use an appropriate and effective method (for example, qualitative interview) with children.

8.2.1 How primary school age children talk about pain

The children’s use of similar words to describe the pain in the pictures emphasises the limited use of vocabulary for distinguishing between pain intensity. As has been reported previously, children often express pain using words comprising of vowels only such as ‘ooo’, ‘aiee’, ‘oy’ and ‘oh’ Selzer (2011), making it more difficult to distinguish between types of pain. A

child's age has a role in the development of cognitive ability to understand both their thinking and the thinking of others; therefore, children at the age recruited for this study (4-8 years) should be able to distinguish the amount of pain presented in the PPI pictures. However, in this study, younger children used words to indicate the presence of pain in every single picture but when they were asked to place the picture; they put it on the green paper, which represented very little pain. By contrast, older children described the amount of pain presented in the picture in broader terms, for example *'that's scary'* and immediately said it should be placed on the red paper i.e. their judgement tended to relate to fear rather than the extent of pain.

Jerret and Evan (1986) used a verbal pain instrument and interviewed 40 school age children in order to examine how primary school age children describe pain and self-report their pain. They analysed the words used by the children in response to the question: *'Can you think of words to describe what pain feels like?'* They found that school age children provided the researcher with a wealth of pain vocabulary. Although, this descriptive study used the same age group of children, they did not directly compare the monolingual and EAL children, and hence the findings are of limited relevance to this study. Further, Stanford and colleagues (2005) surveyed 245 children aged between 1-9 years in order to examine the role of children's age in the cognitive development and acquisition of the social communication skill. They documented that younger children were used similar language to describe pain. Therefore, they chose the seven most commonly used English primary pain words-stems 'ache', 'boo-boo', 'hurt', 'ouch', 'ow', 'pain', and 'sore' and they surveyed 111 parents of children aged between 3-6 to find out which words their children used when in pain. They found that 'hurt', 'ouch', and 'ow' are the most frequently used words by younger children. The findings of the current study reported that `eee`, `oooh`, `ouch`, `owww` were commonly used as a vowel sound, regardless of the rating given to the amount of pain viewed in the

pictures. Further, this study found that the word `ow` was most frequently used by both monolingual and EAL younger children, however, monolingual children were more likely to also use the word `hurt`. These findings are consistent with the Stanford et al., (2005) study; however, they did not take children's linguistic features into consideration. Moreover, this study also did not consider the parent's perceptions. However, both focused on the vital role of verbal communication of children in pain assessment. Phase 2 respondents in this study (MIU nurses) also reported the active role of language in the communication of pain. Any language barrier particularly for those who do not speak English well, can cause difficulty in verbal communication of pain, which might be a challenge to the health professional in the assessment and management of pain. Stanford and colleagues (2005) strongly agreed with the importance of verbal communication in assessing pain among children. They videotaped 58 children aged between 4-6 years having an immunisation injection, the results found that more than half of the children, mostly younger children, verbalised pain using `ow.` They recommended health care professionals develop a more complete understanding of the factors that influence the understanding and expression of pain by children and emphasised the importance of nurse's information about the assessment of pain. These suggestions are also emphasised in the findings from this study, which will be discussed later.

As stated in the literature review, hospitalised children have experienced more pain than non-hospitalised children (Savendra et al., 1982). However, this study used healthy primary school age children aged between 4-7 years in order to capture the language used while they are talking about the amount of pain presented in the PPI pictures and they were also in a comfortable environment (school environment). This was because, first, stress may block the children's language and their expression of pain, which would have had a negative impact on this study. This is supported by Pölkki and colleagues (1999) who suggested that the expressive abilities of children can be affected by psychological disorders. Second, when

children are in pain, the language to describe the intensity of pain may be destroyed; as a consequence the vocalisation of pain might be increased. In Phase 1 of this study, it was important to capture the way children expressed pain through the pictures that were presented; however, critical conditions in a stressful situation could lead the children to misconceive the nature of the pain (Kortesusuloma et al., 2008).

8.2.2 Similarities and differences in the language used to talk about pain by children with English as a primary and additional language

Our findings demonstrate that children from EAL backgrounds used less elaborate language when talking about pain; this is supported by the work of Parke (2001) who investigated in a small scale study the story- telling performance of monolingual and EAL children when they were exposed to the same picture book. They reported that narrative production is difficult for EAL children compared to British children because EAL children focussed on their linguistic resource, which limited their ability to express themselves in other ways. monolingual children had stronger language skills and could draw on other resources, which gave them greater confidence to play the game and tell the story. Parke also stated that teachers in British primary schools use narration to make conceptualised judgments about EAL children in order to assess their linguistic abilities. Similarly, Han and colleagues (1998) reported that children from other backgrounds, especially Asian backgrounds, provide short and less complex narratives with less description and less references to the past events compared to native speakers. Whilst these studies are supported by the findings of Phase 1 from this study, children with different language abilities were able to tell (albeit limited) stories. This was also a finding of a recent study by Gorman and colleagues (2011) in a subset of narratives based on the wordless picture books, which analysed the stories of 60 first and second grades African American, Latin American, and Caucasian children in order to investigate the effect of culture on the quality of the stories they produced. They found that

children across different cultural backgrounds can create a story in order to communicate information such as: thought, idea, and belief, teach and lesson, emotional express from one generation to another.

Against the context of these earlier studies, this study used narrative analysis to explore the EAL children's language when speaking about pain. In this study, the younger EAL children were concrete in their descriptions of pain rather than theorising pain, as well as this they had less ability to elaborate on their own experiences of pain. They focused on short phrases using familiar language and little elaboration; some of the children were unable to story the pain episodes. Younger English children were much more vocal than the younger EAL group and provided very elaborate stories describing what was happening in the pictures. These results are supported by Schick and Melzi (2010), who explored in their study the development of oral narrative skills among children with diverse socio-cultural backgrounds in a wealth of research on narrative. Schick and Melzi (2010) found that as children get older their stories become more complex and well- structured.

In terms of producing a narrative story, our data indicated that there were differences in the way in which children from different linguistic backgrounds (monolingual and EAL) talked about pain. Young children in this study produced short narratives; of whom they used simple sentences and less complex narratives. There are interesting differences in the amount of language produced by the year one and year two EAL/monolingual groups. In foundation and year one the EAL students seem to produce a limited amount of language (although they were animated). What is interesting in this study is that the year one monolingual groups seemed keen to share the 'stories' of their pain, whereas in year two they seemed to be producing shorter, perhaps more 'culturally' appropriate answers. In contrast, the year two EAL children provided extended answers and were 'storying' their experiences of pain to a far greater extent than the year one EAL students. This may, of course, reflect their growing

confidence in the English language which manifests itself in an increased desire to communicate their experiences as narrative. During the story telling the context and meaning of the linguistic expression needs to be fully understandable by others, therefore, older EAL children in this study were more likely to tell a story rather than the other group to provide more meaning.

The findings of this study demonstrate that monolingual children in year1 generally gave a medical response, they rationalised pain and gave advice and guidance, and they used more vocabulary and context. In general, older children, even those who speak English as a second language produced more descriptive stories and also gave more responses related to the implications, or consequences, of pain, as they can understand and discuss psychosocial pictures as well. Therefore, there are different status to pain based on the PPI picture settings (activities of daily living, recreation, psychosocial), children's age, and children's language background. The originators of the Pediatric Pain Inventory (PPI) (Lollar et al., 1982) used this instrument with 370 individuals aged between 4-19 years, including 240 children and adolescents. They also found that there were different responses to pain by children according to the settings (Lollar et al., 1982), supporting the earlier suggestion that the PPI is more useful for research than clinical practice.

Fumoto and colleagues (2007) used a Likert- type format in order to assess teachers' perceptions toward relationships with 120 younger children (between ages 37-80 months) from whom 41 were EAL children. The teachers stated that EAL children have difficulties in expressing their emotional and behavioural experiences and this is especially the case for younger children who may be in the phase of language acquisition known as the silent period. Whilst these findings are relevant to this study in terms of taking linguistic background into account, in this study the researcher did not collect the teacher's perceptions about children's perception of pain. However, prior to the data collection the researcher met the class teachers

in order to assess the suitability of the pictures that were going to be presented to the children in their class. They suggested that younger children especially EAL in the foundation year would be unable to understand the picture “Pulling off a band aid” and the set of psychosocial pictures. Therefore, they suggested omitting some pictures based on the children’s age (see Table 4.3 in Chapter 4). This is strongly supported by Lollar and colleagues, based on their clinical experiences; they observed that the emotional responses of many younger children to the psychosocial pictures were conflicted in that they described the pain in physical terms. The findings from this study corroborate what Piaget (1929) investigated through his cognitive development theory, which suggested that children as young as pre-school age do understand the mental state but as a physical reference. However, school age children included in this study were able to understand the psychosocial pictures for example; identifying it would hurt feelings rather than physically hurt.

Demographic data collected for this study demonstrated that EAL children had a lower level of English in the BPVS II test (language/month); this is supported by previous studies. Mahon and Crutchley (2006) investigated 165 EAL children aged between 4-9 years using the BPVS II score. They found that younger EAL children had a lower BPVS score and that with increasing age there is a smaller gap between the levels of BPVS. Therefore, they concluded that age and language statuses both affect the level of BPVS. Assessing language comprehension needs to be specialised for EAL children, because there is very little research on assessing second language acquisition and there is also a lack of culturally appropriate assessment instruments (Chan and Sylva, 2006; Espinosa, 2005). In this study BPVS II was used to assess language comprehension but also to compare participants with those of other studies; when compared by age group, EAL children’s performance in the BPVS II test was lower in comparison than that of the peer group of monolingual children. These results reflect

previous studies (Howell, 2003; Hutchinson et al., 2003; Mahon and Crutchley, 2006; Pearson, 1993), indicating the groups of children used in this study were not ‘unusual’.

8.2.3 Differences in the perceptions of pain by children of different age, gender, language background, and country of birth

In this study, younger children verbalised pain in response to most of the pictures without considering the intensity level of pain presented in the picture. For example younger monolingual and EAL groups used the word “oww” for all pictures but still placed them on different coloured paper. By contrast, older children were more descriptive and used a richer vocabulary. This is supported by Pölkki and colleagues who found that school age children are able to express pain. Piaget (1969), in terms of development also suggested that children from age 5-7 years old can reach intuitive stage 2. Younger children in this study express the pain in the pictures as a physical indicator, however, older children described pain using a richer pain vocabulary, and they provided more description in term of the amount of pain they might experience than younger children. This is in contrast to an earlier study by Stanford et al., (2005) with 58 children of a similar age (4.8 - 8.3 years) where older children were less likely to verbalise pain than younger children. Vocalising pain in a few words does not give the health professional any sense of how much pain the children feel; no previous published studies have examined the meaning of individual words in terms of the intensity of pain. Therefore, nurses ask patients (including children) to describe pain using understandable and metaphorical language in order for them to assess and manage pain effectively (Sussex, 2009). In this study the ability of children to talk about pain experience through a Picture Placement Activity (PPA) allowed the researcher to investigate words verbalised by children and at the same time the amount of pain that they feel this child is expressing in this picture through deciding which colour paper it related to. As identified previously, younger children vocalised pain without necessarily understanding the meaning

of the word. From the Phase 2 factorial survey findings, respondents reported the impact of a child's age and language comprehension on the assessment of pain. This study found that if the children were not able to understand how to use the pain tool because of their age and language barrier, their clinical judgement was not to use a verbal pain assessment tool (VAS) with them. Hence these findings suggest that age and language affect not only perceptions of pain but ability to communicate those perceptions.

Involving children from across three school year groups in the research enabled them to share their experience. Whilst their verbal responses may affect other participants in different age groups (Shaw 2011), in this study the children were separated based on their age groups. This also allowed the pace of the focus groups to vary depending on the attention span of the children, particularly important with the younger children.

As identified in chapter 2, theory of mind has proved useful in explaining the importance of language in the ability of children to understand the thinking of others. Hale and Flusberg (2003) investigated the role of language in the development of the theory of mind. They found that children can improve scores in the theory of mind test by a significant level of mental state and also language construction. Further, theory of mind development is the most significant theory in relation to social, psychological cognitive development in early childhood; therefore, theory of mind explains the development of children's mental state, which includes the understanding of social desire, thought and feelings (Astington and Edward, 2010). They also stated that the cognitive capacity of children to understand their thinking and the thinking of others begins at age 4 years, by age 4 to 5 years old children can demonstrate a clear understanding of the thoughts and ideas of others. This theory supported this study in terms of the age of the children who participated in the study matched the results of the previous two studies, which were firstly that children from age 4 to 5 can understand the other's thoughts, desires and feelings, and secondly, the vital role of language

in the development of the theory of mind. However, whilst these two pieces of research support this present study in these two ways, these previous study authors did not directly investigate EAL children.

Gender differences in pain reporting have been reported previously in studies with adults (Brooks-Brunn and Kelser 2000; Koffman et al., 2008; Miller and Newton 2006; Woodrow et al., 1972). In the PPA, the discussion of the pictures showing fighting and the bike accident, girls were more likely to put these pictures on green, and, boys on red. Regarding the bowling picture, the girls decided on green, while, the boys decided on red. However, there was no big difference in terms of gender when they justified their choices for example, presence/likelihood of blood was a factor: as was the surface onto which the child fell and the circumstances of the accident. In terms of children's narrative, Nicolopoulou (2008) stated that narrative style is different in terms of gender, for example a girl is more likely to use a network of social relationships, while boy's stories lacked coherence and connection. In this study, children demonstrated their ability to describe what is happening in these pictures by telling a story. Sometimes pictures acted as a stimulus for a narrative relating to pain experienced by the child or someone known to the child. This confirms previous suggestion that sharing the story helps children to articulate their experience of pain (Carter, 2004).

It is also interesting to examine the cultural influences that are evident in the children's stories. The second year EAL students vividly evoked a feeling of 'shame' at misspelling a word which may reflect their own experiences of struggling with a 'new' language. This 'story' might relate to an EAL child's educational experiences in their culture where accuracy may be valued/ expected more than it is in the UK. The monolingual children also provided some interesting culturally specific examples; the use of a bag of (frozen) peas, for example to soothe a bumped head. There were also some interesting insights into different parent / child relationships in both groups as evidenced through the children's answers to the question

‘what would mummy and daddy do?’ and their descriptions of sanctions or punishments that might be imposed by parents when they first looked at the pictures during the Picture Placement Activity. The importance of family dynamics was also evident in the responses to the factorial survey open question, particularly in the responses provided by the (more experienced) MIU nurses. Again, this confirms the findings of previous studies (Hallström and Elander, 2004; Ford et al., 2007; RCN, 2011).

8.2.4 Impact of length of time the child has lived in the UK on language ability

There is another factor that could influence the BPVS language scores, which is whether EAL children were born in UK, or are newly arrived in the UK. In this study, EAL children born in the UK had nearly as high BPVS score as monolingual children and had a higher level of language acquisition than the other EAL groups, possibly because of the effect of the child’s stay in UK on their English performance. As Cummins (2010) noted, EAL children approach native norm when they have been resident for at least 5 years. Moreover, Kilgore (2010) concluded that the EAL children who are in contact with native children achieve more English language performance. Therefore, increased exposure to the second language may have value for language acquisition (Howell et al., 2003). It also depends on the range of exposure to English during this time, because the more exposure to the native language, the broader range of vocabulary acquired (Mahon and Crutchley, 2006). As Espinosa (2005) reported, exposure to the language is one of the key factors that can influence second language acquisition.

A superior capacity for language learning is present in early life but this capacity needs to be exercised to activate effective first or second language acquisition (Johnson and Newport, 1989). Theorists distinguish between language acquisition (learning a language) and language socialisation (appropriate use of language in a social context) (Schieffelin and Ochs 1986).

Competence in a language is said to exist when the speaker can convey feelings and recognise the mood or emotion of others through language (Hornberger and McKay 2010). Children in the silent period are learning to comprehend language before developing oral fluency. Further, as Krashen (1982) argued, children must learn their first language before acquiring the second language. However, this is contradicted by Whetton (1997) study which showed that older EAL children were poorer than younger children in linguistic activity. A native learner is when the child is exposed to language from birth, an early learner is when the child is exposed to language from 4-6 years, and late learner is when the child learns the language at age 12 or later. There appears to be a strong relationship between the age of exposure and the performance of language (Johnson and Newport, 1989). In this study, two of the EAL children in year 1 were born in the UK, and they communicated pain qualitatively better than their older EAL peers. This is also evident in the BPVS II score, which was higher for EAL year 1 children than year 2 EAL children (language age 63 and 47 months respectively).

8.3 Influence of language on the assessment of pain

Generally pain is measured using three forms of assessment: firstly, individual self-report (for example using the 'faces' scale or a visual analogue scale); secondly, behavioural assessment (for example assessment of behaviour using the FLACC scale) and, thirdly, physiological measurement of pain (for example heart rate and blood pressure). These tools assume that children will experience and express pain in a similar manner. However, not all the children have capability to report pain depending on the children's developmental level, cognitive ability and learning ability (Baeyer and Spagrud, 2007). In phase 2, findings were synthesised through the three judgments made in the factorial survey in order to determine the influence of language on the assessment of pain in simulated minor injury scenarios involving primary

school aged children. The inclusion of an open-ended question for each vignette allowed the participants to expand on or explain their choices in the factorial survey.

8.3.1 Judgments made by CHN students and MIU nurses about the assessment of pain for children with different language abilities

After planning the data collection for this study, Herr and colleagues (2011) provided guidelines for clinicians to use with patients who have difficulties in self-reporting their pain. They stated that health professionals need to observe the patient's behaviour when there is absence of pain self-report. The study, on which Herr and colleague based their recommendations, supported the findings of the current study; almost all of their participants were in agreement that the behavioural pain assessment tool was the appropriate tool to assess pain among children when self-report is not able to provide a 'gold standard'. However, Herr and colleagues did not include those who have a limited English proficiency as one of their five non-verbal patient populations, (older adult with advanced dementia, infant and preverbal toddler, critically ill/unconscious patients, person with intellectual disability and patients at the end of life). Findings in this study indicate that people with 'Limited English Proficiency' (LEP) also need to be one of the non-verbal populations because LEP refers to those individuals whose primary language is other than English and who cannot speak English at all or who speak English so poorly that, although they are living in an English-speaking country, they cannot communicate in English without assistance. They do not suffer from any clinical linguistic or cognitive development disability; their only problem is inability to communicate adequately in English.

The results from the factorial survey showed that *Observe the child's behaviour* is the most frequent type of pain assessment scale preferred against the others to assess pain among those children who do speak English as an additional language. This result is supported by Grubbs

et al., (2006) who conducted a telephone survey with 1200 Limited English Proficient (LEP) individuals in 11 languages in order to raise an awareness of LEP language barrier in a health care setting. The results showed that the most significant barrier that influenced the quality of care is the language barrier. Whilst this study finding is relevant to the current study, however, they did not use the same method of data collection and also did not collect the health professional judgements. This is also supported by American Academy of Pediatrics (AAP) (2001) who reported that behavioural assessment should be carefully examined when communication is difficult between patients and health professionals. A difference in language expectation is one of the reasons that cause a communication barrier, which can lead to stress, anxiety and confusion for patients (Wissow and Kimel, 2002). However, AAP stated that behaviour is difficult to assess especially when children are under stress, as they may not demonstrate expected behaviour. The findings from this study corroborate this evidence; respondents (CHN students and MIU nurses) proposed that language barriers can cause stress to the children and their parents because they may not be able to understand what is going on. Therefore, this can change the children's behaviour. This is also supported by the earlier work of Pölkki and colleagues (1999) who found that the expressive ability of children can be affected by stress; therefore, when the person's psychological balance is disturbed expression is affected, irrespective of a linguistic barrier, which can increase the problems for EAL children and their parents. Writing in the same time period, Solter (1989) stated that one of children's fears is lack of information; this can cause stress and confusion. Respondents to the factorial survey in this study reported that children may experience stress because of the normal fear from the illness and the hospital, and in addition, the language barrier that may lead them to misunderstand and misinterpret their condition. In gate control theory Melzack and Wall, (1965) proposed that any stress, shame, and frustration experienced by children might increase the activation of the inhibitory pathway and open the gate. This means that,

for EAL children, as well as the physical pain they have because of the injury or illness, they may also experience emotional pain from shame and frustration.

Results from the factorial survey showed that for those children who speak English poorly, there are no differences in the decisions of the respondent to use either *'Assess movement'* or *'Observe behaviour'* in order to measure children's pain, as both these scales observe behaviour and movement, and do not need patients to express pain verbally. However, in the responses to the open question ('does anything make it difficult to assess this child's pain?'), one of the nurses suggested using play therapy to cope with uncooperative children when they are crying and upset. Play therapy helps health professional assess the child's pain by observing their movements while playing, which in turn can also decrease the child's stress (Malchiodi, 2007). This finding is supported by Solter (1989) who suggested that playing with children is not only valuable for learning in early childhood, it is also important as a therapeutic tool that helps children to cope with the hospital environment and overcome the frightening experiences of pain and hospital

In terms of judgments about pain assessment methods, respondents chose a *visual analogue scale (VAS)* in order to assess pain among those children who speak English well. However, for children who speak English poorly, respondents were more likely to assess their pain through *Observe behaviour* over VAS. In the International Association of the Study of Pain (IASP) guide which was recently produced to identify the pain management in low-resource settings, Powell and colleagues (2010) reported that VAS is one of the verbal descriptor pain rating scales, which requires patients to describe their level of pain verbally. Therefore, the health care providers need to ask patients to understand and rate their pain intensity using a 10 cm long horizontal line rated from 0 means (no pain) to 10 (severe pain). The findings from Powell and colleagues corroborate this study's findings, which emphasised the need to assess patient's comprehension of the pain assessment tools before using them to rate their

pain accurately and communicate the pain effectively. This result is also supported by the study of Harman and colleagues (2005) who described the expectations of 46 children between age 6- 17 years to describe their dental treatment by selecting words from the published list of words, for example `sore` and `tingly`. In order to rate their pain and describe the severity of pain, they most commonly used just two words and the results showed that the most anxious children were more likely to select words from the list to describe their expectation rather than their experiences of the treatment. In the picture placement activity, EAL children were anxious about their understanding of the PPI pictures, therefore, they provided more explanations, and most of the personal stories were given by them. Therefore, Harman and colleagues recommended that in order for the health professional to assess the level of children's pain experiences, it is important for them to investigate children's linguistic comprehension.

This finding is also relevant to this study's conceptual framework (see Figure 5.5), which presents the importance of socio-linguistic comprehension for enabling both monolingual and EAL children to encode (express) their pain and health professionals to decode (assess) pain. Wilson et al., (2005) conducted a telephone survey with 1200 Californians with LEP in 11 languages or English proficiency to identify the effect of LEP on the medical comprehension in the presence and absence of language concordance physicians. Wilson found the LEP respondents were more likely report problems with medical comprehension than the proficient English respondents. However, whilst these findings are of relevance to this study, they did not obtain children's views and used a different method of data collection. Moreover, Biro (2010) also raised awareness that language is the key factor that aid patients to allocate pain by using some metaphor in order to improve their comprehension of pain, which helps the patient to encode their pain and the health professional to decode it. The factorial survey respondents stated that parents might become anxious when they are not able

to understand what is being discussed about their child's condition. This can impact on the health professional as they need to ensure the level of the child understands. Narayan (2010) supported these findings and reported that this can also cause distress to the health care provider as they are responsible for making sure that parents understand everything related to their children's medical condition. Therefore, it is important for nurses to be sure that the parents and children understand what is happening by using a culturally sensitive pain assessment tool and asking many exploratory questions. Narayan (2010) also identified the additional challenges that a health care provider faced when they wanted to improve a minority patient's pain outcome successfully as they are at more risk of adverse pain outcome because of language and cultural barriers. This result is quite relevant to this study finding, which also identified language and culture as issues that impacted the judgments made by the CHN students and MIU nurses. Regarding culturally sensitive care, one of the recommendations of this study will be that culturally sensitive care becomes a priority in all hospitals.

In terms of using either *'vital signs'* or *'observe behaviour'* for those children who speak English poorly in comparison to those children who speak English well, the findings of this study showed that checking vital signs are more likely to be used to assess pain among children with lower English ability than those who speak English well, regardless of the severity of injury. As this tool is one of the non-verbal assessment tools. it can be used to overcome the challenges of language barrier; however, Arbour and Gélinas, (2010) showed that observing vital signs alone cannot be considered to be a valid pain assessment tool in ICU patients, as pain is a subjective feeling and what the patients says it is, in line with the original definition proposed by McCaffery (1979).

8.3.2 Judgments about pain assessment made by CHN students and MIU nurses

The findings of this study reported the importance of self-report of pain as it is called a 'gold standard' in the assessment of pain. The importance of the subjectivity of pain was more likely to be identified by the CHN students who, it could be argued, have up to date knowledge. However, MIU nurses focused more on the importance of the parent's interaction in their children's pain experience. Therefore, sometimes they accepted family translation instead of calling for an interpreter. CHN students were concerned about assessing pain among those who were not able to verbalise pain, and they preferred to call for an interpreter rather than use parents as an interpreter. Meyer and colleagues (2010) presented the reasons why a family interpreter is widely used in medical settings identifying availability and the emotional interaction between patients and family, which enables them to provide specific information that the interpreter could not provide. This is supported by Endacott and colleagues who suggested that the use of interpreters adds an extra layer to language transmission, increasing the opportunities for misunderstanding (Endacott et al., 2010).

MIU nurses were more likely to identify practical difficulties with assessing pain more than CHN students possibly because of their clinical experience. For example, they identified vital signs monitoring as a priority action for all children who had suffered from severe injury and they also addressed the effect of language barriers on taking the history of the injury and illness from the EAL children.

Results from statistical analysis of the factorial survey judgment A showed that there was no significant difference between the decisions of CHN students and MIU nurses regarding the selection of 'observe child's behaviour' as the most frequent type of pain assessment scale against the others in order to assess pain among those children who speak English poorly. However, in the qualitative findings, CHN students made different judgements and they were

more worried about 'Observing behaviour' of those children who could not speak English well. They raised some difficulties like how children's stress that may arise from misunderstanding and lack of information can mask the pain behaviour and they suggested using a behaviour pain tool (FLACC) alongside observing behaviour. They also suggested using an age appropriate tool as some of them reported that young children might have no positive reaction to pain, so behaviour is hard to assess and the parent's interpretation of the pain might be another barrier when the child was not able to verbalise pain. However, the choice of the MIU nurses to observe the child's behaviour appeared more confident (i.e. they identified less 'difficulties'- judgment C) than the CHN students' even if the child's language is poor. They emphasised the understanding of the tool even if it is by the parents and they were also more confident about the parent's interpretation of their child's condition.

In their decisions, the MIU nurses focused on the individual differences in children's experience of pain, such as pain threshold, coping, skills, and cultural differences. The differences between children in terms of pain experiences were rarely mentioned by the CHN students.

8.3.3 Impact of the language of the parents on decisions made about assessment of the child

It is important for children to understand their illness in order for them to be involved in the decision making process. Hallström and Elander (2004) suggested that it is important for the nurses to promote the child's rights by making them feel that they are part of the medical team. However, respondents in this study were less likely to involve children's parents when they (the parents) could not speak English well. Therefore, language is one of the common barriers that were perceived to influence communication between children, parents, and health professionals. For children who speak English poorly, respondents were more likely to

involve their parents if they could speak English well. Otherwise, they tended to not include them, because they could become a barrier to the process of pain assessment as they were not able to give an accurate history about their children's condition.

Some studies raised the issue of parent's knowledge as the reason for not involving them in pain management. Greenberg and colleagues (1999) conducted a pre-post comparative study test to assess parent's knowledge of post-operative paediatric pain management. This study demonstrated the effectiveness of an educational program (video presentation) in improving parents' knowledge and in building a useful network to open discussion between parents with various levels of knowledge and health professionals. In his systematic review, McCabe (1996) also outlined many issues regarding children's involvement in medical decision making, which include developmental issues such as cognitive and social development, clinical issues including childhood issues such as emotional and physical state, family issues such as cultural background and religious affiliation, and situational issues like stress and anxiety. However, the review included limited studies that addressed the issue of parent's language ability as a factor that influences their participation in their children's care services. Thus, through the factorial survey, respondents raised the issues of linguistic communication of the parents, and the importance of their relationships with the health professional. In a recent study, Isaacs and colleagues (2011) supported this fact and pointed out that the common problem of the linguistic minority patients in the medical setting is the relationship between them and health professionals. Therefore, it affects the process of pain assessment.

Language is not the only problem that may have an impact on the assessment and management of pain, Simons and Robinson (2002) interviewed 20 parents and 20 nurses to explore their perception about the causes of poor management of postoperative pain in children and found that poor communication between nurses and parents can lead to poor pain management. Therefore, better education for nurses can improve the management of

children's pain. In addition language education is important for both parents and health care providers. In this study, the reason why respondents refused to involve parents in their children's pain assessment was most commonly the language barrier. However, there was another concern regarding involving them in addition to the linguistic barriers, which was that the gender of the parent may affect the estimation of their child's pain, For example, in the qualitative thematic analysis of the factorial survey open question, respondents proposed that sometimes the mother may over or underestimate their son's pain. This finding contradicted what Moon et al., (2008) said after interviewing 73 children (37 boys, 36 girls) children aged 4-12 years along with 32 fathers and 42 mothers who observed their children while they undertook the cold compressor pain task. During the procedure, heart rate and facial expression were recorded and children also self-reported their pain. Moon et al., (2008) found that fathers were more likely to overestimate their son's pain rather than their daughters; however, mothers did not differentiate. The findings from judgment C of the factorial survey must be interpreted with some caution as the respondents were not directly asked to comment on whether parents may over- or under-estimate their child's pain.

Regardless of the parent's language, it has been proposed that they should accompany their children as this is one of the child's rights and makes them feel that they are not alone (Hallström and Elander, 2004). In a different study, Moon and colleagues (2011) reported that the mother's behaviour has an impact on the children's responses to pain. However, maternal attending talk (talk focused on the child's pain) may increase children's pain and non-attending talk (talk not focused on the child pain) may decrease children's pain. Parents have an active role in teaching their children how to behave when in pain. Moon and colleagues (2011) reported that parents behave differently and sometimes mothers overstate their children's pain. However, the respondents in this study agreed to involve children's parents as interpreter in order to estimate children's pain as they thought that it is their right

and it enhances self-esteem and self-regard. This study showed that parents' language is a strong predictor on nurse's decisions to involve them in assessing their child's pain.

For parents who speak English poorly as a second language, respondents were more likely to involve them in the clinical judgment with an interpreter over involving them without interpreter than those parents of children who speak English as a first language or well as a second language. In addition as they provided some details about the positive and negative impact of using an interpreter. If the child speaks English well, most of the respondents prefer not to call for an interpreter but some stated that interpretation is important for those children who speak English poorly as a second language in order to treat them effectively. These findings are supported by Ngo-Metzge et al., (2007) who examined the role of a language-concordance provider in access to quality healthcare and found that language - discordant providers provided less health education compared to language- concordant provider. This means that in health education personal care can be easily transmitted to the EAL patients with access to a clinic interpreter. Grubbs et al., (2006) also suggested that using an interpreter and using language concordance might improve the accuracy of the health assessment in the health care settings. However, their role is not just to translate. Bowen (2001) said that they should combine this role with that of Cultural Interpreter, Educator, Mediator, and Advocate. On the other hand, there are negative impacts in using an interpreter. In Grubbs et al., (2006) study 37 oncologists and 17 professional language interpreters and 17 ELP children's parents were surveyed in order to identify the effect of language barriers in paediatric care. The oncologists were concerned about the loss of information confidence which includes over and underestimation of information by the translator. Parents are also concerned about missing some information about their children's pain which may lead to anxiety and this might impact on the health professional. However, respondents in this study identified a further problem of involving an interpreter to translate

the information that it is a time consuming process. Some respondents said that it can take a long time to call for the interpreter and therefore, access to health care can be delayed. In the environment of a Minor Injuries Unit, rather than an in-patient hospital ward, this may be an important consideration.

8.3.4 Difficulties identified by CHN students and MIU nurses in assessing pain for EAL children

The factors that influence assessment of pain among children in general and EAL children in particular were explored. Through the responses to the open direct question, participants in this study mentioned some of the difficulties that they faced during assessment of pain among this group of children.

It is known that cognitive development of children is one of the factors which might affect children's linguistic maturity and ability to understand. Children's cognitive development is one aspect that impacts on the ability of children's comprehension of their illness (McCabe, 1996). This study reported the importance of a child's age in terms of understanding the medical process and also knowing how to use the pain assessment tool, most of which need language to describe pain. This links to what was found in the first phase of this study, which was that the comprehension of children decreased as age decreased. As discussed before, a child begins to understand their thinking and the thinking of others from the age of 4. This strongly supports what the respondents in Phase 2 of this study faced as they linked the effect of the child's age to the level of understanding, regardless of whether they speak English well or poorly.

More specifically the age of children might cause them to misunderstand the pain score, which could affect the health professional's estimation of the amount of pain and also affect the children's ability to express their feelings. This is supported by Goodenough et al., (1999)

who found that children over 8 years have the capability to distinguish between the severities of pain. However, younger children might overestimate their pain. Some evidence was found to support the relationship between child's age development and the range of language they can achieve. In a recent study, Franck and colleagues (2010) invited 1716 parents to complete an internet-based survey. They reported that children as young as 12-30 months rapidly develop the ability to use the language of pain and especially to vocalise pain. In this study, the qualitative data from the factorial survey showed that FLACC and Wong Baker were both identified as tools that could be used with younger children with limited English ability. This is supported by Manworren and Hynan (2003) who pointed out that FLACC is one of the preverbal scales to measure pain in young children. Sometimes the age of the children might negatively affect the behaviour of the children (RCN, 2009). These findings are supported in a focus group discussion study generated by Lioffi, et al (2012) who interviewed parents of 48 children aged between 1-5 years in order to examine their perceptions regarding young children's communication of pain and reported that parents play an active role in their children's pain assessment and management. Whilst these findings are interesting, however the relevance is limited because the focus of this study was on children's and health professionals' perception, not on the parents' perception. Lioffi et al., (2012) also did not investigate the language barrier as a reason for difficulties that children face when they communicate pain. By contrast, this study focused on the linguistic abilities of children in relation to their age and language background, which can both affect the pain communication. Furthermore, communication is often problematic for children with English as an Additional Language and can cause failure in access to health care especially pain assessment and management (RCN, 2009). Therefore, it is important to provide linguistically appropriate measures that have been validated with the racial and ethnic minority population to avoid any potential difficulties in being able to communicate (Zinke, 2007).

The findings of this study have shown that using English language in relation to pain reporting is difficult for those children and their parents who speak English poorly as an additional language. In addition to language barrier, understanding the nature of pain is also necessary for the patient (child or adult) as without a conception of pain there is no expression, which may be reflected in the pain assessment and the management of their pain. Language barrier is one of the factors which may affect the estimation of pain in terms of linguistic communication. Hadjistavropoulos and Craig, (2004) supported the importance of language to create an active channel between patients and health professionals, as language and communication are considered to be the most important factors which needs to be addressed by nurses and patients: without adequate language patients may not gain the best outcome and nurses may feel that their misunderstanding of the patient's needs could lead to a deficiency in health services (Todd, 1996).

The socio-communication model of pain developed by Hadjistavropoulos and Craig (2002) was used as a conceptual framework in this study, which included biological, psychological, and social dimensions. The important concept of this model to this study is the interaction between the child and the caregiver. This study applied the active interaction between the encoding of pain, which comes from the child and the decoding of pain by health professionals. This requires an understanding of how pain is perceived and expressed in order to communicate pain effectively. This reflects what Gonzalez and colleagues (2010) said which was that a health professional can achieve the best communication when they are speaking the same language as the patients. As Lee (2001) reported, effective intercultural communication between health professionals and patients can be achieved mainly when conversation is comprehensible to both sides. Otherwise, language becomes the major barrier to accurately measuring pain in cross- cultural research (Todd, 1996). One of the most common problems that are addressed in this study is the language barrier of the child and also

the parents and respondents found that dealing with this group of children is difficult and time consuming. Thus, this might reflect directly on the children's assessment and also their management of pain.

Gimble-Berglund (2008) interviewed 21 nurses in a paediatric department using semi structured interviews; content analysis revealed that a lack of cooperation between patients and health professionals and between nurses and physicians can affect the behaviour of children. Certain routines in the organisation and nurses' lack of experience or knowledge can lead children to be uncooperative. This not only impacts on personal interaction but it also affects the quality of care offered to the patient. Whilst, this research finding supported the fact that any lack of cooperation between nurses and patients could impact on the quality of care, they did not take language barriers into account, they gave other reasons which were, nurses' experience, knowledge and the routine policy of the hospital. Hence the findings are of limited relevance to this study, as this study found that language plays an active role in the interaction and communication between nurses and patients. This is supported by Wittgenstein's earlier work (1967) which stated that language plays an important part in health care, especially in the aspect of pain communication.

The findings of this study also looked for ways in which nurses might overcome some of the language barriers, for example some factorial survey respondents preferred to observe the child's behaviour and use nonverbal tools rather than use those tools that needed to be understood by the patients such as VAS. These tools assess pain as an objective feeling not a subjective one. Parents' language abilities also play an active role as this study found that using parents instead of calling for interpreter is considered better and that using a third party is a long and time consuming process. The individuality of pain was largely ignored especially when using interpreter and observing children's behaviour. In a comparative study, Rømsing and colleagues, (1996) examined the relationship between a child's rating of their

pain and a nurses pain score using two pain intensity tools (poker chip and VAS tool) in pre and post operation treatment of 100 children aged 3-15 years who had been scheduled for tonsillectomy. Their results identified that nurses overestimated the effect of analgesics and underestimated the children's pain because pain can only be articulated by the person who is experiencing the pain. Therefore, even nurses are not always able to interpret the child's pain experience accurately (Rømsing et al., 1996). Further, even nurses are not able to personally assess pain without considering how the children are describing their pain.

As discussed above, language barrier is one of the main problems for the health professional when assessing pain among EAL children. The other clinical deficits that might impact on the health professional assessment are the mechanism of injury and reactions to pain. Respondents explained some of the problems involved when the child is quiet and they are playing with toys in the waiting room as this might demonstrate a negative reaction to pain. Therefore, from the respondent's point of view it could be concluded that absence of reporting pain does not necessarily mean the patient is not in pain, as there may be impacts of language that is making them silent (Breau and Camfield, 2011). Wittgenstein in his philosophy of psychology stated that the expression of pain is a part of the pain itself and is not separate. Wittgenstein (1967) attempted to adapt his theory to nurses in a medical setting, as he said that nurses ignored silent patients. In support of the philosophical theory of Wittgenstein (1967), respondents in this study reported that both 'sitting quietly' and 'crying' affect the reaction from the nurse. To overcome these difficulties one of the respondents suggested communicating with these children through playing, as discussed earlier.

Gender might also have an impact; some of the factorial survey respondents in this study identified some differences between genders in their interpretation of a child's expression of pain. This study found that boys suffer from post-traumatic pain rather than girls and also stated that boys can potentially be more difficult to treat than girls because boys cry more and

therefore, are not able to give an accurate pain score. The finding is corroborated by Pawar and Garten (2010) who found in their case reports that boys suffered from post-traumatic pain more than girls, therefore, they need faster analgesia than girls, and school age girls cope with pain and behave more quietly than boys. This is mirrored in the analysis of Phase 1 of this study, which reported some impact of gender on the communication of pain through PPA and the focus group interview findings.

No matter what a person's racial or ethnic background is, they are able to discriminate the pain stimuli. Therefore, it is important for the health professional to assess the cultural variations of pain; Zatzick and Dimsdale, 1990 supported the idea that neurophysiologic detection of pain varies from one culture to another. Phase 2 respondents in this study stated that in some cultures children do not like to show their pain especially in front of the father, whilst others identified that there is a link between pain and cultural reaction to pain. This finding is supported by Koffman et al., (2008) who reported that a total 23/26 black Caribbean patients understood pain as a religious belief as it is a 'test of faith' and 'punishment' associated with wrong doing. One respondent mentioned the religious barrier. This finding is supported by Kankkunen et al., (2009) who found that culture, religion and physiological and social values are all culturally related factors which influence children's pain. Again the impact of religious beliefs in this study, proposed by just one respondent, should be interpreted with caution as no religious beliefs were included in the vignettes and therefore respondents were not prompted to consider religion.

8.4 Summary

In this chapter, the findings of the study are discussed in relation to the research questions. The findings are supported to those of the literature review, which considered relevant to this area of the study. In the final chapter, the researcher will outline the final conclusions and also have identified the strengths and limitations of each methods used in the study. Further,

the findings of this study will describe the implications for practice, policy, and education; also suggest further research for the future.

CHAPTER 9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

In the previous chapter the findings of this study were discussed in relation to the research questions. In this chapter, the findings are reviewed with the aim of drawing conclusions about the conduct and outcomes of the study. In the final part of the chapter implications of the study for policy, practice, education and future research are drawn.

9.2 Overview of study findings

This study employed a mixed methods sequential approach using qualitative and quantitative methodologies. The central aim of this study was **to examine the impact of language on the expression and assessment of pain in children age 4-7 years**. Specifically in the first phase, the aim was to explore the impact of language on the expression of pain, which was achieved through a Picture Placement Activity and focus group interviews with primary school age children aged between 4-7 years old (both monolingual and EAL children). From the findings of this phase, it was found that language has an impact on the expression of pain in primary school age children, particularly among EAL children. Because of variations in the children's language ability, many of the EAL children found it more difficult than monolingual children to communicate the pain illustrated in PPI pictures. Further, it was found that in addition to language, the age of children also has an impact on the expression of pain, as the younger children in this study vocalised pain using vowel sounds more than the older children. However, the vocalisation of pain did not necessarily reflect the level of pain presented in the picture. The older children were more descriptive and understood the nature of pain presented in the PPI pictures. This means that there are differences in the expression and perception of pain by children according to their age and language background. The results of the BPVS II test demonstrated that the age of children, the language status, and the amount of exposure to the second language also affects language ability.

The second phase aimed to identify the impact of language on the assessment of pain for a series of vignettes using a factorial survey. The respondents for this phase made clinical judgments (judgement A and B) by answering two multiple choice questions. They were also given space within the factorial survey to answer an open ended question (judgement C) to provide some details about the difficulties they faced. *‘Observe the child’s behaviour’* was the most frequent type of pain assessment method preferred against the others to assess pain among those who cannot self-report their pain. In response to judgment C, respondents suggested using a behaviour pain tool (FLACC) alongside observing behaviour in order to help overcome the language barrier. They also stated that a Visual Analogue Scale (VAS) was one of the verbal tools least likely to be selected to assess pain among EAL children, especially those who do not speak English well. There was no difference between using either *‘observe behaviour’* or *‘assess movement’* to assess pain among those who speak English poorly. There were also no significant predictions to use *‘record vital sign’* over *‘observe behaviour’* to assess those children’s pain. However, respondents emphasised using *‘record vital sign’* only to assess the physical impact of the injury.

In this phase, respondents were also asked if they would involve the children’s family in their assessment of pain. They indicated they would not involve the parents of EAL children, if they were not able to speak English well, because they were concerned about their ability to communicate with the health professional and also with their children. In addition the children might display signs of disturbance such as sitting quietly, which might make it hard to assess the child’s behaviour. It is the right of children and their parents and also the health professional to understand what is being discussed. Therefore, respondents preferred to call for an interpreter mainly in the instances when the language of the patient and the parent become an insurmountable communicative barrier as they wanted to ensure that the encoding

and decoding of pain was completed appropriately. However, respondents noted that using an interpreter is a time consuming process, which might delay the management of pain.

In addition to language barriers, the respondents also identified the impact of the child's age on the assessment of pain in the response to the open ended question, as young children cannot understand how to use some verbal pain tools. Specifically, respondents stated that children aged 4 years are quite young to learn how to use a pain tool. Further, this study reported that cognitive abilities of children might affect their behaviour, as respondents stated that it is hard to assess young children's pain behaviour. Therefore, the respondents suggested using an age-appropriate tool in order to overcome this problem and also identified the importance of family involvement when the child is young. However, it might be difficult for the health professional to communicate with parents who are not able to speak English well. This means that regardless of the language background there are active relationships between the age of children and language ability, because as children grow their linguistic capability develops. This study reported that both language barrier and age of children impacted on the assessment of children's pain and that this impact is likely to be greater for children who speak English as an additional language.

9.3 Review of the theoretical model

This study extends the conceptual framework (socio-communication model of pain) (Hadjistavropoulos and Craig, 2002) in relation to identifying the importance of language in the expression and assessment of pain. In order to guide the first phase of the data collection an adapted version of the socio-communication model of pain was used (figure 2.2), as the content of this model was relevant to this study in three aspects:

- Communication is important in pain assessment and management.
- Language is used by the person in pain in order to express their feeling of pain (encoding pain, phase 1).

- The clinician needs to understand the language used through attribution of pain and assessing it (decoding pain, phase 2).

The original model was further adapted based on the findings of phase 1 of this study. This model was modified in the following aspects:

- The original model is quite general and was designed for the whole population without taking the person's age into consideration. In this study children were the focus for the study aims and Phase 1 demonstrated that age has an important impact on their experience and expression of pain. Therefore, it is one of the factors that impacted on the clinician when assessing pain in children.
- In this study considering the language background was an important factor as it affects the encoding of pain and also influences the process of decoding pain. Therefore, this study explored the impact of language as the main problem that EAL children and also clinicians face in managing pain.
- The name of the model was changed from (**socio-communication** model of **pain**) to (Socio- **linguistic** communication of pain **in children**) in order to reflect these modifications.
- The model was drawn (adapted) and classified into two parts with important aspects added to, which are detailed in chapter 5 section 5.5.1. and 5.5.2:
 1. Perception of pain as the heart of pain communication, which included pain expression and experience. (see figure 5.5)
 2. Communication of pain in children, which emphasised two aspects:
 - A. Encoding of pain (children's self- reports of pain), which requires the following aspects as illustrated by the study findings:
 - A.1. Vocalisation of pain
 - A.2. Development of English language comprehension

A.3 Chronological development

B. Decoding of pain (observer of pain), which requires the following aspects:

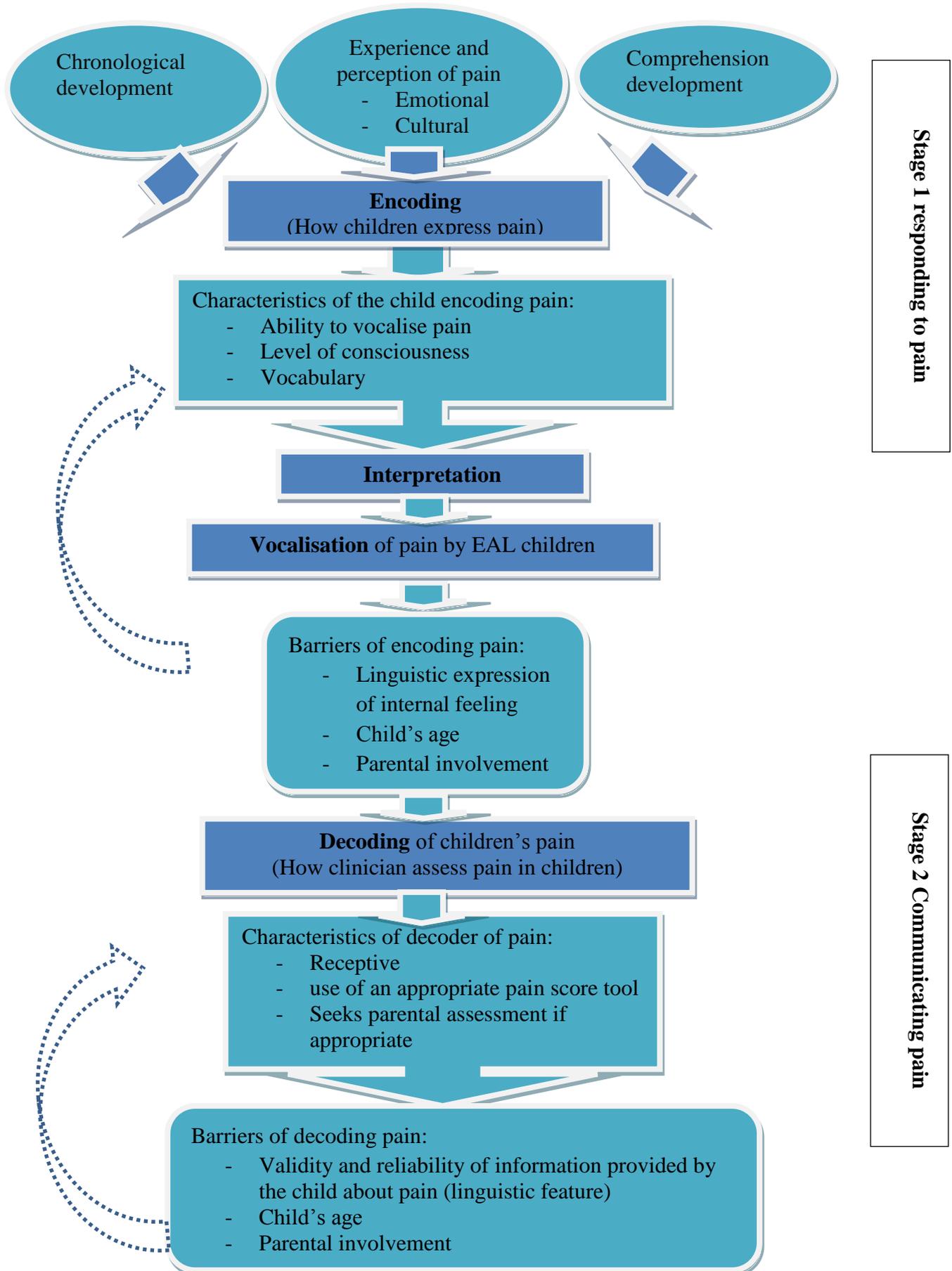
B.1 Linguistic feature of children

B.2. Age of children

B.3 Parental involvement

Phase 2 data collection, which was designed to explore this second version of the model, demonstrated that the new model represents the findings of this study. This model has drawn and classified in to three parts. However, according to the findings of this study, this model will require to add a third party such as an interpreter to help and make the conversation between the health professionals and limited language proficient children understandable as it is the right of both. This adapted version of the model is shown at Figure 9.1. Dotted arrows are used to indicate where there may be an impact of one stage on another, for example, barriers when encoding pain may also influence the characteristics of the ‘encoder’, the child who is experiencing pain.

Figure 9.1 Socio-linguistic communication of pain in children: a theoretical model



9.4 Review of the methods

The advantages and disadvantages of each method are explained in the methods chapters (chapters 3 and 6). However, whatever the failings and strengths of the methods, it is important to take the study circumstances into account in order to explore the appropriateness of the method for the study sample and to answer the research questions. An exploratory sequential mixed method was used for this study, which required using both quantitative and qualitative approaches and combined them in one method. In both phases, the two sources of data were important in order to answer the research questions. The order in which the data were collected (quantitative followed by qualitative in both phases) was appropriate for the research questions.

9.4.1 Review of Pediatric Pain Inventory (PPI) tool

Pediatric Pain Inventory was used as a tool to encourage children to:

- quantify the children's rating of pain presented in the picture
- get the children talking
- discuss the nature of pain outside of a hospital setting.

Lollar et al., (1982) used PPI to examine the perception of pain (intensity and duration) in hospitalised children from different age groups from 4- 19 years; however, there were some drawbacks to the pictures used in the original study:

- the pictures were black and white
- the pictures showed blank faces
- the pictures did not represent gender equally
- reported use of the PPI does not identify whether the pictures were designed to be used with children from different language backgrounds.

Therefore, the researcher piloted these pictures to make sure that they are suitable to be used with healthy children, and with children from different language backgrounds. One of the

limitations the original authors identified was the use of the instrument with people with less developed communication skills in a clinical setting, as the instrument would be required to be primarily non-verbal.

The researcher made the following modifications in line with children's preferences in the pilot study and discussion with the class teachers:

- Some features of the pictures were coloured in (for example, children's clothing, objects such as the bike).
- The pictures were piloted with children from different language backgrounds. They were able to respond to pictures in the same way as monolingual children hence there was no difference in the pictures used with EAL and monolingual children in this study.
- The medical set was omitted as the drawings were to be used with healthy children in this study.
- The psychosocial pictures were omitted with younger children as this was considered to be beyond their abilities.

9.4.2 Phase 1 methods

This Phase used Picture Placement Activity (PPA) and focus group discussions with children aged between 4-7 years. The advantages and disadvantages of each of them are as follows:

1- Picture Placement Activity (PPA) was useful for this study to:

- a. Familiarise the children with the pictures.
- b. Decide on the most suitable and understandable picture for the next stage (focus group interview)
- c. Examine the ability of children to quantify the amount of pain by putting the picture on a paper (green, yellow, or red).

However, as the decisions of children were taken as a group not individually, it was an exhausting procedure as the researcher had to remind them every single time of the rules of the discussion especially with the very young children. It was essential to have an observer present to take field notes, recording the behaviour and the process taken to reach consensus (or not).

2. Focus group discussions

These were conducted while children were sitting in the same groups and location. To ensure the success of a focus group with children from different age groups and language background, this study was piloted with one group of different age and language backgrounds (EAL children). It was found that it is important to separate the children depending on age and language background to prevent the domination of the older children and the monolingual children over the younger children and EAL children.

A focus group interview was a suitable method to use in this study because of the following advantages:

- a. Is a flexible method that allowed the researcher in this study to combine both quantitative and qualitative methods (Morgan (1997)).
- b. It is a suitable method to determine the ability of children (younger and older) to talk about pain
- c. It is a suitable method to identify the similarities and differences between the languages used to discuss pain by EAL children in comparison to monolingual children.
- d. It saves time, as the researcher determined the views of a group of children in a time range of 30-40 minutes.
- e. It is a significant method to generate more narrative as generally children do not like formal individual interview.

However, this study indicated some disadvantages as follows:

- a. It was a tiring procedure, the children lacked the ability to stay sitting in the chair for that much time and they had a short attention span.
- b. It was an exhausting procedure because of the children's need to be constantly reminded of the rules.
- c. Some children tended to copy each other. In particular some EAL children used the same information that their peers used because of their inability to justify their choice because of the language barrier.

Despite these limitations, the richness of data gained through this method demonstrates its' usefulness in answering the study questions.

9.4.3 Phase 2 methods

This phase used a factorial survey with randomly generated vignettes in order to identify, firstly, the clinical judgments of the health professionals, and, secondly, to identify difficulties in assessing the child portrayed in the vignette. There were advantages and drawbacks for the factorial survey:

Factorial survey was useful because of:

- a. **Validity:** internal validity of the vignettes was established for this study, as the factors to generate the vignettes were identified through the results of the first phase and through pilot study, where those taking part commented on whether the vignettes were realistic.
- b. **Reliability:** The respondents answered the vignettes without any introduction of bias. External validity is also high due to the large sample size, with each vignette representing a unit of analysis.

- c. Anonymity of data: it is a suitable method to seek of information about a sensitive topic (assessing children in pain), as all information is saved electronically and anonymously.
- d. Confidentiality of respondents: in this study the data were saved on a password protected file on the laptop.
- e. Range of vignettes presented: this gave the respondents an opportunity to make a number of judgments based on the number of vignettes presented to them,
- f. Sample size: as the vignette is the unit of analysis in factorial survey, this method generated a large amount of data without the need to survey a number of respondents.
- g. The open question (Judgement C) allowed the respondents to expand their answers and give a reason for their decisions, providing rich data.

However, use of the factorial survey also revealed some limitations:

- a. The researcher observed some signs of fatigue in some respondents; this may be because the vignettes had some similarities. However, this did not affect the willingness of the respondents to answer the open question; answers provided for the final vignettes were as detailed as those given in the early answers.
- b. The response given to the vignette data does not necessarily represent decisions that would be made in a real-life situation. Therefore, although respondents may indicate what their intended behaviour would be, this may not be the same as their actual behaviour. This is an acknowledged limitation of the method.
- b. Two respondents missed some information when they were required to leave temporarily, as the MediaLab software could not save their previous answers. This was a particular disadvantage because this study took place in a very busy unit in the hospital.

- c. It was a time consuming method.
- d. It was necessary to ‘fix’ the level of some dimensions, which affected the orthogonal of the factor, in order to prevent generating unrealistic vignettes.
- e. The order of the responses was not able to be randomised; the impact of this on the responses is not known.

Despite these limitations, it was felt that, on balance, the factorial survey was a useful method to address the Phase 2 research questions.

9.5 Study Recommendations

There are several recommendations which could assist in improving practice in order to reduce health risks posed to children with minor injuries who do not have a good command of English. This final section will address the recommendations for policy and practice, educational awareness, and potential areas for future research.

9.5.1 Recommendations for Policy and Practice

This study has outlined the potential pitfalls which disadvantage minority groups of children, therefore to facilitate the health assessment and intervention for this group of children, this study highlights the following issues

- a. The allocation of nursing time for pain assessment: This study found that language is one of the main barriers, which impacted the health professional as it is a time consuming to deal with EAL in order to assess their pain, particularly those who speak English poorly. Therefore, health professionals should allow sufficient time to deal with this group of children.
- b. The extent to which translators can adequately convey the level and severity of pain; findings from this study indicate that the policy adopted in some areas of having telephone interpretation may not be an appropriate way of providing care and pain

management of children who do not speak English as a primary language. However, this was not directly examined during this study. When the purpose of interpretation is to assess pain among those children, study findings revealed that observation of child's behaviour is the most common approach that preferred by the respondents. Therefore, NHS providers need to recognise that telephone interpretation is unlikely to meet the patient's or clinician's needs. It is recommended that telephone interpretation is not used when the goal is to assess symptoms with a visual representation, such as pain.

- c. Pain is experienced by the child, as pain is a subjective feeling. This study found that the individual experience, in particular self-report of pain, was ignored by some of the respondents. Again, this was not a specific question asked of the respondents; however, health professionals should consider that self-report of pain is a gold standard for all regardless of the language background. Hence there needs to be investments in ensuring self-report tools are available that are suitable for children from all language abilities.
- d. Where consultation time allows, the degree to which parents are able to advocate on behalf of their children should be assessed carefully prior to their involvement in assessing their child's pain.
- e. Cultural practices which impact upon the way pain is managed should be acknowledged. Therefore, it is important to take cultural sensitivity to pain into account before assessing and managing pain among those with different cultural backgrounds.

9.5.2 Recommendations for Education

The education and training of health professionals requires consideration through staff development programmes. This study found that those children who do not speak English

well and their families need some support in communication, cultural care, and appropriate language assistance. Therefore, this study recommends that educational opportunities are provided for the health professional to:

1. Develop their knowledge in assessment and management of pain in children.
2. Develop culturally competent care in order to assess pain among those who unable to speak English well. This study recommends that cultural competent care training is provided for every health professional, in particular those who deal with children from different cultural backgrounds.
3. Recognise anxiety in children from different language backgrounds.
4. Develop educational guidelines for the provision of information about how pain is assessed and how self-report tools are used to children and families in their languages. Study findings recommend translating some guidelines with different main languages.
5. Develop verbal and nonverbal communication skills with EAL children and their parents.
6. Develop health professionals' advocacy skills to encourage the involvement of child's parents in their care. It is important for health professionals to be sure that parents understand the range of questions asked them.

9.5.3 Recommendations for future research

This study aimed to examine the impact of language on the expression and assessment of pain among primary school age children aged 4-7 years and highlighted some factors that influenced pain expression and assessment for those who do not speak English as a primary language. Despite the significant findings of this study, which addressed all the research questions, there are some areas in which future research would be valuable:

1. The impact of pain expression among hospitalised EAL children.

2. The complex interaction between children' parents and health professionals particularly for different language backgrounds
3. The difficulties of involving parents in their children's clinical care when they are from different cultural backgrounds.
4. The impact of interventions designed to improve communication between parents and health professionals.
5. Further evaluation of the knowledge, skills, and attitude of health professionals who deal with children from different language and cultural backgrounds.
6. The evaluation of the benefits and limitations of interpretation services in the NHS services through observation study.

APPENDICES

Appendix 1 Search strategy

Sources	<ul style="list-style-type: none"> - Computerized data bases from different databases such as BNI, Cinahl, and Medline, PubMed and dissertation abstracts. - Manual research of Nursing medical and methodological journals and books, or their available alternative variations. - `Grey` literature such as policy documents, conference proceeding and local project reports. - Citations in papers identified by the above searches
Inclusion criteria	<ul style="list-style-type: none"> - Primary research includes surveys, interviews, observations, and ethnographic research. - Secondary research includes: published statistics, published text(theoretical work), journal - Systematic review - Policy documents
Exclusion criteria	<ul style="list-style-type: none"> - Studies not published in English - Unpublished research - Timeframe research - Non-human subject
Type of participants	<ul style="list-style-type: none"> - Adults - Children - School age children - EAL children - Monolingual
Key words	pain, children, language of pain expression, English as an additional language (EAL) children, school age children and pain, ethnicity and pain evidence, culture and pain sensitivity, Interpretation and language impact and assessment of pain
Types of the studies	All

Appendix 2 Participant information sheet and consent form

Examining how primary school age children with English as a primary or additional language discuss pain.

Participant Information Sheet (Parents)

Date:



About the researcher

I am a PhD research student at the University of Plymouth undertaking a study of how children with English as a first or second language talk about pain. This research has been approved by the university research Ethics committee

About the study

In this study, we are trying to find out how children with English as a first or second language talk about pain. Findings for the study will help us to provide health care that will meet the needs of local children. The study will involve talking to children, observing children's language activity and really getting to know the effect of language in expressing their feelings. As part of the study I will be inviting children who have English as a first or second language to join a group discussion in their usual classroom when we will look at drawings of children in pain (for example, falling off a bike). Your child has been invited to join the study.

Your Rights...

- Participation in the study is voluntary and I'm not trying to persuade you to allow your child to take part in the study. I am interested in hearing about how your child with English as a first or second language talks about pain.
- The group interview may take an hour and with your permission will be audio-recorded; if this is not acceptable I will take notes instead.
- Your child will also take part in an individual interview to assess his/ her individual vocabulary score.
- There are no right or wrong answers and unless there is concern for someone's safety everything that your child says is confidential. (Local *Safeguarding Children* procedures will be followed).
- All information collected will be kept securely, field notes, transcripts of interviews and focus groups will be kept separate from your child's personal data, will only be used for the purpose of the research, and will comply with the Data Protection Act (1998). The result of the vocabulary score will not be given to the school. No individuals will be named in the written published reports and all quotes taken from participants will be anonymised. In the written reports the school studied will be given a fictitious name and, whilst every effort will be made to guarantee anonymity, this will be limited by the extent to which the identity of the school itself is made public by others.

- Some of your children's answers may be used in research papers or presented at conferences, and my findings will be discussed with my supervisor, but your child will not be identified in any way.
- I am aware that, for some, talking about painful experiences can raise emotions and may be upsetting. Your child will be invited to share only what she/he wants to share. If your child discloses information of a sensitive nature and requires further support with regard to this, with your permission school counselling facilities or the school nurse will be made available.
- Your child has the right to withdraw from the study at any time, and you have the right to withdraw your child's data at any time without having to provide a reason and without any detriment to your relationship with the school or the University.
- Refusal to take part will make no difference to any professional relationship you have with the school or the University.

Feeding back to you

I hope that by listening to the way in which your child talks about pain that this project will have a positive impact on shaping how future services are delivered for children and parents. The school will be given a copy of the research findings at the end of the study and if possible I would like to come and share my findings with the parents of children involved in the study.

If you are unhappy with any aspect of the study and feel you need to talk to someone else please contact

Prof Ruth Endacott (Director of Studies)

8 Portland Villas

University of Plymouth

Drake Circus

Plymouth

PL4 8AA

Tel 01752 587488

ruth.endacott@plymouth.ac.uk

Thank you

Consent form

Signed Consent (Two copies required – retain one and give one to participant)

I consent to my child participating in this project; I have read the above and understand that this is voluntary and that I can withdraw my child at any time without any negative consequences.

Signed _____ Print name _____

Date _____

Further information from:

Pary M. Azize

PhD student

Faculty of Health and Social Work

University of Plymouth

Tel 01752 586544

Director of Studies

Prof. Ruth Endacott

Appendix3 List of Drawings in the Pediatric Pain Inventory (Lollar et al., 1982)

Medical (MED):

1. getting an injection ;
2. lying in a hospital bed beside an intravenous bottle ;
3. receiving stitches ;
4. getting medicine from a nurse;
5. sitting in a wheelchair in a hospital;
6. having a cast put on in a physician's office;

Recreation (REC):

7. being hit by a ball when playing cricket or rounder;
8. falling off a skateboard;
9. having a wreck with a bicycle;

10. dropping a bowling ball on foot; whilst ten pin bowling
11. run over by another football player;
12. falling out of a tree ;

Activities of Daily Living (ADL):

13. closing a finger in a door;
14. getting an electric shock;
15. getting stung by bees;
16. cutting hand while peeling fruit ;
17. pulling off a band aid;
18. burning hand on the stove; and

Psychosocial (PS):

19. being scolded by a policeman;
20. laughed at by schoolmates for misspelling a word;
21. striking out in a baseball game;
22. reprimanded by a teacher;
23. fighting with another child ;
24. being excluded from a game.

Appendix 4 Focus Group Interview Guide

INTRODUCTION

Hello, my name is Pary and this is Ruth. What are your names? Let's put some labels on so that we can remember your names.

We've got some things to do with you on your table today. This is how we're going to do it.

- Please say exactly what you think; don't worry about what I think and what your friends think.
- We're going to tape our talk today so please talk nice and loud.
- Let's try to have one person talking at one time until you get a turn. (If the teacher uses a particular technique, for example having a child hold a ball or toy whilst it is their turn to speak, this will be used during the interview. If a child becomes too verbose or too quiet, the researcher will say "let's remember what we said at the beginning and take turns to speak").

Activity 1

The children will be presented with a series of drawings from the Pediatric Pain Inventory given three pieces of paper (red, yellow, and green) and asked to do the following:

"Take all of the pictures and put them on one of the three pieces of coloured paper. If you think the child is hurting a little, place the picture on the green paper, if you think the child is hurting 'some' put it on the yellow paper and if you think the child is hurting a lot put the picture on the red paper".

Activity 2

In order to elicit language used by the children to describe pain, the children will be shown pictures from the Pediatric Pain Inventory and asked the following questions:

Example: picture of a boy falling off a bike:

1. What would he say?
2. What would he tell his mummy or daddy?
3. What would mummy or daddy do?
4. What would happen then?

The first two questions will elicit data for the study; the latter questions will allow the incident to have a positive outcome.

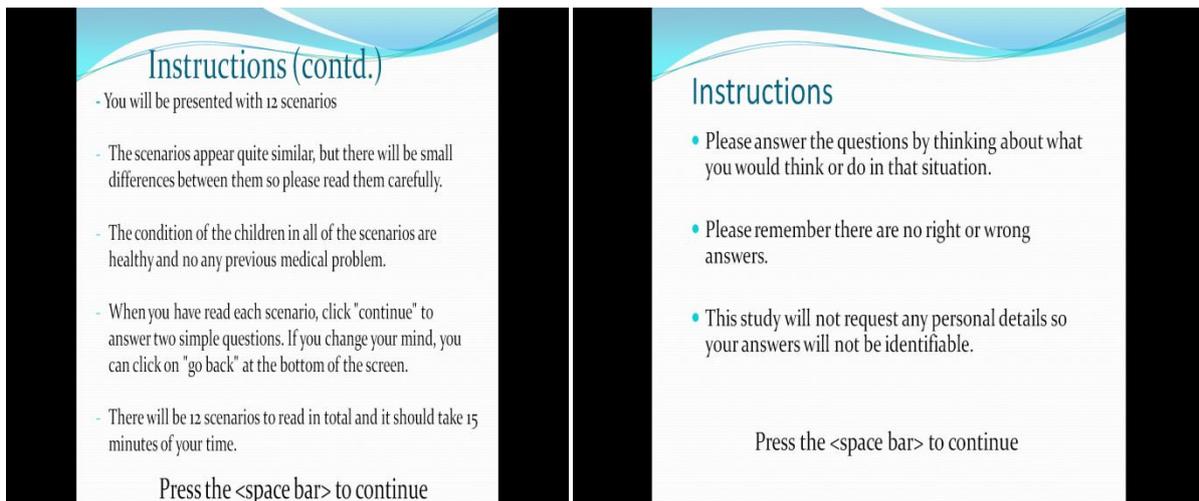
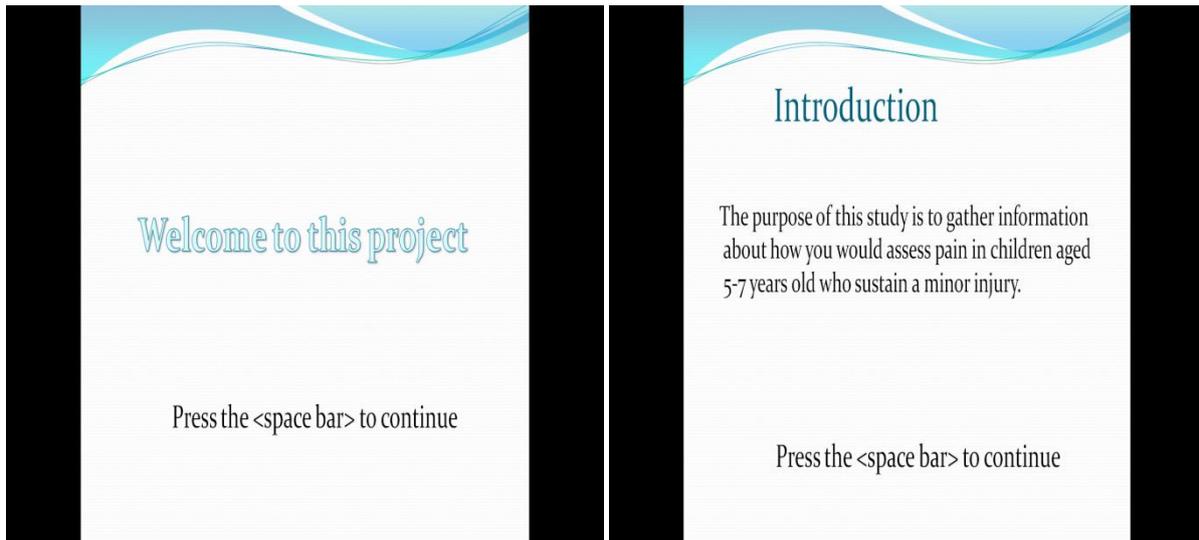
Appendix 5 Demographic data sheet

- Name:
(To be removed after data collection)
- Date of birth
- Gender: Male Female
- Country of origin of mother
- Country of origin of father
- Language spoken to the child by the mother
- Language spoken to the child by the father
- Date when your child started at the school
- Date when you moved to the UK

Appendix 6 the Media Lab Experiment project

	Condition	Position	File Name	BackImag	BackSoun	BackVideo	Parameter	WGR	BGR
1	1	1.00	Pary_projectRE.pps	none	none	none	none	none	none
2	1	2.00	Pary_Post_Plot_2_PPL_vigns.que	none	none	none	none	none	none
3	1	3.00	pary_projectPA.pps	none	none	none	none	none	none
7									
8									
9									
10									
11									
12									
13									
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36									
37									
38									

Appendix 7 Power point file: introduction to the study



Appendix 8 Multiple choice and open questions used for each vignette

Position	Name	Item Type	Question Wording / File Name	Filename	BackImage	BackSound	BackVideo	BackDoc	Parameter	WGR	BGR	OmitCondi	WriteData	WriteRT	WriteText	PointLabel	PointLabel	PointLabel	Poi	
1	1.00 nusage	Scale Response	Your age		none	none	none	none	(p3)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
2	2.00 jobtite	Fill-in-the-Blank	Professional qualification		none	none	none	none	(s2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
3	3.00 nursgender	Scale Response	Gender		none	none	none	none	(p2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
4	4.00 nursworktime	Scale Response	Length of time working in hospital		none	none	none	none	(p4)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
5	6.00 q1v1	Multiple Response	Please read this case scenario 1:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
6	7.00 q2v1	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
7	8.00 q3v1	Fill-in-the-Blank	<vigt>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
8	10.00 q1v2	Multiple Response	Please read this case scenario 2:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
9	11.00 q2v2	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
10	12.00 q3v2	Fill-in-the-Blank	<vig2>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
11	14.00 q1v3	Multiple Response	Please read this case scenario 3:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
12	15.00 q2v3	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
13	16.00 q3v3	Fill-in-the-Blank	<vig3>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
14	18.00 q1v4	Multiple Response	Please read this case scenario 4:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
15	19.00 q2v4	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
16	20.00 q3v4	Fill-in-the-Blank	<vig4>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
17	22.00 q1v5	Multiple Response	Please read this case scenario 5:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
18	23.00 q2v5	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
19	24.00 q3v5	Fill-in-the-Blank	<vig5>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
20	26.00 q1v6	Multiple Response	Please read this case scenario 6:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
21	27.00 q2v6	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
22	28.00 q3v6	Fill-in-the-Blank	<vig6>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
23	30.00 q1v7	Multiple Response	Please read this case scenario 7:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
24	31.00 q2v7	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
25	32.00 q3v7	Fill-in-the-Blank	<vig7>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
26	34.00 q1v8	Multiple Response	Please read this case scenario 8:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
27	35.00 q2v8	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
28	36.00 q3v8	Fill-in-the-Blank	<vig8>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
29	38.00 q1v9	Multiple Response	Please read this case scenario 9:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
30	39.00 q2v9	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
31	40.00 q3v9	Fill-in-the-Blank	<vig9>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
32	42.00 q1v10	Multiple Response	Please read this case scenario 10:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
33	43.00 q2v10	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
34	44.00 q3v10	Fill-in-the-Blank	<vig10>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
35	46.00 q1v11	Multiple Response	Please read this case scenario 11:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
36	47.00 q2v11	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
37	48.00 q3v11	Fill-in-the-Blank	<vig11>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
38	50.00 q1v12	Multiple Response	Please read this case scenario 12:		none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
39	51.00 q2v12	Multiple Response			none	none	none	none	(50,60,a2)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
40	52.00 q3v12	Fill-in-the-Blank	<vig12>		none	none	none	none	(200,s6)	none	none	none	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	none	none	none	non
41													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
42													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
43													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
44													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
45													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
46													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
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48													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
49													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
50													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
51													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
52													<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

Info
Details
Sort
ReNum
Print
Help
Save
SaveAs
✓ Ok

Appendix 9 Sample of Media lab response file

Copy of responses [Compatibility Mode] - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
2	r1age1		2												
3	age1	5 year-old													
4	r2gender1		1												
5	gender1	boy													
6	r3child language abil1														
7	child language abil1		#N/A												
8	r4prona1		1												
9	prona1	his													
10	r5pronb1		1												
11	pronb1	He													
12	r6injury1		3												
13	injury1	The child was playing in the park and was hit in the leg by a football. There are no breaks in the skin and the leg is not swollen													
14	r7pronc1		1												
15	pronc1	he													
16	r8nonverbal react1		0												
17	nonverbal react1		#N/A												
18	vig1		#N/A												
19	r1age2		4												
20	age2	7 year-old													
21	r2gender2		2												
22	gender2	girl													
23	r3child language abil2		3												
24	child language abil2	speaks English poorly as a second language													
25	r4prona2		2												
26	prona2	her													
27	r5pronb2		2												
28	pronb2	She													
29	r6injury2		2												
30	injury2	The child was walking home from school and tripped over and resulting in a grazed knee. The graze is oozing slightly but not swollen or restricting limb movement													
31	r7pronc2		2												
32	pronc2	she													
33	r8nonverbal react2		0												
34	nonverbal react2		#N/A												
35	vig2		#N/A												
36	r1age3		3												
37	age3	6 year-old													
38	r2gender3		2												
39	gender3	girl													

Copy of responses [Compatibility Mode] - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
40	r3child language abil3		0												
41	child language abil3		#N/A												
42	r4prona3		2												
43	prona3	her													
44	r5pronb3		2												
45	pronb3	She													
46	r6injury3		2												
47	injury3	The child was walking home from school and tripped over and resulting in a grazed knee. The graze is oozing slightly but not swollen or restricting limb movement													
48	r7pronc3		2												
49	pronc3	she													
50	r8nonverbal react3		0												
51	nonverbal react3		#N/A												
52	vig3		#N/A												
53	r1age4		3												
54	age4	6 year-old													
55	r2gender4		2												
56	gender4	girl													
57	r3child language abil4		0												
58	child language abil4		#N/A												
59	r4prona4		2												
60	prona4	her													
61	r5pronb4		2												
62	pronb4	She													
63	r6injury4		1												
64	injury4	The child was playing at the local playground and fell from a 3 foot high climbing frame. There are no breaks in the skin but one ankle is swollen and painful on movement													
65	r7pronc4		2												
66	pronc4	she													
67	r8nonverbal react4		0												
68	nonverbal react4		#N/A												
69	vig4		#N/A												
70	r1age5		0												
71	age5		#N/A												
72	r2gender5		0												
73	gender5		#N/A												
74	r3child language abil5		0												
75	child language abil5		#N/A												
76	r4prona5		2												
77	prona5	her													

Appendix 10-1NHS Ethical approval



National Research Ethics Service

South West 2 Research Ethics Committee

South West REC Centre
Level 3
Block B
Lewins Mead
Whitefriars
Bristol
BS1 2NT

Telephone: 0117 342 1332

Facsimile: 0117 342 0445

e-mail: Ubh-tr.SouthWest2@nhs.net

28 January 2011

Prof Ruth Endacott
Professor of Critical Care Nursing
University of Plymouth
8 Portland Villas
Plymouth
PL4 8AA

Dear Prof Endacott

Study Title: Factors influencing assessment of pain in primary school age children
REC reference number: 10/H0206/63

Thank you for your letter of 10 January 2011, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Vice Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

This Research Ethics Committee is an advisory committee to South West Strategic Health Authority
*The National Research Ethics Service (NRES) represents the NRES Directorate within
the National Patient Safety Agency and Research Ethics Committees in England*

For NHS research sites only, management permission for research (“R&D approval”) should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

Where the only involvement of the NHS organisation is as a Participant Identification Centre (PIC), management permission for research is not required but the R&D office should be notified of the study and agree to the organisation's involvement. Guidance on procedures for PICs is available in IRAS. Further advice should be sought from the R&D office where necessary.

Sponsors are not required to notify the Committee of approvals from host organisations.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Protocol	1	16 August 2010
Response to Request for Further Information		02 October 2010
Response to Request for Further Information		16 December 2010
Response to Request for Further Information	email	10 January 2011
REC application	3.0	08 September 2010
Insurance Certificate		25 August 2010
CV for Student: Pary Azize		16 September 2010
Coding level dimension for each factor	2	01 October 2010
Participant Information Sheet	4	10 January 2011
Investigator CV		11 August 2010
Participant Consent Form	4	10 January 2011
Covering Letter		10 September 2010
Covering Letter		02 October 2010
Employers' Liability Insurance Certificate		01 August 2010
Online survey	3	01 December 2010
Transfer VIVA report		15 April 2010

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

REC reference 10/H0206/63 Please quote this number on all correspondence

With the Committee's best wishes for the success of this project

Yours sincerely



**Dr Denise Sheehan
Vice Chair
South West 2 Research Ethics Committee**

Enclosures: "After ethical review – guidance for researchers"

Copy to: ✓ Pary Azize 4 Portland Villas University of Plymouth Drake Circus Plymouth PL4 8AA

Dr Helen Neilens Plymouth Hospitals NHS Trust Room N14 ITTC Building Tamar
Science Park Derriford Plymouth PL6 8BX

Appendix 10-2 University of Plymouth ethical approval

MS/ab

9th June 2011

CONFIDENTIAL

Pary Azize
University of Plymouth
Room 103
4 Portland Villas
Drake Circus
Plymouth
PL4 8AA



Faculty of Health

University of Plymouth
Drake Circus
Plymouth
Devon PL4 8AA
United Kingdom

tel +44 (0)1752 586999
fax +44 (0)1752 586970
www.plymouth.ac.uk/hsw

Professor Michael Sheppard
CQSW BSc MA PhD, AcSS
Chair of Research Ethics Committee

Dear Pary

Application for Approval by Faculty Research Ethics Committee

Application Title: The impact of language on assessment of pain in primary school age children

I am pleased to inform you that the Committee has granted approval to the amendments you requested on 2nd June 2011 for the ethics application that has previously been granted approval.

Please note that this approval is for three years, after which you will be required to seek extension of existing approval.

Please note that should any MAJOR changes to your research design occur which effect the ethics of procedures involved you must inform the Committee. Please contact Alison Bendall on (01752) 586703 or by email alison.bendall@plymouth.ac.uk

Yours sincerely

Professor Michael Sheppard, PhD, AcSS,
Chair, Research Ethics Committee
Faculty of Health
University of Plymouth

Appendix 11 Information Sheet: MIU Nurses

Title of the study:

The impact of language on the assessment of pain in primary school age children

PART 1

Information about the study

We would like to invite you to take part in this study. Before you decide, you need to understand why the research is being done and what it involves for you. Please take time to read the following information carefully and talk to the researcher if you wish. Part 1 of this information sheet tells you about the purpose of the study, and what will happen if you take part. Part 2 gives more detailed information about the conduct of the study.

Please ask us if there is anything you do not understand, or you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

The primary research question for this study is: does language influence the assessment of pain in primary school age children who sustain a minor injury? We have approached you as we aim to gather information about the impact of factors such as age, language ability and verbal and non-verbal reaction to injury on the assessment of pain in this age group. There are no right and wrong answers to any of the questions. We will also invite child health students to take part in the study to examine how language affects assessment of pain in children who sustain a minor injury.

The findings of the study will allow us to make recommendations about the assessment of children who have English as an Additional Language (EAL) when they experience pain, and to raise awareness of potential barriers to the effective communication of pain by EAL children. The results of this study will contribute to an area which is currently under researched and will generate further studies in this field, In light of the growing numbers of EAL children in the UK; this research has a wide application in a number of contexts.

Why have I been invited?

You are invited to take part in the study because you work in a Minor Injury Unit. We aim to recruit approximately 20 MIU Nurses to our study. Your manager has allowed me to approach you with information about the study; however, this does not constitute consent from you. As we are seeking responses from nurses with experience of managing children, we have excluded nurses who have less than 2 years' experience. We have also excluded nurses who have English as an additional language.

Do I have to take part?

It is up to you to decide to join the study. The study will be conducted via a laptop based survey; when you log on you will be given the opportunity to read this information sheet again and to contact the researcher to ask any questions. If you agree to take part, we will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. Your employer will not be aware of your participation in the study hence refusal or withdrawal will not have any consequences for your employment.

What will happen to me if I take part?

If you agree to take part, you will complete a laptop based survey. The main focus of this survey is to determine decision making in varying situations using scenarios that will be presented to you, describing children who may present to a Minor Injury Unit. The survey

has two types of questions: some questions will require you to select an answer from a range of options (multiple choices). Other questions will take the form of open ended questions, which will give you the opportunity to provide more detailed responses regarding the factors that you take into account when assessing children who present with a minor injury. Biographical data items will be collected, which will assist us to interpret the study results. However, we will not collect any information that would identify you. The time taken to complete the survey is approximately 30 minutes

What will I have to do?

If you are happy to take part in the study, please contact the researcher to arrange a date and time for the survey to be administered. A freepost envelope is included with the consent form.

What are the benefits of taking part?

There are no direct benefits for you; however, completion of the study vignettes will provide an opportunity for you to review your decision-making regarding the assessment management of children who present to the Minor Injury Unit.

What is if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. The detailed information on this is given in part 2 of this information sheet.

Will my taking part in this study be confidential?

Yes; we will not collect any personal information that might identify you. If the information in part 1 interests you and you are considering participation, please read part 2 of this information sheet before making any decision.

Part 2

What will happen if I don't want to carry on in this study?

You are free to withdraw from the study at any time if you change your mind; you do not have to give a reason for withdrawal.

What if there is a problem?

If you have a problem you should ask to speak to the researcher who will do her best to answer any questions. The research lead is Ms Pary Azize (PhD student) who can be contacted on 01752 586544. Alternatively contact the study supervisor Dr Ann Humphreys on 01752 586501 or the director of the study Professor Ruth Endacott on 01752 587488.

Harm

It is not anticipated that any harm will come to you. However, in the event that something does go wrong and you are harmed due to someone's negligence then you may have grounds for a legal action for compensation against the University of Plymouth but you may have to pay your legal costs. The University has vicarious liability for researchers' actions with indemnity insurance schemes in place should any harm occur. If the study raises some difficult issues for you please feel free to contact the Trust Employee Assistance programme, PPC Online who can be contacted on 0800 282 193 quoting organisation name NHS Plymouth. Alternatively, you can access at www.pcconline.info username: NHS Plymouth password: NHS Plymouth. A local counselling service is provided through Occupational Health on 01752 437222.

Will my taking part in this study be confidential?

All information collected about you during the study will be strictly confidential and will have your name removed so that you cannot be recognised. Only the research supervisory team will have access to research data. Only non -identifiable information will be used in the data analysis; the data will be anonymised by using participant numbers, not names, and all the data will be kept in a locked drawer or a password- protected computer file. Data will normally be destroyed after 10 years from the date of completion the study according to the University policy regarding the procedure for storage of research data.

What will happen to the results of the research study?

As the study is part of an academic course, study findings will be published in a doctoral thesis. It is also likely to be presented at a conference and published in an academic journal. You will not be identifiable in any presentation or publication.

Who is organising and funding the study?

The study is sponsored by the University of Plymouth.

Who has reviewed the study?

All research in the NHS is looked at by an independent group of people, the research ethics committee, to protect safety, right, well-being, and dignity. This study has been reviewed by the South West Research Ethics Committee 2. This information sheet is yours to keep.

Further information and contact details

If you have any queries or would like to discuss participation further, please contact Pary Azize: Pary.azize@plymouth.ac.uk or phone no 01752586544

Thank you very much for your help.

Pary Azize

PhD student, Faculty of Health

Appendix 12 Information Sheet: Child Health Nursing Students

Title of the study:

The impact of language on the assessment of pain in primary school age children

PART 1

Information about the study

We would like to invite you to take part in this study. Before you decide, you need to understand why the research is being done and what it involves for you. Please take time to read the following information carefully and talk to the researcher if you wish. Part 1 of this information sheet tells you about the purpose of the study, and what will happen if you take part. Part 2 gives more detailed information about the conduct of the study.

Please ask us if there is anything you do not understand, or you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

The primary research question for this study is: does language influence the assessment of pain in primary school age children who sustain a minor injury? We have approached you as we aim to gather information about the impact of factors such as age, language ability and verbal and non-verbal reaction to injury on the assessment of pain in this age group. There are no right and wrong answers to any of the questions. We will also invite MIU Nurses to take part in the study to examine how language affects assessment of pain in children who sustain a minor injury.

The findings of the study will allow us to make recommendations about the assessment of children who have English as an Additional Language (EAL) when they experience pain, and to raise awareness of potential barriers to the effective communication of pain by EAL children. The results of this study will contribute to an area which is currently under researched and will generate further studies in this field, In light of the growing numbers of EAL children in the UK; this research has a wide application in a number of contexts.

Why have I been invited?

You are invited to take part in the study because of your knowledge of child health. Your Head of School has allowed me to approach you with information about the study; however, this does not constitute consent from you.

Do I have to take part?

It is up to you to decide to join the study. The study will be conducted via a laptop based survey; when you log on you will be given the opportunity to read this information sheet again and to contact the researcher to ask any questions. If you agree to take part, we will then ask you to sign a consent form. You are free to withdraw at any time, without giving a reason. If you decide not to take part you will not be disadvantaged in any way in relation to your education and learning.

What will happen to me if I take part?

If you agree to take part, you will complete a lap top based survey. The main focus of this survey is to determine decision making in varying situations using scenarios that will be presented to you, describing children who may sustain a minor injury. The survey has three types of questions: some questions will require you to select one answer from a range of options (multiple choices). Other questions will take the form of open ended questions, which will give you the opportunity to provide more detailed responses regarding the factors that you take into account when assessing a child who sustains a minor injury. Biographical data items will be collected, which will assist us to interpret the study results. However, we will

not collect any information that would identify you. The time taken to complete the survey is approximately 30 minutes

What are the benefits of taking part?

Taking part in this research study is entirely voluntary. It is up to you to decide whether or not to take part. If you decide to take part I will come and visit you to discuss the research further. During this meeting we will spend some time together talking about any concerns you may have. You will then have more time to decide whether or not you would like to take part in the research. If you do decide to take part you will be asked to sign a consent form. You are free to withdraw from the study at any time and any decision not to take part will not affect your progress in your degree programme. You do not have to give a reason for withdrawing from the study. There are no direct benefits for you; however, completion of the study vignettes will provide an opportunity for you to review your decision-making regarding the assessment of children who sustain a minor injury.

What is if there is a problem?

Any complaint about the way you have been dealt with during the study will be addressed. The detailed information on this is given in part 2 of this information sheet.

Will my taking part in this study be confidential?

Yes; we will not collect any personal information that might identify you. If the information in part 1 interests you and you are considering participation, Please read part 2 of this information sheet before making any decision. Your study results will not be available to any of the lecturers in the child team. All data will be anonymised and your name will not be linked to the answers that you provide.

Part 2

What will happen if I don't want to carry on in this study?

You are free to withdraw from the study at any time if you change your mind; you do not have to give a reason for withdrawal.

What if there is a problem?

If you have a problem you should ask to speak to the researcher who will do her best to answer any questions. The research lead is Ms Pary Azize (PhD student) who can be contacted on 01752 586544. Alternatively contact the study supervisor Dr Ann Humphreys on 01752 586501 or the director of the study Professor Ruth Endacott on 01752 587488.

Harm

It is not anticipated that any harm will come to you. However, in the event that something does go wrong and you are harmed due to someone's negligence then you may have grounds for a legal action for compensation against the University of Plymouth but you may have to pay your legal costs. The University has vicarious liability for researchers' actions with indemnity insurance schemes in place should any harm occur.

Will my taking part in this study be confidential?

All information collected about you during the study will be strictly confidential and will have your name removed so that you cannot be recognised. Only the research supervisory team will have access to research data. Only non -identifiable information will be used in the

data analysis; the data will be anonymised by using participant numbers, not names, and all the data will be kept in a locked drawer or a password-protected computer file. Data will normally be destroyed after 10 years from the date of completion of the study according to the University policy regarding the procedure for storage of research data.

What will happen to the results of the research study?

As the study is part of an academic course, study findings will be published in a doctoral thesis. It is also likely to be presented at a conference and published in an academic journal. You will not be identifiable in any presentation or publication.

Who is organising and funding the study?

The study is sponsored by the University of Plymouth.

Who has reviewed the study?

All research conducted by staff and students at the University of Plymouth by an independent group of people, the research ethics committee, to protect safety, right, well-being and dignity. This study has been reviewed by the University of Plymouth, Faculty of Health Research Ethics Committee. This information sheet is yours to keep.

Further information and contact details

If you have any queries or would like to discuss participation further, please contact Pary Azize: Pary.azize@plymouth.ac.uk or phone no 01752586544

Thank you very much for your help.

Pary Azize

PhD student, Faculty of Health

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