# Maternal perspectives of child health consultations by medical students

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## Abstract

This thesis had two principal aims. The first was to determine the relationship between medical student clinical competence and patient-centredness, and maternal satisfaction and subsequent recall of information in child health consultations. The second was to test the application of this knowledge in medical student teaching programs.

Studies of patient priorities in medical care identify doctor competence and patient-centredness as two key elements of successful doctor-patient interviews. However the relative ability of patients to recognise these two elements has not previously been assessed.

In child health interviews with medical students, parents as active participants form their own impressions of student interview skills. These parent evaluations can be formally sought as a component of medical student interview skills assessment, and contribute to medical student learning programs.

Following a pilot study, 60 mothers viewed and rated pairs of videotaped interviews in which the level of clinical competence and patient-centredness of the student were varied independently. Maternal satisfaction ratings were positively correlated with both the level of clinical competence and the level of patient-centredness demonstrated by the student. Maternal recall was also positively correlated with the level of clinical competence, but not with the level of patient centredness. Mothers preferred more competent and patient-centred student interviews.

To test the application of this knowledge in medical student learning, the videotaped interview recreations were integrated subsequently into a child health learning program. Reviewing maternal evaluations of the videotaped interviews illustrated important elements of medical consultations for the students, and demonstrated the practical importance of developing good interviewing skills. Use of the videotapes also afforded students the opportunity to review interview structure and content.

This thesis has demonstrated the ability of mothers to assess the clinical competence and patient-centredness of medical students in videotaped consultations. It included, as a major component, the development and independent testing of a method for standardising medical student interviews so that maternal evaluations for identical interviews could be compared. Applications in medical student learning were also developed and evaluated.

**Statement**

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the University Library, being available for loan and photocopying.

Maree O'Keefe

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## Introduction

You are the mother of a young child who is sick with a high fever. You take your child to the doctor. You are particularly worried about her high fever, and concerned that the medication you are using to control fever is not working. Which of the following responses by the doctor to your concerns do you think is most helpful?

*Mother: We gave panadol, normally it does work but it wouldn't work.*

**Doctor response 1:** **So has that been a concern to you?**

**or**

**Doctor response 2:** **Oh, it hasn't been working.**

**or**

**Doctor response 3:** **How often are you giving the panadol?**

The success of a medical interview can be judged in many ways. In the case described above, a successful outcome would include an acknowledgement by the doctor that the high fever was concerning the mother. In the first response the doctor invites the mother to share her concerns fully. In the second response the doctor repeats the mother's statement as either a less explicit invitation to provide more information, or merely as a memory aid to the doctor. In the third response the doctor seeks specific information only and thereby limits the mother's opportunity to describe her concerns further at that time.

The medical interview is a key tool of the practising doctor, and interview skills training is a basic component of medical student education. Because the medical interview is

a complex interaction involving both the doctor and the patient, patients should be invited to participate in the evaluation of medical interview skills.

In paediatric and child health practice, parents as well as their children are integral participants in the interview process. When parents consult a doctor they need to feel that the doctor both understands the nature of their concerns, and is competent to deal with the presenting problem. Recognition of these qualities by parents is important so that they have confidence in the treatment recommendations made by the doctor, and intend to comply with these.

There is insufficient information available regarding an appropriate role for parent evaluations of child health interviews by medical students. To form a more complete picture of our current knowledge about parent evaluations a comprehensive literature search was undertaken addressing this issue. In reviewing this body of work, a number of important questions were identified. The studies which comprise this thesis, were designed to address these questions.

# Chapter 1 Parent evaluation of medical interviews: A literature review

## 1.1 Introduction and overview

The interview skills of doctors in medical practice are important because of their association with health outcomes (Stewart et al. 1999; Di Blasi et al. 2001) and more recently, with levels of litigation. One of the most common reasons for medico-legal problems is poor communication by the doctor (Shapiro et al. 1989; Hickson et al. 1992; Levinson et al. 1997; Daniel et al. 1999).

Doctors with better interview skills elicit greater amounts of information from patients in medical consultations (Woolliscroft et al. 1989; Wissow et al. 1994). Their consultations are associated also with greater patient satisfaction, less litigation, and greater patient recall and adherence to treatment recommendations (Kaplan et al. 1989; Shapiro et al. 1989; Woolliscroft et al. 1989; Kenny 1995; Stewart 1995a; Daniel et al. 1999; Kinnersley et al. 1999). Increased resolution of psychological problems, increased success in smoking cessation, improved therapeutic outcomes in asthma, and fewer diagnostic tests and referrals have all been associated with better doctor interview skills (Roter et al. 1995; Stewart 1995a; Cape 2000; Stewart et al. 2000; Adams et al. 2001).

A precise definition of the term 'interview skills' is difficult. In the context of a medical consultation, it refers to a complex set of doctor behaviours and attributes that support the three primary functions of the clinical interview; eliciting information, responding to patients' emotions, and explaining diagnosis and treatment recommendations (Bird

and Cohen-Cole 1990). The term 'interview skills' therefore includes a wide range of complex factors encompassing knowledge, interpersonal, clinical and technical skills.

Basic verbal interview skills include questioning, summarising information and explanation. Non-verbal behaviours such as appropriate seating arrangements and body postures also are important components, together with observances of social norms such as greetings, introductions and appropriate turn taking in speech. The more complex features of interview skills include empathy, rapport, genuine interest and caring. Interview skills require flexibility, and must be adaptable and reactive to individual patient differences (Lipkin et al. 1995). Some authors prefer the term 'communication skills' or 'interpersonal skills' to 'interview skills'. For the purpose of this literature review, these terms are regarded as equivalent. 'Interview' and 'consultation' are also used interchangeably to describe the medical interview.

The importance to professional bodies of doctors possessing good interview skills is reflected in the increasing prominence of quality assurance, professional development and professional standards maintenance programs which include a strong focus on this aspect of clinical practice (Benson et al. 1983; Daeschner et al. 1987; Royal Australasian College of Physicians 2000; Brennan et al. 2002). In addition, there is increasing use of patient satisfaction surveys in medical audit and incorporation of patient evaluations in general practice training programs (Thomson 1994; Meredith and Wood 1995; Greco et al. 1998). Because the interview skills displayed by doctors in medical consultations are associated with a number of important consultation outcomes, it is important to both teach and assess these skills in medical student education.

Teaching and assessing interview skills is challenging due to the complexities of these skills, the teaching staff and resources required, and the subjective nature of many of

the assessment tools (Novack et al. 1992; Hargie et al. 1998). The teaching programs that are most effective combine theory with practice and feedback on performance (Kurtz et al. 1998). Patient evaluation of medical student interview skills is not a widely accepted mode of assisting student learning and assessment. However with the increasing use of patient satisfaction surveys and patient evaluations of medical consultations in post-graduate settings, it is appropriate to consider their possible role in contemporary medical student education.

### 1.1.1 The importance of feedback

Early work by Maguire et al. (1978) demonstrated the importance of feedback for medical students in their interview skills training. Students who received any one of three methods of feedback (videotape, audiotape or practice interviews with other students) demonstrated improvement in their interview skills that was greater than was observed for a control group of students who did not receive any feedback. These improvements were most significant for students able to replay and review their own interview by videotape or audiotape in the presence of a tutor who discussed the student's performance.

Maguire et al. (1986) subsequently re-evaluated the interview skills of the same medical students five years after the initial study. The interview skills of both the control student group and those of the videotape feedback group were compared. Both groups demonstrated improvement in their skills. However, doctors who had received feedback as medical students by reviewing their own videotaped interviews with a tutor demonstrated superior interview skills when compared with the control group.

The value of videotape review and feedback to medical students regarding their interview skills was also supported by other studies conducted around this time (Simek-Downing and Quirk 1985; Scheit et al. 1986). Since then, videotape review and feedback has become an important component of medical student interview skills training programs (Kurtz et al. 1998).

### 1.1.2 The role of standardised patients in interview skills training

In many instances, interviews that are videotaped for the purpose of providing medical students with feedback are conducted with standardised patients who are trained to present a clinical scenario as if they were real patients.

Standardised patients have been assessing interview skills for many years. In child health settings both Helfer et al. (1975a) and Stillman et al. (1978) were training mothers in the 1970's to retell the history of their child's illness in a reproducible way to recreate the same interview for multiple students. Mothers were also trained to evaluate the students' interview skills, and in some instances to provide feedback directly to the students (Stillman et al. 1983).

Helfer et al. (1975a) trained mothers to participate as medical student teachers. Mothers were trained first to act as standardised patients and to present a number of clinical histories to individual medical students. These mothers then gave each student specific feedback on their performance at the conclusion of an interview using an extensive checklist. When the characteristics of the maternal feedback were compared to those of the paediatrician teachers, mothers were found to have initiated more comments and involved the student more actively in the discussion. Mothers also noted more specific items for discussion relating to the interview than did the

paediatricians, and consequently provided more comprehensive information to the students.

Identifying concerns that students may interview a standardised patient mother differently to a real mother, Helfer et al. (1975b) also compared medical student interviews with mothers who gave their own child's history to student interviews with mothers who were trained to provide a simulated history. No differences in student performance were detected.

Stillman et al. (1978) used similar methods to assess the interview skills of junior doctors. Mothers were trained to give a consistent and reproducible history of their child's illness, and to then assess the interview skills of the doctor. The assessments of these standardised mothers were then used to ensure minimum levels of interview skills competence amongst the junior medical staff. Junior doctors in need of remedial teaching in interview techniques were identified also.

Since this early work, standardised patient interviews have become an integral component of interview skills training programs (Graham et al. 1993; Barrows 1993; Hoppe 1995), and are at least as effective as professional teachers in producing behavioural change through feedback on interview performance (Vannatta et al. 1996). Medical students have identified feedback from standardised patients as being more helpful than videotape review with a tutor (Levenkron et al. 1987). In addition to the assessment of child health interviews by standardised patient mothers, there is increasing use of adolescent standardised patients to both participate in and to evaluate medical interviews (Hardoff and Schonmann 2001).

Several groups have tested the authenticity of standardised patient presentations. Woodward et al. (1985) placed standardised patients in physician's offices and found

low levels of detection by the physicians. This was even though the physicians were aware of the possibility of a standardised patient consultation. Similarly, Sanson-Fisher et al. (1980) found medical students were unable to discriminate between actual and simulated patients.

### 1.1.3 The developing role for real patient evaluation of medical student interviews

With the increasing sophistication of standardised patient participation in medical education programs, there is growing interest in obtaining real patient evaluations of medical student interview skills.

There are a number of advantages in using real patients to provide evaluations of medical interviews as compared with standardised patients. The preparation required to obtain assessments of interview skills by real patients is less complex than if standardised patients are used, as real patients do not require training. However, they also do not undergo any form of calibration regarding the evaluation measures and assessments are made according to individual patient expectations and past experiences. A comparison of the features of standardised patient and real patient assessments is shown in Table 1.1.

Cope et al. (1986) demonstrated that improvement in resident staff technical and interpersonal skills was associated with the provision to resident staff of satisfaction ratings obtained from their patients. Changes in physician consultation practice were reported also in response to patient feedback by Fidler et al. (1999). Patient feedback enabled physicians to make specific changes to their consultation styles, in particular increasing their explanations to patients of treatment recommendations. Real patient evaluations have also been used in the assessment of general practice trainees in real-work situations (Greco et al. 1998).

### 1.1.4 Conclusions and formulation of literature review questions

Feedback to medical students on the quality of their interview skills is an essential component of effective medical education programs. A standardised patient whom the student interviews can provide feedback to a student on their interview performance. There is increasing interest in real patient evaluations of medical interviews and there is evidence that these can be an additional source of useful feedback to medical students or doctors about their interview skills (Cope et al. 1986; Greco et al. 1998; Fidler et al. 1999).

Specific information regarding the relationship between identifiable medical student or doctor interview skills and optimal medical consultation outcomes is required to determine the most effective elements of interviews. The identification of key interview elements also permits the development of appropriate teaching programs for medical students.

In considering both a possible role for patient evaluations of medical student interviews and the identification of key elements of a successful interview, the following five questions were formulated and a literature review was undertaken.

- What are key interview elements in a successful medical consultation?
- What is the relationship between specific medical interview elements and patient evaluations?
- What is the validity and reliability of patient evaluations?
- What are the applications of information gained from patient evaluations of medical student interviews?

- What is the feasibility and acceptability of obtaining patient evaluations of student interviews?

Medicine is a vast field, with each specialty area of practice possessing its own particular clinical skills, terminology, and illness profiles. To assist analysis of the relevant literature, the particular context of a child health consultation was selected. The ability to conduct a child health interview is a basic skill required of all medical school graduates. During training in paediatrics and child health medical students are expected to develop effective interview skills which foster good relationships between themselves, parents and children.

Assessment of medical student interview skills is a complex undertaking, often using subjective evaluations by independent observers and/or standardised patients (Carroll 1995). As active participants in child health consultations, parents are ideally placed to evaluate interview skills (Tates and Meeuwesen 2001). Their perceptions are vital to an appreciation of interview strategies that are associated with desirable consultation outcomes. The addition of parent evaluations to the range of assessment procedures already available could provide complementary, valuable and relevant information.

## 1.2 Methods

The search strategy included PubMed for publications 1966-2001, Medline (WinSpirs) 1975-2001, Medline (MacSPIRS) 1986-1999, Current Contents (OVID) 1990-2001, and The Cochrane Library. The subject headings "Doctor-patient relations", "Students, medical", and "Education, medical" were used. Each subject heading was searched in combination with the following keywords: interpersonal skills; patient/parent/consumer satisfaction; outcome; recall; patient/parent/consumer perceptions/evaluation/ratings;

child; interview/consultation; patient-centred/patient-centered interviewing; clinical competence; communication. In addition a "related article search" of strategic studies was undertaken through PubMed. References cited by authors of identified studies were reviewed together with related bibliographies. The search was limited to English language publications.

The initial electronic search identified 781 citations. Titles and abstracts where available were read for all these identified citations to identify duplications, and to evaluate the content of each individual article. Full texts of appropriate publications were then read and bibliographies reviewed to identify any further reference citations. Over 1,100 publications (full text) were reviewed. The following review is not intended to be a comprehensive summary of all the relevant literature. The publications selected best highlighted key issues, were most representative of the particular field of study, and summarised current thinking.

## 1.3 What are key interview elements in a medical consultation?

### 1.3.1 Clinical competence

Clinical competence comprises elements of knowledge, and of clinical, technical and interpersonal skills (Newble 1992; Colliver et al. 1998). It describes the skills a doctor requires to obtain a full medical history from a patient, to conduct an appropriate clinical examination, to proceed with any investigations that may be required, to determine a correct diagnosis and to institute a management strategy that will either cure or ameliorate the patient's symptoms.

Clinical competence is important to the practice of medicine. The development of clinical competence forms the basis of medical school curricula and much time is

devoted to developing these skills in medical school students. In post-graduate settings 'maintenance of professional standards' and 'continuing education' professional development programs strive to maintain acceptable levels of clinical competence in practitioners (Wass et al. 2001; Brennan et al. 2002). Is the level of clinical competence demonstrated by doctors also important to the patients who consult them? In a survey of complainants to the New South Wales Health Care Complaints Commission, 64% of patient complaints about their doctor related to clinical care. A further 22% of complaints were related to poor doctor interpersonal skills. In a quarter of instances the patients making the formal complaint intended to sue the doctor (Daniel et al. 1999). "The combination of a bad medical outcome and patient dissatifaction is a recipe for litigation" (Levinson et al. 1997).

The importance of clinical competence to patients was clearly demonstrated by Wensing et al. (1998) in a literature review regarding patient priorities concerning their health care. Doctor competence was ranked as the second most important priority to patients in their evaluations of medical care. The only aspect of health care ranked more highly was the humaneness of the doctor.

Further evidence of the importance of clinical competence to patients was provided when Bialor et al. (1999) asked 355 patients to nominate one or two factors that were most important to them when they saw a doctor. Fifty-three percent of the respondents (189 patients) nominated a doctor's interpersonal skills, and 25% (90 patients) nominated a doctor's clinical skills.

Higher levels of perceived doctor clinical knowledge and skills are associated with greater patient satisfaction (Hall and Dornan 1988; Sullivan et al. 2000; Katic et al. 2001). Poorer clinical control of asthma symptoms is associated with patient dissatisfaction with medical care (Markson et al. 2001). In addition, patient recall of

information provided during a medical consultation is associated with specific doctor interview skills and competencies such as clarity and repetition of key information (Hall and Dornan 1988; Stewart 1995c).

Patients clearly value clinical competence, recognise it, and identify it as a key element of successful medical consultations.

### 1.3.2 Patient-centredness

Patient-centred interviewing as a model of doctor-patient consultation interactions has been evolving over the past 40 years. After gradual development of the model during the 1970's, detailed descriptions together with the development of measurement tools were published in the 1980's and form the basis of what now is usually understood by the term 'patient-centred interviewing' (Brown et al. 1986; Levenstein et al. 1986). Patient-centred care has been associated with improved patient health, greater patient satisfaction, more accurate diagnosis, and reduced diagnostic tests and referrals (Badger et al. 1994; Kinnersley et al. 1999; Stewart et al. 2000; Adams et al. 2001).

A patient-centred interview is fully characterised by six facets of the doctor patient relationship;

- understanding the patient's perspective of their illness
- relating to the patient as a whole person
- negotiation of management recommendations
- sharing of power in the relationship
- providing specific information
- illness prevention and health promotion strategies

(Weston and Brown 1995).

Depending on the specific context and content of the interview, not all of these facets are always present in any single interview (Winefield et al. 1995; Little et al. 2001).

There has been considerable interest recently in characterising patient expectations of medical consultations as a means of understanding patient perspectives of illness. A wide range of patient expectations have been identified and include a desire for specific information, a desire for more active involvement in health management, and specific expectations regarding management (Kravitz et al. 1996; Jackson et al. 2001; Lin et al. 2001; Mangione-Smith et al. 2001).

Patients come to a consultation with their doctor with not only their symptoms, but also their theories and beliefs as to what may be the cause of their problems (McKinley and Middleton 1999; Barry et al. 2000; Kravitz 2001). Sometimes patient attributions for symptoms may include serious diagnoses, so serious that the patient may be too afraid to mention them in the consultation (Marple et al. 1997; Lang et al. 2000). If the doctor does not recognise and address these concerns then the patient remains anxious (Marple et al. 1997).

More usually the patient does not come to a consultation fearing they may have a serious illness. They may however have an 'agenda' of items that they want addressed (McKinley and Middleton 1999). Patients may leave the more important items on this 'agenda' until the end of the consultation, and may require prompting and support from the doctor to voice their requests, particularly if they are personal issues (Levinson et al. 2000). Failure to address patient expectations in medical consultations has been associated with lower patient satisfaction with the consultation, doctor-patient misunderstandings, unwanted treatment regimes and non-adherence (Like and Zyzanski 1987; Barry et al. 2000; Rao et al. 2000; Jackson and Kroenke 2001).

A patient may not describe their concerns explicitly, but may allude to them obliquely. Therefore recognition of patient 'clues' is important. Levinson et al. (2000) who defined patient clues as "direct or indirect comments about personal aspects of their (the patient's) lives or their emotions", identified at least one patient 'clue' in just over half of all the consultations they studied. However, the doctors responded appropriately to these clues and explored the patient's concerns further in less than a third of cases. More often doctors did not address these concerns, a situation termed 'lost opportunities' by the authors. The authors also noted that consultations in which clues were not explored were longer than those in which the doctor recognised and explored the patient's underlying concerns.

A principal expectation of patients is that they will receive specific information related to diagnosis, management and prognosis (Buck et al. 1996; Hasnat and Graves 2000; Krupat et al. 2000a; Rao et al. 2000; Jackson et al. 2001; Jackson and Kroenke 2001). Patients also expect to be 'empowered' by information so that they can participate more actively in the management of their health (Winefield and Murrell 1991; Krupat et al. 2000a). Patient-centred interviews should involve patients in shared decision making regarding all aspects of management planning. However it appears that this feature of patient-centred interviewing has been less readily adopted (Stevenson et al. 2000). In a paediatric setting, Worchel et al. (1995) observed that doctors often underestimated the degree to which parents wished to actively participate in consultations regarding their children.

When patients were asked to compare a patient-centred interview with a more traditional doctor-centred interview, patients expressed a preference for a patient-centred interview (Smith et al. 1999; Dowsett et al. 2000; Krupat et al. 2000b). When asked to state their preferences regarding medical interviews, patients clearly identify

the central components of patient-centred interviewing, in particular communication, partnership and health promotion (Little et al. 2001).

### 1.3.3 Patient and doctor characteristics

In patient satisfaction ratings of medical consultations the importance of individual patient characteristics varies considerably across studies. al-Doughaiter et al. (2000) attributed 39% of variance in patient satisfaction ratings to patient demographics, whilst Tucker et al. (2000) put the figure at only 5%. Patient and doctor gender is the most frequently studied characteristic.

Female patients are more likely to have a relationship with the doctor that is characterised by partnership (Hall et al. 1988; al-Doghaither et al. 2000). Female patients also receive more information because they ask a greater number of questions in their consultations (Hall et al. 1988).

Female doctors in general are more patient-centred than male doctors, using more positive talk and partnership building in their consultations (Hall et al.1994a; Law and Britten 1995). Patients also provide female doctors with more information (Hall et al. 1994b). Greatest patient satisfaction is associated with the female doctor/female patient dyad (Derose et al. 2001), and these consultations are more patient-centred than are consultations between male doctors and male or female patients (Hall et al. 1994a; Law and Britten 1995). Female medical students demonstrate more patient-centred attitudes than their male collegues (Krupat et al. 1999).

In one study of gender effects in standardised patient assessments of medical student interview skills, female standardised patients were observed to award higher scores to female medical students (Rutala et al. 1991). However, other studies of standardised

patient medical student assessments have found no effects relating to the gender of either the student or the standardised patient (Colliver et al. 1993; Furman et al. 1993). With adequate training, standardised patients should provide evaluations of medical student interviews that are unrelated to the gender of the student.

Other adult patient characteristics studied in relation to patient satisfaction with medical consultations are ethnicity, age, health status and socioeconomic status. Racial and ethnic minority groups have less patient participation in medical consultations when compared to majority ethnic group patients, and are less satisfied (Hall et al. 1988; Cooper-Patrick et al. 1999; Doescher et al. 2000). Older patients are provided with more information, are treated with more courtesy and are more satisfied with their consultations than are younger patients. Consultations with older patients attract greater interest by physicians in the older patient as a person (Hall et al. 1988; Jackson et al. 2001; Katic et al. 2001). More healthy patients are more satisfied with their care (Woolliscroft et al. 1994; Hall et al. 1996; Jackson et al. 2001), and higher socioeconomic status is also associated with greater patient satisfaction (Hall et al. 1988; Heffer et al. 1997; al-Doghaither et al. 2000).

The doctor's affective quality is also a determinant of patient consultation outcomes. Doctors who "adopt a warm, friendly and reassuring manner are more effective than those who keep consultations formal and do not offer reassurance" (Di Blasi et al. 2001). Warm, caring and compassionate doctors assist their patients by reducing anxiety, and improving their quality of life (Fogarty et al. 1999; Ong et al. 2000), and as observed earlier, the humaneness of a doctor is the patient's first priority regarding their health care (Wensing et al. 1998).

### 1.3.4 Conclusions

Clinical competence and patient-centredness are key interview elements closely associated with patient satisfaction and consultation outcomes. The relative importance of patient and physician characteristics to outcomes are less clear, with gender emerging as the most common patient and doctor characteristic associated with consultation outcomes. Greater patient satisfaction is associated with the female doctor/female patient dyad, older patients, healthier patients and higher patient socioeconomic status.

## 1.4 What is the relationship between specific medical interview elements and patient evaluations?

In the preceding section clinical competence and patient-centredness were identified as important medical consultation elements for patients. The particular focus of this review concerns child health consultations and medical student interview training. Consequently the initial literature search strategy included a specific focus on studies of parent evaluations of medical student or doctor consultations.

Seven studies were identified that examined the relationship between specific doctor/student behaviours in child health consultations and parent perceptions (Table 1.2). One study specifically addressed medical student consultations. In each study the doctor or medical student interview behaviours were confirmed by independent assessment.

In all of the studies, an association was demonstrated between doctor/student behaviours and parent satisfaction. In particular, greater parent satisfaction was

associated with consultations in which the doctor/student demonstrated greater warmth and empathy, provided information and explanation, addressed parent concerns and involved parents and children in the consultation.

### 1.4.1 Conclusions

There was an association demonstrated between parent evaluations of medical consultations, and doctor/student behaviours. Consultations in which doctors/students involved parents more in discussion and decision making were associated with greater parent satisfaction. Parent satisfaction was also greater following consultations in which the doctor was more supportive and informative.

## 1.5 What is the validity and reliability of patient evaluations?

The methods used to measure patient evaluations of medical interviews should demonstrate both reliability and validity. That is, "how reproducible the results of a scale are under different conditions" (reliability) and "the degree of confidence we can place on inferences we make about people based on their scores from that scale" (validity) (Streiner and Norman 1995). Information was sought from the literature concerning the reliability and validity of the patient evaluation measurement scales.

A large number of scales exist for use by professional observers or standardised patients to assess the interview skills of students or doctors (Kraan et al. 1995; Boon and Stewart 1998). These scales however are used rarely by real patients for whom satisfaction is the principal measure in medical care evaluation (Hall and Dornan 1988; Sitzia and Wood 1997). Although there are a large number of scales assessing patient satisfaction also, many of these scales include as a major component, aspects

of medical care other than the interview skills of the doctor. This review focuses only on studies of patient satisfaction primarily relating to the interview skills of doctors.

Ratings of student interviews by observing physicians are not the same as ratings made by standardised patient interview participants. Cooper and Mira (1998) in comparing teacher and standardised patient assessments of medical student interview skills demonstrated a significant correlation (Correlation coefficient = 0.75) between teacher and standardised patient overall assessments. However, when the overall standardised patient rating was compared with overall teacher ratings regarding ten separate specific interview criteria, these ten criteria accounted for only 10.1% of the variance observed in the standardised patient score. The most likely explanation of this finding is that the skills considered important by the teachers did not reflect the skills considered important by the standardised patients.

As with comparisons between standardised patient and teaching staff evaluations, real patient evaluations of trainee doctor interpersonal skills differ from teaching staff evaluations of the same interviews (Cope et al. 1986; Klessig et al. 1989; Weaver et al. 1993; Woolliscroft et al. 1994). In contrast, there are similarities between evaluations by standardised patients and real patients (Carney and Mitchell 1985; Tamblyn et al. 1994). Tamblyn et al. (1994) compared ratings by standardised and real patients for 26 resident medical staff. Each resident was rated by five standardised patients and between five and forty-two real patients. Whilst standardised patient communication scores for residents were lower than real patient ratings, the two scores were significantly positively correlated with a Pearson correlation coefficient of 0.45

Whilst not clearly establishing the validity of either standardised or real patient assessments of doctor interview skills, these studies demonstrated agreement

between real patient and standardised patient evaluations and a difference between these and teacher assessments. This agreement provided support for the criterion validity of these assessments (see below).

Twelve studies specifically addressing aspects of the validity and reliability of patient evaluations were identified from the literature search and are discussed under the separate headings below.

### 1.5.1 Validity

The validity of a measurement scale for patient evaluations of medical interview skills represents the degree to which the scale actually measures and represents a patient's true evaluation. This discussion is organised around the three main concepts of validity:

i) Content validity: does the measurement scale truly assess the relevant interview skills?

ii) Criterion validity: how well a measurement scale agrees with other approaches used to ascertain interview skills either when assessed at the same time (concurrent validity), or when compared at some time in the future (predictive validity).

iii) Construct validity: how well a measure reflects the relationship between different aspects of patient perceptions of interview skills. Establishing construct validity involves the development of hypotheses and testing these using the measurement scale (Streiner and Norman 1995).

*Content validity*

There are many studies describing the development of measurement scales for the evaluation of patient perceptions of medical interviews. Considerable attention is

usually given to the process of item generation for these scales. This commonly involves literature reviews, consultation with skilled colleagues, and extensive patient consultation (Rifkin et al. 1988; Matthews and Feinstein 1989; Baker 1990; Simonian et al. 1993; Weaver et al. 1993; Laerum et al. 1998; Loblaw et al. 1999; Greco et al. 2000). Patient consultation should ensure that questionnaire items relate to specific patient perspectives and that the scale is representative of actual interview skills that affect patient perceptions. Two scales have been developed primarily to measure children's perceptions of medical care, and include items derived from consultation with children (Rifkin et al. 1988; Simonian et al. 1993).

*Criterion validity*

Most studies of the criterion validity of patient evaluation measurement scales describe the testing of a scale against another patient evaluation scale administered at the same time i.e. concurrent validity (Weaver et al. 1993; Kinnersley et al. 1996; Black and Church 1998; Greco et al. 2000). High levels of agreement have been reported following comparisons of different patient evaluation scales.

The predictive validity of an interview skills measurement scale is tested less frequently. To establish predictive validity, agreement must be demonstrated between the measurement scale and some future measure of interview skills. Ware et al. compared patient satisfaction ratings on two scales with subsequent patient behaviours (Ware and Hays 1988). One patient satisfaction scale of the two administered to patients demonstrated greater predictive validity in that it more accurately predicted whether patients continued to consult a particular doctor, recommended the doctor to a friend, or complied with treatment recommendations.

*Construct validity*

Establishing construct validity involves the development of hypotheses and testing these using the measurement scale to explore the relationship between different aspects of patient evaluations of medical interviews (Streiner and Norman 1995). For example, Weaver et al. (1993) compared patient responses on their "Physicians Humanistic Behaviours Questionnaire" with patient responses on the "Medical Interview Satisfaction Scale" and demonstrated agreement between the level of patient satisfaction and patient evaluations of physician humanistic behaviours. Greco et al. (2000) compared patient ratings of doctor interpersonal skills with patient ratings of consultation satisfaction and found high levels of agreement. Similar comparisons by other investigators also have demonstrated agreement between patient satisfaction scales and other measures of patient evaluations of the interview qualities of doctors (Baker 1990; Loblaw et al. 1999; Meredith et al. 2001).

### 1.5.2 Reliability

As stated earlier, the reliability of a measurement scale reflects the reproducibility of the results of that scale. Most authors focus on describing internal reliability when reporting the reliability of scales to measure patient evaluations (Kinnersley et al. 1996; Black and Church 1998; Loblaw et al. 1999; Solomon et al. 1999; Greco et al. 2000; Haddad et al. 2000; Meredith et al. 2001). Other forms of reliability testing such as inter-rater (differences between different raters) and test-retest (differences in ratings by one rater at two different times) reliability have been reported less frequently.

Test-retest reliability refers to the degree to which the same patient would give the same evaluations of the same interview at a different time. Greco et al. (2000)

reported a positive correlation between patient response scores on an evaluation questionnaire when patients were retested over a three month period with the same questionnaire and doctor ($r=0.75$, $p<0.001$). It was not possible to retest the patient evaluation measure on the same interview, but patients were able to re-evaluate the same doctor.

Wensing et al. (1997) argue that the reliability of aggregated patient satisfaction scores per doctor is more important than is the reliability of individual patient evaluations, and that the reliability of the aggregated patient satisfaction score is increased by increasing the number of patients providing an evaluation. In studying patient evaluations of medical consultations they calculated that reliable measurement of one doctor's consultation skills required 60-90 patients to provide an evaluation. A similar study by Wooliscroft et al. (1994) estimated that greater than 50 patients were required for reliable ratings of one doctor's interview skills.

### 1.5.3 Conclusions

Whilst no studies have fully explored all aspects of the reliability and validity of any particular scale, adequate psychometric properties have been demonstrated in many existing patient evaluation scales.

## 1.6 What are the applications of information gained from patient evaluations of medical student interviews

Studies identified in the literature search were reviewed to identify randomised controlled trials of applications for patient evaluations of medical interviews. Eight studies met these criteria, of which two were in child health settings (Table 1.3). All the studies were evaluations of interview skills teaching programs. Six studies reported improved consultation outcomes following student/doctor participation in an interview skills training program. Authors of the studies in which no significant differences in patient evaluations were demonstrated between the study group and the control group suggested that their training courses were either too short, or too narrow in their focus to result in detectable differences in patient evaluations. Programs associated with significant improvements in patient satisfaction were characterised by one or more of the following features:

- conducted over a longer time
- included opportunities for student/doctor reflection and practice of interview skills
- specific focus on identifiable interview behaviours

More recently, alternative applications for patient evaluations have been explored. For example, patient evaluations have been a component of medical care audit procedures (Meredith and Wood 1995), and have been used to evaluate specific aspects of clinical consultations such as the level of compassion displayed by the doctor (Fogarty et al. 1999).

### 1.6.1 Conclusions

Currently the most fully developed application for patient evaluations is in the evaluation of interview skills training programs. Whilst the potential contribution patients could make in this area is substantial, more recent applications of patient perceptions underline the wider contributions patients could be making to the evaluation of their health care.

## 1.7 What is the feasibility and acceptability of obtaining parent evaluations of student interviews

It is important to know whether obtaining parent evaluations of student interviews is feasible and acceptable prior to the integration of parent evaluations into medical student learning programs.

### 1.7.1 Acceptability to patients

There is ample evidence that the great majority of patients are willing to assist in clinical training programs (Berkelhamer and Herold 1982; York et al. 1995; Cooke et al. 1996; O'Malley et al. 1997; Black and Church 1998; Lynoe et al. 1998; Bentham et al. 1999; Devera-Sales et al. 1999; Cowles et al. 2001), and that involvement of students in patient care does not affect patient satisfaction adversely (Hajioff and Birchall 1999; Simon et al. 2000). Student involvement can enhance patient perceived quality of care (Prislin et al. 2001).

Furthermore, patients regard themselves as active participants in medical education, as experts in their medical condition, and as professional development facilitators

(Stacy and Spencer 1999). When specifically surveyed regarding their appropriate role in medical student assessment procedures, patients describe an active role for themselves with clear preferences for interactive methods of assessment (Bain and Mackay 1995).

### 1.7.2 Feasibility

Asking real patients to evaluate interview skills is time consuming and requires considerable administrative support (Henkin et al. 1990; Woolliscroft et al. 1994). Over a 20-month time period, Wolliscroft et al. (1994) sought patient evaluations of resident medical staff interviews. For 70 resident staff, 625 patient evaluations were obtained, an average of only 9 evaluations per resident (range 4-24). This was considerably lower than the 50 patients evaluations per resident initially sought by the authors. Access to eligible patients was identified as a major difficulty with the percentage of eligible patients able to be approached to provide an evaluation being as low as 46% in some instances. Specific reasons for this were not stated. About 20% of all the patients who were asked to complete an evaluation declined to participate.

Henkin et al. (1990) also described the high demands in terms of time and manpower of obtaining real patient evaluations of medical student interview skills. Hearnshaw et al. (1996) costed the process of obtaining patient evaluations in general practice settings in the United Kingdom and obtained responses that ranged from no cost to several thousand pounds. Questionnaire length can also be a difficulty for patients who may not feel completely well, or may have other commitments that limit their available time (Woolliscroft et al. 1994; Greco et al. 1998).

### 1.7.3 Acceptability to students

Thomas et al. surveyed medical resident attitudes towards patient evaluations of their interview skills and feedback (Thomas and Hellmann 1999). Residents appeared to value feedback from patients less highly than feedback from their professional teachers or peers. During the study period of 1 year the authors also discovered a decline in the perceived value of patient feedback to the resident staff. The acceptability to medical students of including patient evaluations of their interview skills has not been specifically addressed in any of the studies reviewed.

### 1.7.4 Conclusions

Patients when asked are quite willing to participate in student learning, and their participation does not compromise consultation outcomes. However, involving patients in medical education is difficult due to administrative considerations. There are also lingering doubts about the acceptability to students (and perhaps their teachers) of including patient evaluations in student learning and assessment.

## 1.8 Summary

"It is now generally accepted that any credible assessment process must have the attributes of reliability, validity, acceptability, feasibility, and educational impact" (McKinley et al. 2001). In addressing the questions posed earlier, this review has considered each of these attributes in relation to patient evaluations of medical interviews. Where possible these attributes have been considered in relation to the specific context of the child health consultation. However, due to the limited number of studies that relate to either medical student or to child health consultations, the wider patient evaluation literature was reviewed. No studies were identified which

specifically addressed any aspects of parent evaluations of child health consultations by medical students.

### 1.8.1 Reliability and validity

Existing patient evaluation measurement scales demonstrate validity and reliability, however each individual scale has limited evaluation of these attributes.

### 1.8.2 Acceptability and feasibility

Patients demonstrate strong support for their participation in student learning, including the assessment of student interview skills (Berkelhamer and Herold 1982; York et al. 1995; Cooke et al. 1996; O'Malley et al. 1997; Black and Church 1998; Lynoe et al. 1998; Bentham et al. 1999; Devera-Sales et al. 1999; Cowles et al. 2001). Practical difficulties however arise in the administration of such a process, and administrative planning must figure prominently in the development of such programs. Student support for such a learning initiative has not been studied extensively and merits further attention.

### 1.8.3 Education impact

Parent evaluations of child health consultations by medical students can provide feedback to students, an essential component of effective learning programs. An association between parent evaluations and types of doctor behaviours has been demonstrated (Korsch et al. 1968; Wasserman et al. 1984; Howell-Koren and Tinsley 1990; Lewis et al. 1991; Street 1992; Wissow et al. 1998). However only one study assessed the behaviour of medical students (Evans et al. 1992).

To allow more meaningful interpretation of parent assessments, it is necessary to identify the skills demonstrated by medical students that are associated with good or poor parent evaluations and interview outcomes. Clinical competence and patient-centredness are identified as key components of interviews. However, more information is required about the relationship between these qualities in medical student interviews and parent evaluations and interview outcomes.

Few applications for patient evaluations of medical student interviews have been described, other than in the evaluation of teaching program effectiveness. Even fewer have been identified in the context of child health consultations. Specific educational roles for parent/patient evaluations of medical student interview skills need to be developed.

## 1.9 Aims and hypotheses

The aims developed for the studies described within this thesis were:

- To determine the relationship between the level of clinical competence and patient-centredness demonstrated by medical students in child health consultations, and both parent satisfaction (parent evaluation) and subsequent recall of information (interview outcome).

- To determine the relationship between parent satisfaction ratings and information recall following a medical student interview, and child and parent characteristics, including previous parent experience of student interviews, parent socioeconomic status and the health problem of the child.

- To develop a role for parent evaluations of medical student interview skills in medical student education.

The hypotheses were:

- Maternal satisfaction and recall are greater following interviews in which students demonstrate higher levels of clinical competence and patient-centredness, and these effects are independent.

- Child and maternal characteristics, previous maternal experience of medical student interviews and the health problems of the child are associated with different maternal ratings of student interviews.

- Focussing on maternal perceptions of medical student interview qualities assists students to understand the importance of these skills.

Maternal evaluations were sought in these studies because mothers are the primary care givers of children in most instances and are more likely to take their sick child to the doctor. Maternal recall of diagnostic and management information was the interview outcome variable studied.

## 1.10 Ethical approval

All studies undertaken in the preparation of this thesis were approved by the Research Ethics Committee of the Women's and Children's Hospital, Adelaide, South Australia.

**Table 1.1 A comparison of standardised and real patients as assessors of medical student interview skills.**

| | Advantages | Disadvantages |
|---|---|---|
| **Standardised patients** | Clinical problem is reproducible<br>Clinical problems can be scripted<br>Reliable assessments obtained with smaller numbers of interviews<br>Can provide immediate feedback<br>Can be undetectable in clinical practice | Simulated, not real<br>Require training<br>Require payment<br>Can not provide a range of different patient perspectives<br>Can not readily simulate children |
| **Real patients** | Evaluations reflect values of real patients<br>Minimal costs<br>No training required<br>Clinical situations are real (including emotional components)<br>Provide multiple perspectives<br>Can provide evaluations of interviews involving children<br>Opportunities for assessment require less organisation | Require larger numbers of interviews to obtain reliable assessments |

**Table 1.2 Studies of the relationship between doctor interview behaviour and parent ratings**

| Author | Subjects and settings | Doctor Behaviours assessed including methods used | Child/parent outcome |
|---|---|---|---|
| Korsch et al. 1968 | 800 parents<br>64 resident doctors<br>Emergency clinic | Doctor behaviours<br>• friendliness<br>• warmth<br>• account of patient concerns<br>• explanations<br>Audiotape recording of consultations | Parents were less satisfied when consultations were associated with a lack of warmth, inadequate explanation of diagnosis and treatment, and where their concerns were not addressed. |
| Wasserman et al. 1984 | 40 mothers<br>9 resident doctors and 2 nurse practitioners<br>Infant health clinic | Supportive behaviours<br>• encouragement<br>• reassurance<br>• empathy<br>Videotape recording of consultations | Greater maternal satisfaction and reduction in concerns was associated with higher levels of encouragement and empathy. |
| Howell-Koren et al. 1990 | 51 mothers<br>7 paediatricians<br>Infant health clinics | Doctor interactive communication<br>Audiotape recording of consultations | Increased maternal satisfaction was associated with greater levels of doctor interactive conversation (asking questions and offering information) and with greater levels of doctor casual conversation. |
| Lewis et al. 1991 | 141 children and their parents<br>34 paediatric residents<br>General practice | Inclusion of child in discussion of medical recommendations<br>Videotape recording of consultations | Children had greater recall of treatment recommendations and preferred consultations in which the doctor included them in discussions. High levels of parent satisfaction was observed with involvement of their children in the consultation. |

**Table 1.2 Studies of the relationship between doctor interview behaviour and parent ratings (continued)**

| Author | Subjects and settings | Doctor Behaviours assessed including methods used | Child/parent outcome |
|---|---|---|---|
| Street et al. 1992 | 115 parents<br>7 doctors<br>Paediatric outpatients | Doctor patient-centredness<br>Audiotape recording of consultations | Less satisfied parents received more directives and had consultations that were less patient-centred than those of more satisfied parents. |
| Evans et al. 1992 | 53 medical students participating in a randomised controlled evaluation of a communication skills training program | Student use of good communication skills<br>Videotaped recording of consultations | Greater patient satisfaction ratings were associated with greater student use of good communication skills as taught in the training program. |
| Wissow et al. 1998 | 140 children with their parents<br>doctor numbers not stated<br>Paediatric emergency department | Doctor patient-centredness<br>Audiotape recording of consultations | Increased patient-centredness toward parents was associated with greater parental ratings of informativeness and partnership.<br>Increased patient-centredness toward the child was associated with greater parent ratings of good care. |

**Table 1.3 Randomised controlled patient evaluation studies of the effectiveness of interview skills training programs**

| Author | Subjects and settings | Training program | Outcome |
|---|---|---|---|
| Evans et al. 1987 | 52 general practitioners<br>10 patients per doctor<br>Randomised controlled trial<br>General practice | Interactive seminars (2x3 hours) on doctor-patient communication reinforcing skills that are often weak, and those associated with greater patient satisfaction | Greater patient satisfaction was associated with interviews with trained doctors as compared to the control group. |
| Lewis et al. 1991 | 56 paediatric trainees<br>141 children<br>Randomised controlled trial<br>General practice | Children, parents and doctors each viewed one videotape aimed at increasing child competence and participation in the medical interview | Doctors in the intervention group more often included children in the consultation.<br>Children attending doctors in the intervention group reported greater satisfaction with the interview. |
| Evans et al. 1992 | 53 medical students<br>Each student was rated by 3 different patients before, during and after the communication skills course<br>Randomised controlled trial | Interactive communi-cation skills course (11 hours then 3x2 hour interactive workshops 1 year later) | Patient ratings for the trained group increased during the study period whereas similarly obtained ratings of the control group actually declined. |
| Smith et al. 1998 | 63 primary care residents<br>394 patients<br>Randomised controlled trial<br>Primary care clinics | One month clinical attachment with experiential skills based learning including patient-centred interviewing | Patient satisfaction was higher with the trained group, however the difference from the control group was not significant. |

**Table 1.3 Randomised controlled patient evaluation studies of the effectiveness of interview skills training programs**
**(continued)**

| Author | Subjects and settings | Training program | Outcome |
|---|---|---|---|
| Clark et al. 1998 | 74 paediatricians<br>637 parents<br>Randomised controlled trial<br>Consultation clinics | Interactive seminars (2x2.5 hours over 2-3 weeks) to encourage doctors to develop a partnership with their patients | Greater parental reports of reassurance and the provision of information to relieve specific worries were associated with trained doctors. |
| Brown et al. 1999 | 69 primary care doctors and nurse practitioners<br>Mean of 81 patient responses per clinician<br>Randomised controlled trial<br>Consultation clinics | Interactive workshops "Thriving in a busy practice" (2x4 hours over 4 weeks) on communication skills | No significant difference in patient satisfaction was observed between seminar participants and the control group. |
| Thom 1999 | 20 physicians<br>412 patients<br>Randomised controlled trial<br>Primary care practices | Workshop (7hours) involving seminars, tutorials, role-play and video-tapes teaching skills to build and maintain patient trust | No significant differences in patient trust, satisfaction or other variables were noted. |
| Moral 2001 | 20 family physicians<br>110 patients<br>Randomised controlled trial<br>Doctor surgeries | Communication skills intensive course (18 hours) involving role-play, videotapes and feedback | Patient evaluations indicated that the trained doctors were more likely to adopt a patient-centred approach to the consultation than were the control group doctors. |

# Chapter 2 Definition and assessment of key consultation elements

## 2.1 Introduction

Studying medical interviews is complex because of the numerous variables that may influence both process and outcome. In relation to a child health consultation between a medical student and the mother of a young child, these variables include;

- the clinical problem of the child who presents with his/her mother
- the specific concerns of the mother
- the verbal content of the dialogue of the mother
- the verbal content of the dialogue of the medical student
- the nonverbal communication of the mother
- the nonverbal communication of the medical student
- the reactions of the child during the consultation
- the physical appearance of the medical student including gender and attire
- the physical environment of the consultation

This thesis examined the relative effects of varying the verbal content of medical student dialogue on maternal evaluations of medical student interviews, and on maternal recall of information provided by students in these interviews. Unless all the other variables listed above that may also influence interview outcomes can be controlled, it is difficult to confidently identify effects that are due specifically to the medical student dialogue. Similarly, it is not possible to further separate individual elements of verbal dialogue (in this case clinical competence and patient-centredness) for independent analysis.

For the studies in this thesis, control of the other interview variables listed above was achieved by producing videotaped recreations of medical student interviews. This chapter describes the development and independent assessment of these videotaped interviews. Clinical competence and patient-centredness were selected as key interview elements for manipulation following the literature review described in Chapter 1. Whilst both of these elements have been shown to be important determinants of interview outcomes, the degree to which they are independent of one another was not known prior to this study.

Development of the videotaped interviews was undertaken in several stages. Firstly, real student interviews were videotaped. From these, two interview transcripts were derived with contrasting levels of student clinical competence and patient-centredness. Using these transcripts as a starting point, new transcripts in which student clinical competence and patient-centredness were varied independently were then developed. Videotapes were produced, firstly from the initial two transcripts and subsequently from the later transcripts in which student clinical competence and patient-centredness were varied separately. Finally, extensive independent assessment of clinical competence, patient-centredness and information content were undertaken. Each of these stages is described below.

## 2.2 Definitions

The following definitions were used in the development of the medical student interview transcripts:

*Clinical Competence*

"the mastery of a body of relevant knowledge and the acquisition of a range of relevant skills, which would include interpersonal, clinical and technical components" (Newble 1992).

*Patient-centredness*

The extent to which the student sought to elicit the mother's thoughts, feelings, concerns, and expectations; answered these with specific information; and checked maternal understanding of this information and negotiated management planning recommendations (Henbest and Stewart 1989; Farmer 1995; Weston and Brown 1995). Although this definition of patient-centredness does not include all facets of patient-centredness as identified earlier, it is consistent with most patient-centredness measurement scales.

## 2.3 Development of interview transcripts

The first priority in recreating medical student interviews with parents was to ensure the authenticity of the interview dialogue. To achieve realistic recreations of medical student interviews, six actual consultations between medical students and parents were videotaped. The level of clinical competence and patient-centredness in each of these videotaped consultations was then ascertained to select two medical student interviews with contrasting levels of both of these qualities.

### 2.3.1 Identification and measurement of clinical competence and patient-centredness

With the consent of students and parents, six medical students in the final year of the six year undergraduate medical course at the University of Adelaide were videotaped whilst conducting initial interviews with parents of acutely ill children in the Paediatric Emergency Department of the Women's and Children's Hospital, Adelaide. Each student consultation was videotaped without interruption from the time the student first met the parent and child until the student had concluded the examination and provided a provisional diagnosis and management plan. The subsequent consultation segment in which the child was reviewed by hospital staff and definitive treatment provided was not videotaped.

Two physician observers then independently rated each of the six videotaped interviews regarding student clinical competence and student patient-centredness using the above definitions. The level of clinical competence demonstrated by each student was rated using a single 3-point global assessment ranging from 1 (low ) to 3 (high).

The level of patient-centredness as defined above was more difficult to assess with a global measure because the raters were much less familiar with the concept of patient-centredness as compared with clinical competence. Therefore to assist the raters, patient-centredness was assessed using the Henbest scale (Henbest and Stewart 1989; Law and Britten 1995). This scale is based on the identification of patient (in this case parent) 'offers' of information. Student responses to each of these 'offers' of information were scored. The minimum score of 0 was recorded when a parent 'offer' of information was ignored by the student, and the maximum of 3 when the parent 'offer' was actively facilitated so that the parent's thoughts and expectations were

elicited. Scores were then summed and divided by the total number of parent 'offers' identified in the interview. The results are shown in Table 2.1.

Physician inter-rater correlation of the six student interviews was 0.92 for patient-centredness and 0.86 for clinical competence (Pearson Correlation Coefficient). Individual student interview scores were ranked from lowest to highest for both patient-centredness and clinical competence. The highest score for both qualities was student number 3, and the lowest were students 4 and 6. In selecting two interviews with contrasting levels of clinical competence and patient-centredness, it was important to control as far as possible for any influences of student nonverbal behaviour in the interview. The nonverbal behaviour of student 4 most closely resembled that of student 3. Both these students (3 and 4) adopted an open posture and maintained good eye contact with the parent throughout the interview, whereas the student in interview 6 at times looked bored and held his head in his hands during the consultation. Because of the similarities in nonverbal behaviour, interviews 3 and 4 were selected and transcripts were made of these interviews whilst altering personal details to preserve anonymity.

### 2.3.2 Transcript development

The student in the more competent interview provided more detailed information with more repetition and more frequent checking of the mother's understanding. The interview also was structured in a more organised fashion than was the less competent interview.

Both interview transcripts contained 11 discrete maternal offers of information, and were designated as high or low patient-centred according to the response patterns of the student to these offers during the interview. In the high patient-centred interview,

the student responded more often to the mother's questions, explored the mother's perspectives of the child's illness more thoroughly, and used a higher proportion of open-ended questions and responses. In the low patient-centred interview the student more often ignored maternal 'offers' or gave a closed response.

The two selected interviews involved a very similar clinical case (a young child presenting with a high fever, cough and poor appetite). Although there were slight differences in the student dialogue between the interviews, the information about key aspects of diagnosis and management given by the students to the mothers was identical in the two interviews.

Because the maternal dialogue from the two student interviews was very similar, the maternal dialogues were combined and then edited to produce almost identical maternal dialogue content in each interview. Discussion regarding the child's past medical history that was unrelated to the current presentation and detailed information about the parent's social history was omitted. These segments were deleted both to shorten the interviews and to prevent any identification of the parents.

To increase the difference in the level of patient-centredness between the two student interviews, a small number of real student responses were altered slightly in the high patient-centred interview to allow more active student soliciting of maternal views and involvement of the mother in management planning. When new student dialogue material was required during the editing process to assist the flow and sense of the dialogue, excerpts from the other student consultations were used as much as possible to maintain actual medical student dialogue content.

The high clinical competence, high patient-centred transcript was designated interview A and the low clinical competence, low patient-centred transcript was designated

interview B. Interview A consisted of 1,467 words, and interview B, 1,283 words. Both interviews contained the same specific diagnostic and management information. Most of the difference in interview length between the two transcripts was accounted for by the increased detail, repetition, and checking of the mother's understanding of management information that was provided in interview A.

### 2.3.3 Manipulation of clinical competence and patient-centredness

In the development of transcripts A and B described above, clinical competence and patient-centredness were varied together. These two transcripts were subsequently used in a pilot study of the effects of clinical competence and patient-centredness on maternal recall and ratings of medical student interviews (see Chapter 3).

In order to study the separate effects of clinical competence and patient-centredness on maternal recall and ratings of medical student interviews (Chapters 4 and 5), four videotaped interviews were required in which clinical competence and patient-centredness varied separately. The four new transcripts were developed from the initial two pilot study transcripts (A and B) by changing medical student dialogue guided by the Henbest patient-centredness measurement scale (Henbest and Stewart 1989; Law and Britten 1995). No change was made to the information content of any of the interviews, nor to the 11 discrete maternal 'offers' of information identified previously. The resulting four transcripts were developed as follows:

(HCHP) High clinical competence, high patient-centredness transcript

This was the unaltered transcript A.

(HCLP) High clinical competence, low patient-centredness transcript

This transcript was created from the HCHP transcript by altering student responses to the 11 discrete maternal 'offers' of information. Student responses from transcript B (low patient-centred) to each of the maternal 'offers' were substituted for those of transcript A (high patient-centred). Student dialogue from transcript A which included checking of the mother's understanding and invitation of questions was deleted from the closing segment. No other dialogue was altered, preserving the high clinical competence component.

(LCLP) Low clinical competence, low patient-centredness transcript

This was the unaltered transcript B.

(LCHP) Low clinical competence, high patient-centred transcript

This transcript was created from the LCLP transcript by altering student responses to the 11 discrete maternal 'offers' of information. Student responses from transcript A (high patient-centred) to each of the maternal 'offers' were substituted for those of transcript B (low patient-centred). Student dialogue from transcript A which included checking of the mother's understanding and invitation of questions was added to the closing segment. No other dialogue was altered, preserving the low clinical competence component.

Minor alterations to the substituted medical 'student' dialogue were occasionally required to maintain the continuity of the interview or to preserve the appropriate clinical competence level. In all cases the patient-centredness level was not effected by these minor changes. The final distribution of transcript content is displayed in

Table 2.2, together with examples of script variations in Table 2.3. The four complete annotated transcripts are included in the appendix.

## 2.4 Videotape production

Recreation of the medical student interviews on videotape was undertaken in two stages. Firstly, two new videotapes were produced for the pilot study described in Chapter 3 using the initial medical student transcripts A and B. The videotapes were produced in a film studio with the assistance of a professional producer.

Because these particular videotapes were only to be used in the pilot study in which the videotaped interview method was being developed, the author undertook the role of 'medical student'. The transcript for each interview was displayed off screen and the dialogue was followed exactly, including pauses, "ums" and "ahs". The 'student' spoke almost directly to the camera with her head and shoulders filling the screen. The approach of having the medical student speak directly to the screen was used to assist mothers viewing the videotapes to identify more closely with the 'mother' whose voice they heard in the videotaped interviews. A technical assistant played the role of 'mother' and read her dialogue off camera so that only her voice was heard. To ensure that the content of the 'student' verbal dialogue was the only medical student variable being assessed, the nonverbal behaviour of the 'student' was as similar as possible in both videotapes. The studio background, and the 'student's' attire were identical in each videotape.

Subsequently, the same procedure was used to develop the four additional videotapes from the modified transcripts in which clinical competence and patient-centredness were varied independently (HCHP, HCLP, LCHP, LCLP Table 2.2). As described

previously, these videotapes were produced in a film studio with the assistance of a professional producer. On this occassion a professional male actor played the role of the 'medical student'. Prior to filming, the actor viewed the two original videotapes of the real medical student consultation from which the transcripts were derived to ensure authenticity of his performance. As in the previous recording session, the transcript of each interview was displayed off-screen and was followed exactly by the actor, including pauses, 'ums' and 'ahs'. When each 'student' interview reached the point where the 'student' examined the child, the 'student's' image was replaced with a still shot that read "Examination" on a plain background. There was no sound transmitted during this still shot which was displayed for 5 seconds. Following this, the 'student's' image reappeared and the interview was concluded.

The actor 'medical student' spoke almost directly to the camera with his head and shoulders filling the screen. The actor's attire, facial expressions and voice were identical in each videotape to ensure control of all interview elements except verbal content. A neutral beige background was used for each videotape, and there were no extraneous noises or other distractions. A still picture from each of the four interviews is shown in Figure 2.1. A female technical assistant once again played the role of the 'mother', reading her dialogue off-camera so that only her voice was heard. These videotapes were used in the studies of maternal satisfaction ratings and recall described in Chapters 4 and 5. The transcripts were coded to prevent viewers identifying or anticipating any differences prior to seeing the videotaped interviews.

## 2.5 Independent interview assessment

Independent assessment of both the clinical competence and patient-centredness of the recreated videotaped interviews was undertaken, together with independent assessment of the information content of each interview. The assessment of patient-

centredness also included the independent identification of parent 'offers' of information.

### 2.5.1 Independent assessment of clinical competence

Independent assessment of the clinical competence of the 'student' depicted in the videotapes was undertaken in two phases. The two videotapes (A & B) prepared for the pilot study were assessed prior to the development of the four videotaped interviews (HCHP, HCLP, LCHP, LCLP) which were assessed separately.

*Interviews A and B*

Ten child health professionals (eight paediatricians with extensive experience in medical student teaching and assessment, and two paediatric public health research unit staff members with extensive experience in child health evaluation), were asked to assess independently the clinical competence of the 'student' in each of the videotaped interviews. All 10 child health professionals viewed the first two videotapes produced (interview A based on transcript A, high clinical competence and high patient-centredness, and interview B based on transcript B, low clinical competence and low patient-centredness). Viewing was undertaken without prior knowledge of videotape content, and videotapes were shown in the order A/B for raters 1-4 and B/A for raters 5-10.

After each videotape was viewed, raters were asked to make free response comments in writing on their assessment of the clinical competence of the 'student' in each interview. To assist the raters in their assessment of clinical competence, they were each provided with a checklist of clinical content elements (Table 2.4). This checklist was derived from the criteria used by Willson and McNamara (1982) in their videotape

recreation of a similar clinical case of a sore throat in an adult, with minor modifications required for this study because it involved a paediatric patient. Raters were also provided with the Arizona Clinical Interview Rating Scale (ACIR) (Stillman et al. 1977; Stillman 1980; Calhoun et al. 1987; Rutala et al. 1991). Raters were not asked to complete a formal checklist or scale, but rather to form their own assessments using the provided lists as a guide. As this was still the pilot phase, it was unclear whether differences in the level of clinical competence displayed in the two videotapes would be detected consistently, or if other unanticipated differences would become apparent. Therefore to maximise the information obtained, free response answers were sought from the raters rather than the completion of a checklist.

Comments by individual child health professionals regarding the clinical competence of the 'student' in each of the two interview videotapes were subsequently reviewed and categorised using the specific clinical content checklist and the ACIR scale. For each clinical content checklist item and each ACIR scale item, the number of raters who commented favourably on that specific item was recorded. As free responses answers were sought, not all checklist items were commented upon by all raters. Considerably more individual clinical content checklist and ACIR elements were identified in interview A than in interview B. In addition, all ten child health professionals rated the 'student' in interview A as displaying greater clinical competence on a separate global assessment question: "which medical student demonstrated superior clinical skills?". Table 2.4 summarises the independent assessment of clinical competence for interview A and interview B.

All ten raters also strongly preferred interview A when asked to contrast the two interviews using the question "Are there any differences between these two videotapes?" Reasons given by the raters in answer to this question included:

- better 'student' clinical skills
- better 'student' rapport and empathy with the mother
- more 'student' open ended questions
- a more complete history and management plan with clearer explanations

The ten child health professionals also completed four questions regarding the realism of the videotape recreations of a medical student interview. The realism questionnaire is described in more detail in Chapter 3. The mean realism rating of the video-taped interviews was 19.1±1.7 (the possible range of scores was 0-20) indicating that a very high level of realism was achieved. Four raters scored the maximum of 20 for the videotapes regarding their realism. The lowest score by any rater was 15.

*Interviews HCHP, HCLP, LCHP, LCLP*

Following manipulation of the content of transcripts A and B to create the four subsequent videotapes (HCHP, HCLP, LCHP, LCLP), further independent assessment of each videotaped medical 'student's' clinical competence was undertaken. Eight paediatricians with extensive experience in medical student teaching and assessment individually and independently viewed all four videotapes. These paediatricians were different to those who had seen the initial pilot study videotapes (interviews A and B).

The order of viewing was assigned randomly, and viewing was undertaken without prior knowledge of either the videotape content or the study aims. At the conclusion of the last videotape, each paediatrician ranked the interviews according to the clinical competence displayed by the student. The paediatricians were provided with the definition of clinical competence described in Section 2.2, that is, appropriate knowledge together with appropriate clinical, technical and interpersonal skills. A score of 1 was awarded to the interview in which the student displayed the highest level of

clinical competence, and a score of 4 for the interview in which the student displayed the lowest level of clinical competence. Paediatricians were permitted to rank two or more interviews as demonstrating equivalent clinical competence. If two interviews were ranked 1, then a final rating of 1.5 was recorded for each. If two interviews were ranked 2, then a final rating of 2.5 was recorded for each, and a final rating of 3.5 each if two interviews were ranked 3.

Mean paediatrician rankings (scale: 1=highest, 4=lowest) of the four videotaped interviews regarding the level of clinical competence displayed by the student were as follows:

HCHP 1.3

HCLP 1.8

LCHP 3.4

LCLP 3.6

The paediatricians all rated HCHP and HCLP as either 1,2 or equal 1 in terms of clinical competence. The paediatricians all rated LCHP and LCLP as either 3,4 or equal 3 in terms of clinical competence.

### 2.5.2 Independent assessment of patient-centredness

Independent assessment of the level of student patient-centredness in each of the videotaped interviews was undertaken using a method developed previously by Winefield et al. (1996). This method requires the assessment of interview transcripts rather than the viewing and subsequent rating of interview videotapes. Because interviews A and B from the pilot study were identical to interviews HCHP and LCLP respectively, a separate assessment of these transcripts for their levels of patient-centredness was not repeated.

Ms J Clifford a research project officer with an honours degree in communications and a Masters of Public Health, undertook the independent assessment of the level of student patient-centredness in each of the four transcripts. As a co-author in the Winefield et al. (1996) study, Ms Clifford rated 210 general practitioner consultation transcripts using two scales, the Verbal Response Modes (VRM) and a global rating scale. These two scales were used for her independent assessment of the patient-centredness of the four interviews created for the studies described in this thesis (HCHP, HCLP, LCHP, LCLP). Ms Clifford was selected for this to ensure the independent rater was experienced with the use of both scales because of the small number of transcripts.

*Verbal Response Mode Coding*

The VRM codings for patient-centredness are based on Stiles' Verbal Response Mode system (Stiles 1978). To calculate a VRM score, every verbal utterance during an entire consultation is coded for intent and categorised into one of a small number of discrete groupings. Combinations of these groupings describe constructs of interest, and the total number of speech units in each of these groups is summed to provide the VRM score. In addition to coding for patient-centredness, the VRM independent ratings also provided independent identification of patient offers of information, 'student' responses to these offers, and the information content of the 'student' responses.

When assessing the four interview transcripts used in this thesis, Ms Clifford used the same coding unit nomenclature and coding instructions as previously (Winefield et al. 1996). The VRM groups describing verbal content are shown below. Under each subheading the coding units are listed:

1. Doctor verbal behaviours

i) emotional support

| | |
|---|---|
| DOQ | open question |
| DREFL | reflection/paraphrase |
| DRESP | response which encourages to continue, confirm, disagree |
| DTIC | task-irrelevant chat |

ii) information support

| | |
|---|---|
| DDOB | describe own behaviour or intention |
| DEXPL | explanation |
| DEVAL | evaluation, interpretation |
| DPRED | prediction |
| DEA | expert advice |

iii) diagnostic behaviours

| | |
|---|---|
| DCQ | closed question |

2. Patient verbal behaviours

i) relationship oriented

| | |
|---|---|
| PPF | greetings or other polite formulae |
| PRDW | repeats doctor's words |
| PRESP | responses which encourage to continue, confirm, acknowledge, disagree |
| PPA | positive attitude to doctor/ treatment |
| PNA | negative attitude to doctor/ treatment |
| PTIC | task irrelevant chat |

ii) illness orientated

| | |
|---|---|
| PPS | information re private symptom |
| POS | information re overt symptom |

| | |
|---|---|
| PACT | information re actions |
| POPIN | information re opinions |
| PQ | question |

*Independent VRM coding of Patient Offers*

The identification of maternal 'offers' of information is a key component of the Henbest measurement scale (Henbest and Stewart 1989). An independent assessment of the maternal 'offers' contained in each interview was sought. Maternal 'offers' were identified by the VRM unit "illness related patient verbal behaviours". Each of the 11 offers of information previously identified by the two physician raters (Section 2.3.1) were independently confirmed by the presence of one or more of the "illness related patient verbal behaviours" VRM units in each of the four interview transcripts as shown in Table 2.5. Each interview had the same eleven 'offers' of information. No other 'offers' were identified in any of the four interview transcripts. Differences in maternal dialogue VRM subunit codings between the HCHP/HCLP interviews and the LCHP/LCLP interviews were due to minor variations in maternal dialogue required to maintain the sense and flow of the conversation. Any alterations made to the dialogue did not effect the VRM codings overall.

*Independent VRM coding of Student Responses to Patient Offers*

The independent VRM coding of student dialogue in response to the 11 identified maternal 'offers' of information was reviewed. All student responses were coded within the 'doctor verbal behaviours' VRM category. This consisted of three coding units, 'emotional support', 'information support' and 'diagnostic behavours', each with their own coding subunits. The VRM codings for the 'student' responses to maternal 'offers' in each of the four interviews are shown in Table 2.6.

In reviewing the student dialogue that was independently coded within the 'emotional support' unit, it was noted that the DREFL unit was identifying two different types of student responses. In addition to identifying student speech that was genuinely reflective, it was also coding, under the same subunit, simple repetitions by the student of the mother's last words whilst the student was thinking of something else to say. The DREFL subunit was further refined to represent either DREFL, which was a simple repetition of the mother's 'offer' of information, or DREFL*, which was speech in which the student actually restated the patient's words after some thought and in a manner that would promote further exploration of the patient's thoughts, feelings or expectations.

The 'emotional support' and 'information support' VRM units are more consistent with a patient-centred interview than are the 'diagnostic behaviours' VRM units. More 'emotional support' and 'information support' units were identified in the high patient-centred interviews (HCHP, LCHP) than in the low patient-centred interviews (HCLP, LCLP) (Table 2.6). The low patient-centred interviews contained more 'diagnostic behaviours' VRM units. This pattern was not observed however for offers 8 and 9 in which the student response codings varied with the level of clinical competence rather than the level of patient-centredness. This was possibly due to limitations of the VRM coding method of measuring patient-centredness. VRM codings do not consider the overall context of a verbal utterence. For example, there is no VRM coding subunit equivalent of ignoring an offer of information, nor is there a VRM coding subunit that accurately reflects the difference between an open-ended response and an active facilitation of the mother's expression of information.

*Independent VRM coding of interview transcripts for Patient-centredness*

In the study by Winefield et al. (1996) a modification of the VRM categories was employed to identify patient-centredness. Two new coding units were formed by regrouping existing coding subunits. The first of these new coding subunits was designated 'doctor receptiveness' and was a component of the category 'doctor verbal behaviours'. The second new coding unit was designated 'patient involvement' and was a component of the 'patient verbal behaviours' category. The coding subunits for each of these derived coding units were as follows:

Doctor receptiveness:

DREFL*: a reflection of what the patient has recently said, often in the same words

DOQ: open question

DRESP: acknowledgement of what the patient has said

Patient involvement

PQ: question

PPA: positive attitude to treatment

PNA: negative attitude to treatment

PPS: private (unobservable symptom)

PACT: account of action or experiences

POPIN: patient opinion

To rate the patient-centredness of a consultation, the total numbers of VRM subunits identified in each of these two units were summed with higher total scores indicating higher patient-centredness. The subunits identified by the independent assessor in each interview that were included in either the 'doctor responsiveness' or the 'patient

involvement' units were summed and are displayed in Table 2.7. The 'doctor receptiveness' unit score shows the HCHP and LCHP interviews to have equivalent, higher levels of patient-centredness, whilst the HCLP and LCLP interviews show equivalent, lower levels of patient-centredness. Because the maternal dialogue was controlled so carefully in the development of the transcripts, the VRM coding unit 'patient involvement' was not a true reflection of the patient-centredness of the medical student interviews. It was almost identical for the HCHP and HCLP interviews, and for the LCHP and LCLP interviews, reflecting the stability of the maternal dialogue at the two levels of clinical competence. In this particular analysis only the 'doctor receptiveness' coding unit was appropriate for the measurement of patient-centredness.

*Global rating of interview transcripts*

The second measurement scale used to code interview transcripts was a rating scale developed to measure trainee general practitioner behaviour in medical consultations (Farmer 1995). This scale scores the highest demonstrated levels of medical student or doctor patient-centred behaviours that are observed in a consultation. Five discrete doctor consultation behaviours consistent with a more patient-centred consultation are identified:

1. Soliciting the patient's views
2. Responding actively to those views
3. Relating information and explanation directly to the patient's views
4. Involving patients in the management of their health
5. Checking the patient's own knowledge

In completing this scale, the verbal behaviours of the student/doctor are assessed by the rater regarding each of these five items. The interview is scored on a 5-point scale from 0 to 4 for each item (0 = refused to make an effort; 4 = more than two definite efforts) reflecting the highest of each of these behaviours exhibited by the student/doctor in the consultation. The scores for all five categories are summed. The range of scores is 0-20, with a higher score indicating a more patient-centred approach. The global rating scale scores obtained for each interview by the independent rater are displayed in Table 2.7.

The HCHP and LCHP interviews were rated as more patient-centred than the HCLP and LCLP interviews on both the global rating and the 'doctor responsiveness' component of the VRMs.

### 2.5.3 Comparison of videotaped student interviews with general practice interviews

The patient-centredness VRM and global scores of the recreated medical student interview transcripts were compared with the scores for general practitioner interviews. The VRM scores (M±SD) in the Winefield et al. (1996) study of 210 general practice consultations ('doctor responsiveness' 61±37; 'patient involvement' 90±57), were higher than those observed with the student interviews (Table 2.7). This finding may be explained in part by the shortening of the medical student interview undertaken during the interview editing process, as VRM scores reflect total numbers of speech units. The general practitioner PCI global scale mean score (9±3) however was similar to the low patient-centred medical student interview.

Winefield et al. (1996) also reported separate VRM scores for two distinct phases of consultations, the diagnostic and the prescriptive phases. The diagnostic phase

represents the first part of a consultation and is followed by the prescriptive phase. This transition between these two phases is identified by the first 'doctor's expert advice' VRM (Winefield and Murrell 1991). Mean general practice trainee VRM scores in the Winefield et al. (1996) study for the diagnostic phase were 'doctor responsiveness' 35±27, and 'patient involvement' 51±42. For the prescriptive phase the VRM scores were 'doctor responsiveness' 26±25, and 'patient involvement' 39±40.

Analysis of the four 'student' transcripts revealed that the 'student' interview VRM scores for the categories 'doctor responsiveness' and 'patient involvement' were almost entirely in the diagnostic phase. No 'student' interview recorded any 'patient involvement' VRM in the prescriptive phase. HCHP and LCHP interviews recorded one 'doctor responsiveness' VRM in the prescriptive phase, with none in the other two interviews. The 'student' VRM ratings that related to patient-centred behaviours were observed almost exclusively in the diagnostic phase of the consultations, unlike the general practitioner consultations. This pattern is consistent with the relative inexperience of the medical students, particularly relating to patient management (Menahem 1987). The low patient-centred student interviews (HCLP and LCLP) had global ratings of patient-centredness that were compatible with those of the mean general practitioner ratings.

### 2.5.4 Interview length and patient-centredness

It is unclear whether adopting a patient-centred approach is associated with longer consultations. Studies addressing this question have reported conflicting results (Henbest and Fehrsen 1992; Winefield et al. 1996). The total word counts of each of the four interview transcripts in this thesis were compared, together with the word counts for the segments preceding and following the examination (Table 2.8). Prior to the examination of the child, the interviews were predominantly concerned with

obtaining the medical history. After the 'examination' intermission, the 'student' in each interview explained the diagnosis and management recommendations to the mother. The higher patient-centred interviews had a greater word count in both the pre-examination segment, and in the total interview. When interviews with the same level of clinical competence were compared, the higher patient-centred interview had a greater word count.

### 2.5.5 Independent assessment of information content

The VRM coding also permitted the independent assessment of the information content of each of the four medical student interviews. The identified information statements regarding diagnosis and management were used subsequently as the basis of the recall questionnaire (Chapter 5). The VRM unit 'doctor information support' was reviewed and the information statements identified in this unit were grouped according to the type of information they contained. The coding subunits under each group were:

| | |
|---|---|
| Diagnostic information | DEXPL, DEVAL (when directly connected with the child's current illness) |
| Management information | DEA, DPRED (when directly connected with the child's current illness) |
| General information | DDOB,<br>DEXPL, DEVAL DEA, DPRED (when not directly related to the child's current illness) |

Each of the four videotaped 'student' interviews contained the same amount of specific core diagnostic and management information provided by the 'student' that related to the child's current illness. The exact wording of the student information dialogue varied

slightly between the interviews according to the level of clinical competence (see Tables 5.2-5.4, 5.7, 5.8). The high competence interviews also contained more student dialogue regarding general health information not directly related to the child's current illness than did the low competence interviews (HCHP and HCLP contained 13 general items of information; LCHP and LCLP contained 6 items). Much of this information was of a nonspecific nature and did not directly refer to the 'child' being assessed in the consultation.

## 2.6 Discussion

To study the relationship between medical student clinical competence and patient-centredness, and maternal evaluations of paediatric consultations and subsequent recall of information, it is necessary to control for the effects of other variables that may influence interview outcomes. Control of all interview variables other than verbal dialogue is a complex task which was undertaken in two stages. Two medical student interview videotapes in which clinical competence and patient-centredness varied together were created for the pilot study. A further four interview videotapes were then created in which clinical competence and patient-centredness were varied independently for the definitive study reported in Chapters 4 and 5. Throughout the videotape development, variables other than the verbal dialogue of the student were controlled.

The most rigorous independent evaluation possible using existing measurement tools was employed at all stages of videotape development. Whilst the patient-centredenss model is conceptually straightforward, identification and measurement of key components has proved challenging in research settings (Stewart 1995b; Mead and Bower 2000a). There was some potential difficulty encountered in the preparation and independent analysis of interview transcripts due to the lack of a generally accepted

measure of patient-centredness. This was addressed by using three separate measures of patient-centredness: one in the development of the interviews and the other two in their independent assessment. Initial identification and subsequent manipulation of the level of patient-centredness in the interview transcripts was guided by the Henbest measurement scale (Henbest and Stewart 1989). Because of the extensive use of this scale in the development phase of the videotapes, it was desirable that it not be used in the independent evaluation of patient-centredness. The two scales used by the independent rater (VRM and the global scale) are quite separate measurement instruments to the Henbest scale (Henbest and Stewart 1989).

Independent assessment at each stage of interview development clearly supported:

a) the successful manipulations of clinical competence and patient-centredness

b) the designated levels of each of these qualities in each of the created videotapes

c) the control of other interview content

The use of real medical student consultations as the basis of the transcripts provided authenticity to the recreated videotaped interviews.

Every consultation is unique in terms of each of the variables listed at the beginning of this chapter (Norman et al. 1985; Turnbull et al. 1996). The methods described for creating multiple versions of a single consultation according to a formula, permits evaluation of only one clinical scenario. However, the control of all other variables that is achieved provides a unique opportunity to assess the effects of medical student verbal dialogue on maternal evaluations and recall.

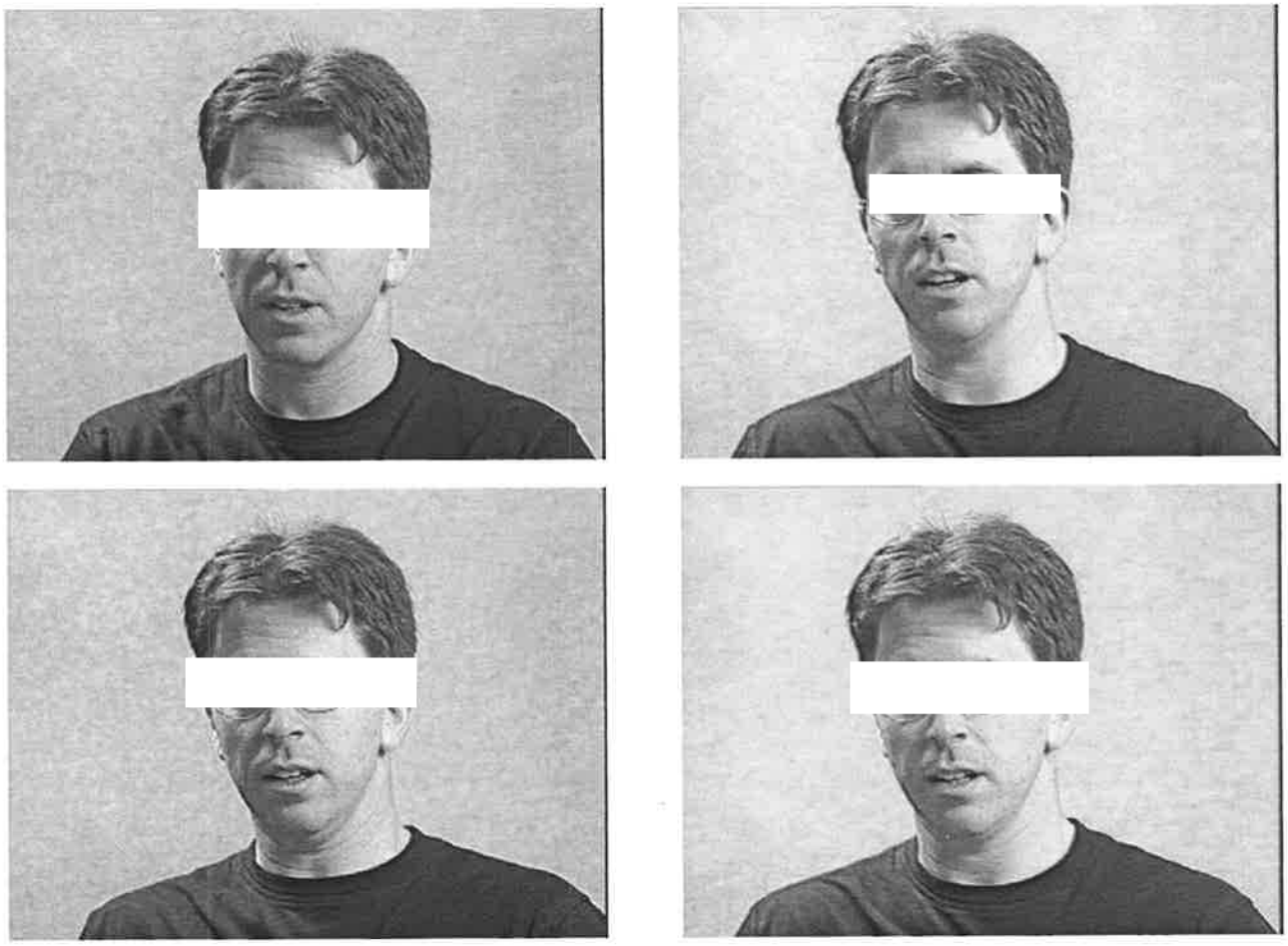
## 2.7 Conclusions

This chapter describes the identification and successful independent manipulation of the level of clinical competence and patient-centredness displayed by a medical student in an interview. Videotaped interview recreations were made based on actual medical student consultations. Extensive independent assessments of clinical competence, patient-centredness, and the interview information content were undertaken.

Levels of clinical competence and patient-centredness were manipulated successfully to achieve four interviews clearly identifiable as: high clinical competence, high patient-centredenss (HCHP); high clinical competence, low patient-centredness (HCLP); low clinical competence, high patient-centredness (LCHP); and low clinical competence, low patient-centredness (LCLP).

Independent assessment of clinical competence was relatively straightforward, whilst the independent assessment of patient-centredness was more complex.

**Figure 2.1 Still pictures from each of the four interviews**



Still pictures taken from each of the four videotapes demonstrating the similarities in each videotape. Clockwise from the top left: high clinical competence, high patient-centredness (HCHP), low clinical competence, high patient-centredness (LCHP), low clinical competence, low patient-centredness (LCLP), high clinical competence, low patient-centredness (HCLP).

**Table 2.1 Physician observer clinical competence and patient-centredness scores**

| | Clinical Competence[a] | | Patient-centredness [b] | |
|---|---|---|---|---|
| **Student** | **Coder 1** | **Coder 2** | **Coder 1** | **Coder 2** |
| 1 | 1.0 | 1.0 | 1.0 | 1.0 |
| 2 | 2.0 | 2.0 | 0.7 | 0.7 |
| 3 | 3.0 | 2.5 | 2.1 | 1.6 |
| 4 | 1.0 | 1.0 | 0.5 | 0.8 |
| 5 | 2.0 | 1.0 | 1.0 | 0.7 |
| 6 | 1.0 | 1.0 | 0.7 | 0.6 |

[a]The clinical competence demonstrated by each medical student was rated by two physicians using a 3-point global scale; 1=low, 3=high.

[b]The patient-centredness demonstrated by each student was rated by two physicians using the Henbest scale (Henbest and Stewart 1989; Law and Britten 1995) where student responses to maternal 'offers' of information are scored; minimum score = 0, maximum score = 3. Student scores are summed for each interview and divided by the number of maternal offers identified.

Pearson correlation coefficients between the scores of the two physicians were;

clinical competence =0.86
patient-centredness =0.92

**Table 2.2 Clinical competence and patient-centredness levels of the four interviews**

| | | Clinical competence | |
|---|---|---|---|
| | | **High** | **Low** |
| **Patient-centredness** | **High** | HCHP | LCHP |
| | **Low** | HCLP | LCLP |

HCHP high clinical competence, high patient-centredness
HCLP high clinical competence, low patient-centredness
LCHP low clinical competence, high patient-centredness
LCLP low clinical competence, low patient-centredness

**Table 2.3 Examples of Script Variations to alter the levels of clinical competence and patient-centredness (abbreviations as in Table 2.2)**

**3. Patient Offer 2 "panadol won't work"**

**Mother:** *We gave panadol, normally it does work but it wouldn't work.*
**Student:**

(HCHP) So has that been a concern to you? (active facilitation)

(HCLP) How often are you giving the panadol? (closed question)

(LCHP) Oh, so has that been a concern to you? (active facilitation)

(LCLP) Oh, it hasn't been working? .....
..... Are you giving it 4 hourly? (closed question)

- **Student checking of patient understanding and inviting questions**

(HCHP) **Student:** So panadol each 4 hours if she's hot and miserable and um, has a sore throat. Drinks are more important than food and she should be better in a few days. If she is not getting better, or if she seems to become worse, she won't drink or if you are worried, then she needs to be checked again by a doctor. Do you understand all that?
**Mother:** *Yes, thankyou.*
**Student:** Do you have anything you want to ask me?
**Mother:** *No um, I don't think so.*

(HCLP) **Student:** So panodol each 4 hours if she's hot and miserable and um, has a sore throat. Drinks are more important than food and she should be better in a few days. If she is not getting better, or if she seems to become worse, she won't drink or if you are worried, then she needs to be checked again by a doctor.
**Mother:** *OK.*

(LCHP) **Student:** I'm sure she'll be right in a day or two. Give her panadol 4 hourly and keep her fluids up. Come back if you're worried or she's not getting better. Fever can be good for infections. Does this all sound OK to you, and do you understand?
**Mother:** *Uh, ha,OK.*
**Student:** I'll get one of the other doctors and he'll come in and have a look at her as well and he'll finalise that err, any questions?

(LCLP) **Student:** I'm sure she'll be right in a day or two. Give her panadol 4 hourly and keep her fluids up. Come back if you're worried or she's not getting better. Fever can be good for infections. I'll get one of the other doctors and he'll come in and have a look at her as well and he'll finalise that err, so I'll just go and get him. So if you just want to have a seat I'll be back.

**Table 2.4 Independent assessment of clinical competence**

| | Favourable ratings | |
|---|---|---|
| | **Interview A** (n=10) | **Interview B[a]** (n=10) |
| **Clinical content items*** | | |
| History | 6 | 1 |
| Exam | 1 | 0 |
| Medication | 2 | 0 |
| Care | 3 | 0 |
| Diagnosis | 4 | 1 |
| Prognosis | 0 | 0 |
| Follow-up | 1 | 0 |
| **ACIR** items** | | |
| Organisation | 4 | 0 |
| Time | 0 | 0 |
| Transitional statements | 0 | 0 |
| Questioning skills | | |
| open/closed | 4 | 0 |
| continuity | 2 | 0 |
| repetition | 1 | 0 |
| summarised | 1 | 0 |
| jargon | 4 | 0 |
| Documentation of data | 1 | 0 |
| Rapport | | |
| eye contact | 1 | 1 |
| interruption | 3 | 0 |
| alert to concerns | 5 | 0 |
| positive reinforcement | 1 | 0 |
| further opportunity | 4 | 0 |

* (Willson and McNamara 1982)
**Arizona Clinical Interview Rating Scale (Stillman 1980)

[a] Many of the items listed were commented upon for interview B by the independent raters, but to note their absence or poorer execution in comparison with interview A. Some positive features of interview B were identified, but overall in the assessment of the independent raters, this interview represented a less competent interview than interview A. For example, regarding the adequacy of the clinical history of the child's illness obtained by the 'student', six raters commented that this was done well in interview A. The other four raters either made a negative comment or no comment regarding the quality of the 'student's' history. Only one rater commented that the history was done well in interview B. The other nine raters were either negative in their comments, or made no comment.

**Table 2.5 Independent VRM coding of dialogue identified as 'maternal 'offers' of information'**

| | VRM coding[a] | |
|---|---|---|
| **Maternal 'offers'[b]** | **HCHP, HCLP** | **LCHP, LCLP** |
| 1. Coughing, fever, off food | POS/PACT | POS/PACT |
| 2. Panadol won't work | POS/PACT | POS/PACT |
| 3. Is it serious? | POPIN | PQ |
| 4. Only 60 ml yesterday | PACT/POPIN | POS |
| 5. Can't swallow | POS/POPIN/ PACT | POS/POPIN/ PACT |
| 6. Coughing, sleeping | PACT/POS/PPS/ POPIN | POS/POPIN/PACT |
| 7. Teething | POS/PACT/PPS/ POPIN | POS/PACT/POPIN |
| 8. Doctor said a cold and teething | PACT/POPIN | PACT |
| 9. Not teeth | POPIN/PACT | PACT/POS/POPIN |
| 10. Previous cold | POS/PACT/POPIN | POS |
| 11. Pulling ears | PACT/POPIN/POS | POS |

[a] The independent VRM codings for each of the maternal 'offers' of information were compared for each of the interviews. All maternal 'offers' were identified by the VRM category 'Illness related patient verbal behaviours'. This VRM category consists of the following coding subunits (Winefield et al. 1996);

| | |
|---|---|
| PPS | patient information re private symptoms |
| POS | patient information re overt symptoms |
| PACT | patient information re actions about symptoms |
| POPIN | patient information re opinions |
| PQ | patient questions seeking information |

[b] Maternal 'offers' of information (the exact dialogue is not reproduced, rather a summary is provided in the table).

**Table 2.6 Independent VRM coding of student responses to maternal 'offers' of information**

| | VRM coding[a] | | | |
|---|---|---|---|---|
| **Maternal 'offers' (see Table 2.5)** | **HCHP** | **HCLP** | **LCHP** | **LCLP** |
| 1. | DRESP<br>DCQ | DRESP<br>DCQ | DCQ | DREFL<br>DCQ |
| 2. | DOQ | DCQ | DOQ | DREFL |
| 3. | DEXPL<br>DREFL*<br>DCQ | DREFL | DEXPL<br>DCQ | DRESP<br>DCQ |
| 4. | DOQ | DCQ<br>DREFL | DOQ<br>DREFL | NIL |
| 5. | DOQ<br>DCQ<br>DRESP | DOQ | DCQ<br>DRESP<br>DREFL | DCQ<br>DREFL |
| 6. | DRESP<br>DREFL* | DREFL | DREFL* | DRESP |
| 7. | DRESP<br>DEXPL | DCQ | DEXPL<br>DCQ | DCQ |
| 8. | DRESP<br>DEXPL | DRESP | DCQ<br>DREFL | DCQ<br>DREFL |
| 9. | DOQ | DOQ | DCQ | DCQ |
| 10. | DOQ | DREFL | DOQ | DCQ<br>DREFL |
| 11. | DOQ<br>DRESP | DCQ | DOQ | DCQ |

[a]The independent VRM codings for the student responses to each of the maternal 'offers' of information were compared for each of the interviews. All student responses were identified by the VRM category 'Doctor verbal behaviours' which consists of the following coding units 'doctor emotional support', 'doctor information support', and 'doctor diagnostic behaviours'. Each coding unit then consists of the following subunits (Winefield et al. 1996);

i) emotional support (high patient-centred)

| | |
|---|---|
| DOQ | open question |
| DREFL | simple repetition |
| DREFL* | student reflection |
| DRESP | response which encourages to continue, confirm, disagree |
| DTIC | task-irrelevant chat |

ii) information support (high patient-centred)

| | |
|---|---|
| DDOB | describe own behaviour or intention |
| DEXPL | explanation |
| DEVAL | evaluation, interpretation |
| DPRED | prediction |
| DEA | expert advice |

iii) diagnostic behaviours (low patient-centred)

| | |
|---|---|
| DCQ | closed question |

The more patient-centred interviews (HCHP, LCHP) have more 'emotional support' and 'information support' VRMs than do the low patient-centred interviews (HCLP, LCLP).

**Table 2.7 Independent assessment of patient-centredness**

| | Interview | | | |
|---|---|---|---|---|
| | HCHP | HCLP | LCHP | LCLP |
| **Verbal Response Modes[a] (total number of utterences)** | | | | |
| doctor responsiveness | 43 | 32 | 43 | 36 |
| patient involvement | 56 | 58 | 41 | 39 |
| **Global Scale[b] (range 0-20)** | 16 | 9 | 14 | 7 |

[a] Higher total numbers of VRMs reflects a more patient-centred interview, but in this study the 'patient involvement' VRMs reflect control of maternal dialogue rather than the level of patient-centredness.

[b] Higher score reflects a more patient-centred interview.

**Table 2.8 Total number of words contained in each of the four 'student' interviews**

| | Pre-examination[a] | Post examination[b] | Total |
|---|---|---|---|
| **HCHP** | 1123 | 366 | 1489 |
| **HCLP** | 1023 | 335 | 1358 |
| **LCHP** | 1135 | 294 | 1429 |
| **LCLP** | 1011 | 256 | 1267 |

[a] The segment of the interview in which the student obtained the medical history of the child.

[b] The segment of the interview in which the student explained the examination findings, his diagnosis and his management recommendations.

# Chapter 3 Pilot testing of videotapes and questionnaires

## 3.1 Introduction

A pilot study was planned to examine the relationship between maternal evaluations of student interviews, and student clinical competence and patient-centredness. The relationship between these student skills and maternal recall of information provided by the student was also assessed.

The methods adopted in this pilot study were developed from those previously reported by Willson and McNamara (1982). This earlier work assessed the effect of varying the level of clinical competence and the level of courtesy displayed by the doctor on surrogate patient satisfaction. Psychology students viewed one of four videotaped recreations of a medical consultation involving a young adult with a sore throat. In developing the videotapes, the authors systematically and independently varied the levels of clinical competence and courtesy of the doctor to create four versions of the consultation. After each subject viewed the videotape interview, they then rated their satisfaction with that interview, and also their assessment of the competence and the courtesy of the doctor. Satisfaction was measured using the Medical Interview Satisfaction Scale (MISS) (Kinnersley et al. 1996), and a semantic differential scale devised by the authors was used to rate the competence and courtesy of the doctor.

The authors concluded from their study that "courtesy manipulation influenced the perception of courtesy and general medical satisfaction, while the competence manipulation influenced not only perceived competence, but perceived courtesy, general medical satisfaction and compliance (intent) as well" (Willson and McNamara

1982). The psychology students rated interviews in which the doctor displayed greater levels of courtesy and/or greater levels of competence more highly, with the level of doctor competence appearing to have a greater effect overall on interview ratings. This study did not include any interview outcome measurements such as recall of information or illness recovery. The actual compliance of the students was not assessed; rather their 'compliance intent' was gauged on the basis of responses to the MISS questionnaire.

Surrogate patients were used successfully also by Roter et al. (1987) to rate satisfaction and recall of information following audiotaped consultation recreations. In this study however there was no control of interview content, nor manipulation of any of the doctor verbal behaviours.

The aim of the current pilot study was to examine the relationship between the level of medical student clinical competence and patient-centredness, and maternal interview satisfaction ratings and recall of diagnostic and management information. The initial two interviews (A and B) developed from real medical student consultations described in Chapter 2 were used for this study. In addition to this primary aim, the pilot study provided an opportunity to evaluate the methods used to develop the videotaped interview recreations.

The hypothesis of the pilot study was: Maternal satisfaction ratings and recall of information are greater following an interview in which a student demonstrates higher levels of clinical competence and patient-centredness. Aspects of the Willson and McNamara (1982) study that were strengthened in this pilot study design included:

- The development of the videotaped interviews that were based on actual medical student consultations (as described in Chapter 2)

- Rigorous attention to controlling both nonverbal communication and verbal dialogue content not directly related to the variables of interest (clinical competence and patient-centredness)

- Extensive independent evaluation (as described in Chapter 2)

- Inclusion of intra-subject comparisons.

## 3.2 Study location and subjects

The study was conducted in a General Practice clinic of the University of Adelaide in August of 1999. The community-based General Practice is situated in Adelaide, South Australia. To recruit mothers for this pilot study, receptionist staff at the clinic were asked to approach all mothers of children aged between 3 and 18 years attending the practice during a three week period. The age range of children was specified to increase the likelihood that mothers viewing the videotapes had previously experienced similar illness in a young child to that described in the videotape, and still had dependent children of their own. A printed information sheet was provided to mothers explaining the study. If mothers agreed to participate, they selected a convenient time to view the videotaped interviews from a schedule of five prearranged screening times.

## 3.3 Methods

### 3.3.1 Measures

*Maternal evaluations*

Patient satisfaction is the most common interview outcome measured in studies of patient evaluations of medical interviews, and a large number of published patient satisfaction scales were identified. From these, five scales were selected for use in this study. Selection of these satisfaction scales was based on their suitability for assessing maternal satisfaction with medical student interviews, the existence of published data about their psychometric properties (in particular internal validity and reliability), and the extent to which they had been used in previous studies. This permitted comparisons to be made between responses on the different scales. The term 'satisfaction rating scales' includes scales that rate interpersonal skills, interview skills and communication skills.

The five scales used were:

Medical Interview Satisfaction Scale (MISS), a 29 item, 7 point scale (Wolf et al. 1978; Weaver et al. 1993; Kinnersley et al. 1996; Avis et al. 1997; Kinnersley et al. 1999; Greco et al. 2000).

Interpersonal Skills Rating Scale (IPS), a 13 item, 7 point scale (Schnabl et al. 1991).

Medical Student Interview Performance Questionnaire (MSIPQ), a 12 item, 5 point scale (Black and Church 1998).

Physicians' Communicative Behaviours (PCB), a 14 item, 6 point scale (Street 1991).

Global Patient-Centred Interviewing Measure (PCI global), a 5 item, 5 point scale used in the independent scoring of the transcripts described previously in Chapter 2 (Farmer 1995; Winefield et al. 1996).

Minor adjustments to each measurement scale were required to ensure the questions were relevant to the situation portrayed in the videotapes. In each scale the words 'medical student' were substituted for 'Doctor', and 'your child' for 'you'. In all scales, maternal scores for each item were summed with higher scores indicating higher maternal satisfaction ratings.

*Maternal recall*

After viewing each interview, mothers were asked to describe the child's diagnosis and the management recommendations made by the 'student'. This information was requested with six open ended, free response questions;

- What did the medical student say was the problem with your child?
- What did the medical student say caused the problem?
- What did the medical student tell you to do about it?
- What did the medical student say about what to expect?
- What instructions did the medical student give you?
- What suggestions did the medical student have for you?

Maternal responses were compared to the actual dialogue content of the interview. The independent assessment of interview information content was reviewed to

identify 'student' information that either described specific abnormalities on clinical examination, referred to the cause of the child's illness, gave information on the likely course of the illness, or described management instructions. There were five specific items of diagnostic information and three specific items of management information in each interview. Each interview contained the same information regarding these eight items. The number of correct items recalled by mothers for each interview was summed.

*Videotape interview realism*

Mothers also completed the four item realism scale that was used in the Willson and McNamara (1982) study. Mothers were asked to rate the realism of both videotapes together. The first three items sought maternal responses to the statements: 'I think there are medical students/mothers/situations like this in real life.' The fourth item stated 'As a portrayal of a medical student-mothers relationship these videos are believable'. Each item was rated using a 5-point scale. Maternal ratings for each item were summed, with higher ratings indicating greater realism.

### 3.3.2 Videotape screenings

The videotaped interviews were shown at the general practice clinic. The videotapes were immediately preceded by a pre-recorded videotaped orientation in which a female technical assistant explained that participating mothers would see two videotapes in which the same 'medical student' interviewed the same 'mother'. As in the study by Willson and McNamara (1982), participating mothers were encouraged to imagine themselves as the 'mother' in the videotape, and were asked to remember a time when their own child had been unwell with a similar illness.

The two pilot study interviews (interview A and interview B) were developed from the transcripts of real medical student consultations as described in Chapter 2. The 'student' in interview A demonstrated high levels of clinical competence and high levels of patient-centredness. The 'student' in interview B demonstrated low levels of both clinical competence and patient-centredness. Each videotape ran for approximately 7 minutes. Mothers completed a questionnaire after each interview, imagining that they were the 'mother' in the videotape. Each questionnaire took the mothers 15-20 minutes to complete. Following the second videotape, mothers also completed a brief questionnaire (2-3 minutes) comparing the two interviews. They were asked also to state a preference for one interview with their reasons for this preference.

### 3.3.3 Statistical analyses

Maternal scores for each of the five satisfaction scales, the realism scale, and the maternal recall questionnaire for interviews A and B were compared. Scores for each of these questionnaires were also compared for interview A when viewed as the first interview compared with those scores from when it was viewed as the second interview. Similarly, scores for interview B when it was viewed as the first and second interview were compared.

As the maternal scores were continuous variables, statistical comparisons of the scores were made using t-tests. Maternal scores for interviews A and B were compared using paired t-tests. Maternal scores for each interview according to the order of viewing were compared using unpaired t-tests. The relationship between scores for each of the five evaluation questionnaires was reviewed with scatter-plots. Pearson correlation coefficients were calculated to determine the degree of

correlation between scores on these scales. For all comparisons the significance level was 0.05.

### 3.4 Results

Eleven mothers agreed to participate in the study. One mother did not complete the MISS scale for interview A, leaving 10 completed pairs of MISS scales for analysis. All 11 mothers completed each of the other scales. Five mothers watched interview A first followed by interview B: the other six mothers viewed interview B first. The order of screening of the videotapes was alternated over the five sessions. Mothers were unaware of the order of screening for the two videotapes when they selected a viewing session.

Mean maternal ratings for each of the five satisfaction scales are presented in Table 3.1. For each scale, the scores for interview A were approximately twice those for interview B. Mothers cited many reasons for preferring interview A over interview B, including elements of student clinical competence, student interpersonal skills and the student's receptiveness to the mother's opinions. Mean maternal scores for the PCI global scale were very similar to the independent rater scores for each of these interviews using the same measurement instrument (Table 2.7).

In assessing order effect, there was a consistent pattern for all interview A scores to be higher when this interview was seen after interview B (Table 3.2). The numbers of mothers in each group however was small, and these differences only reached statistical significance with the PCI global score. No consistent pattern was evident with scores for interview B. Pearson correlation coefficients between the five individual maternal rating scales were all very high and are shown in Table 3.3.

Table 3.4 summarises the results for maternal recall responses. Overall, twice as much information was recalled by mothers after interview A as compared with interview B. Recall of management information was better than recall of diagnostic information, which was particularly low following interview B. There was no improvement in recall observed following either interview when it was viewed as the second interview, even though the same information was presented (Table 3.5).

The mean maternal realism rating of the videotape interviews was 19±1 (M±SD possible score range 4-20, with a higher score indicating higher realism). Six of the maternal responses scored the two videotapes as 20 on the realism scale, and another four maternal responses scored 19. One mother rated the realism at 15. Informal feedback following the sessions indicated that mothers strongly identified with the videotape mother and were reminded of previous, similar interviews they had experienced.

## 3.5 Discussion

In addition to the study by Willson and McNamara (1982), other authors have sought to identify key elements of a successful interview by experimental manipulations of interview content (Cox et al. 1981; Feletti and Carney 1984; Savage and Armstrong 1990; Lewis et al. 1991). The present work differs from these studies by the simultaneous inclusion of four important aspects of study design. Firstly, the differences between the two interviews of this pilot study involved changes to verbal content only, with the potentially confounding variables of nonverbal behaviour, clinical content, and student characteristics remaining identical (DiMatteo et al. 1986; Hall et al. 1994a; Hall et al. 1996). Secondly, the same mothers rated each interview rather than having two different groups of mothers rating each interview and then comparing their scores. Thirdly, through the use of videotaped interviews, it was

possible to standardise the medical student, the mother and the clinical situation so that all subjects were rating the same consultations. Finally, edited versions of real medical student interviews were used to develop the videotapes, providing authenticity to the transcripts. A further strength of this study was the participation of mothers in the setting of their own general practice clinic, further enhancing their identification with the mother in the videotaped interview.

Participating mothers preferred the interview in which the 'student' demonstrated higher levels of clinical competence and of patient-centredness, a finding consistent with other studies (Roter et al. 1987; Kinnersley et al. 1999). This interview was associated with higher maternal scores on each of the five rating scales and a high level of agreement was observed between scores on each of these five scales. The IPS, MSIPQ, PCB and the PCI global are all measures concerned primarily with interview process, how the student reacted to the mother, their warmth and how understanding they were. The MISS differs slightly in that it also contains a number of items concerning outcomes such as compliance intent and distress relief. All scales contained very similar questions and at least a moderate level of correlation was expected between them.

The trend observed whereby scores for interview A were higher when interview A was viewed after interview B may have reflected some calibration of maternal responses. Mothers may be more lenient in their assessments if they have had previous experiences with which to compare the interview 'student's' performance, when compared with mothers who only have an abstract concept of expected student performance. The potential influence of previous maternal experience of medical student consultations requires better definition.

Recall of diagnostic and management information by mothers also was better after the more competent and patient-centred interview. Mothers viewing interview B recalled significantly less diagnostic and management information than after viewing interview A. The 'student' in interview A used a number of verbal strategies that are known to enhance recall such as repetition and checking of patient understanding when describing the management recommendations (Stewart 1995c). However, no such verbal strategies were used by the 'student' in providing the diagnostic information in interview A and subsequent maternal recall of diagnostic information was still significantly higher than diagnostic recall following interview B.

The recall questionnaire used for this pilot study used six open-ended questions to assess maternal recall. If mothers did not provide the correct answer, it was not possible to know whether this was because they did not recall the information, or because they did not understand which specific information was being sought. In addition, mothers sometimes provided answers that were correct but did not include all the relevant information. For example, when asked about management instructions, many mothers correctly recalled that the 'student' had advised the use of panadol. However, fewer mothers also included the dosage regime in their answers. The use of more specific questions rather than open-ended questions in future questionnaires would improve the accuracy of the assessment of maternal recall.

Mothers regarded the portrayal of the medical student and the mother in the two videotapes as highly realistic. In a number of instances the mothers described their feelings of frustration when the 'student' appeared to ignore the videotape 'mother's' comments and questions. Influenced by a similar previous experience, one mother completed the free response section of the questionnaire changing the gender of the

female 'student' to a male. Another mother commented that she had almost used her own daughter's name in place of the videotape name when answering the questions.

## 3.6 Conclusions

Maternal satisfaction and recall of information was greater following a more clinically competent and patient-centred medical student interview.

When comparing maternal evaluations and those of independent professionals as described in Chapter 2, there was agreement regarding which of the two interviews demonstrated superior student skills. It was not possible however, to quantify the relative contributions of patient-centredness and clinical competence in the different ratings.

This pilot study developed methods that provided information regarding maternal evaluations of medical student interview skills, and maternal recall of information provided by students. Based on the results of this pilot study, these methods are applicable to more detailed studies of medical student interviews in which clinical competence and patient-centredness are varied separately. Refinements required for the recall questionnaire were identified.

**Table 3.1 Maternal satisfaction ratings for pilot study interviews (Mean±SD)**

| Scale | n | Interview A | Interview B | p* |
|---|---|---|---|---|
| **MISS**[a] | 10 | 142±24 | 76±18 | <0.0001 |
| **IPS** | 11 | 71±14 | 30±7 | <0.0001 |
| **MSIPQ** | 11 | 47±14 | 19±4 | <0.0001 |
| **PCB** | 11 | 63±16 | 29±8 | <0.0001 |
| **PCI global** | 11 | 17±5 | 7±3 | <0.0001 |

[a] One mother did not complete the MISS scale

MISS: Medical Interview Satisfaction Scale (Kinnersley et al. 1996)
IPS: Interpersonal Skills Rating Scale (Schnabl et al. 1991)
MSIPQ: Medical Student Interview Performance Questionnaire (Black and Church 1998)
PCB: Physician Communicative Behaviours (Street 1991)
PCI global: Global Patient-Centred Interviewing Measure (Winefield et al. 1996)

*paired t-tests

**Table 3.2 Maternal satisfaction scores for pilot study interviews according to order of viewing (Mean±SD)**

| | Interview A | | | Interview B | | |
|---|---|---|---|---|---|---|
| | First (n=5) | Second (n=6) | p** (n=6) | First (n=5) | Second | p** |
| **MISS** | 133±25 | 151±21 [a] | 0.3 | 86±11[a] | 67±19 | 0.1 |
| **IPS** | 65±14 | 77±11 | 0.1 | 30±10 | 29±4 | 0.9 |
| **MSIPQ** | 42±17 | 51±9 | 0.3 | 19±6 | 19±2 | 1.0 |
| **PCB** | 58±21 | 67±11 | 0.4 | 25±10 | 33±4 | 0.1 |
| **PCI global** | 14±6 | 20±1 | 0.03 | 5±2 | 8±3 | 0.4 |

[a] Due to an incomplete MISS questionnaire, there were 5 mothers in each group for the MISS score comparisons.

MISS: Medical Interview Satisfaction Scale (Kinnersley et al. 1996)
IPS: Interpersonal Skills Rating Scale (Schnabl et al. 1991)
MSIPQ: Medical Student Interview Performance Questionnaire (Black and Church 1998)
PCB: Physician Communicative Behaviours (Street 1991)
PCI global: Global Patient-Centred Interviewing Measure (Winefield et al. 1996)

**unpaired t-test

**Table 3.3 Correlation coefficients between scores from the five evaluation scales used in the pilot study**

| | MISS | IPS | MSIPQ | PCB | PCI global |
|---|---|---|---|---|---|
| **MISS** | 1.00 | | | | |
| **IPS** | 0.82 | 1.00 | | | |
| **MSIPQ** | 0.82 | 0.95 | 1.00 | | |
| **PCB** | 0.73 | 0.95 | 0.96 | 1.00 | |
| **PCI global** | 0.85 | 0.91 | 0.92 | 0.89 | 1.00 |

All comparisons showed significant correlation at a level of $p<0.0001$.

MISS: Medical Interview Satisfaction Scale (Kinnersley et al. 1996)
IPS: Interpersonal Skills Rating Scale (Schnabl et al. 1991)
MSIPQ: Medical Student Interview Performance Questionnaire (Black and Church 1998)
PCB: Physician Communicative Behaviours (Street 1991)
PCI global: Global Patient-Centred Interviewing Measure (Winefield et al. 1996)

**Table 3.4 Number of information statements correctly recalled by mothers for the pilot study (Mean±SD)**

| | Information recall | | |
|---|---|---|---|
| | **Interview A** n=11 | **Interview B** n=11 | **p*** |
| **Diagnostic (5 items)** | 2.6±1.1 | 0.9±0.7 | 0.002 |
| **Management (3 items)** | 2.7±0.5 | 1.6±0.8 | 0.010 |
| **Total (8 items)** | 5.3±1.4 | 2.5±1.2 | 0.002 |

*paired t-test

**Table 3.5 Information recall according to the order of interview viewing (Mean±SD)**

| | Interview A | | | Interview B | | |
|---|---|---|---|---|---|---|
| | **First n=5** | **Second n=6** | **p**** | **First n=6** | **Second n=5** | **p**** |
| **Diagnostic** | 2.2±0.8 | 3.0±1.3 | 0.06 | 0.8±08 | 1.0±0.7 | 0.9 |
| **Management** | 2.6±0.5 | 2.8±0.4 | 0.4 | 1.7±0.5 | 1.4±1.1 | 0.6 |
| **Total** | 4.8±1.3 | 5.8±1.5 | 0.2 | 2.5±1.0 | 2.4±1.5 | 0.7 |

**unpaired t-test

# Chapter 4 The relationships between student clinical competence, patient-centredness, and maternal satisfaction

## 4.1 Introduction

Based on the pilot study, it was expected that maternal satisfaction and recall of information would be highest after an interview in which the student demonstrated high levels of patient-centredness and high levels of clinical competence. Similarly, it was anticipated that maternal satisfaction and recall of information would be lowest after an interview in which the student demonstrated low levels of patient-centredness and low levels of clinical competence. It appeared likely that levels of maternal satisfaction and recall would fall between these extremes for interviews in which the student displayed either high clinical competence and low patient-centredness, or conversely, low clinical competence and high patient centredness.

The aim of this study was to examine the effects of medical student clinical competence and patient-centredness on maternal satisfaction ratings when the levels of clinical competence and patient-centredness were varied separately. By comparing maternal satisfaction and recall following interviews in which student patient-centredness and student clinical competence were varied independently, the relative effects of each of these qualities in child health consultations could be studied.

In addition to the effects of medical student clinical competence and patient-centredness, this study also examined the relationship between maternal satisfaction ratings and:

i) maternal and child characteristics

ii) previous maternal experience of medical student consultations

Among adult patients, greater patient satisfaction with medical consultations is associated with female gender, older patients, higher socioeconomic status and healthier patients (Hall JA et al. 1994a; Law and Britten 1995; Hall et al. 1996; Heffer et al. 1997; al-Doghaither et al. 2000; Derose et al. 2001; Jackson et al. 2001; Katic et al. 2001). Similar information is not currently available for child health consultations. Because only mothers were enrolled in this study, any effects of gender were controlled.

The hypotheses in this study were:

- Maternal satisfaction ratings are greater following interviews in which a medical student demonstrates higher levels of clinical competence and patient-centredness, and these effects are independent.

- Maternal and child characteristics, previous maternal experiences of medical student interviews and the health problems of the child are associated with different maternal satisfaction ratings of videotaped medical student interviews.

The relationship between maternal satisfaction and recall of medical student interviews, and the level of student clinical competence and patient-centredness were studied simultaneously. Results from the maternal satisfaction ratings are described in this chapter, and results describing maternal recall are described in Chapter 5.

## 4.2 Study location and subjects

Mothers of children attending the paediatric consultant medical outpatient clinic at the Women's and Children's Hospital, between March and December 2000 were invited to participate in the study. The Women's and Children's Hospital is the primary tertiary care paediatric facility in Adelaide, South Australia, and is also the principal paediatric teaching hospital of the University of Adelaide. The University Department of Paediatrics coordinates paediatric and child health clinical training for over 450 medical students each year.

Mothers of children with the first appointment of the afternoon clinic were contacted by letter explaining the study aims and procedures. Mothers were approached because they are usually the primary care-givers of children, and to control for any effects of gender in parent responses. Letters were not sent to families where no current address or telephone number was listed, or if there was a security listing on the case file.

Following the initial letter, mothers were contacted by telephone prior to their scheduled appointment. Mothers were ineligible to participate in the study if the mother (or maternal carer) was not attending the appointment with the child, if the mother was not proficient in spoken and written English, if telephone contact was not successful, if the mother had not received the initial letter, or if the child's appointment subsequently was cancelled.

Mothers who agreed to participate in this study were asked to attend the outpatient clinic 45 minutes before their child's appointment time. The first appointment of the clinic had been selected so that the clinic waiting area was unoccupied by other

patients during the videotape screenings. Each mother was asked to watch 2 of the 4 study videotapes. The selection of videotapes and order of viewing for each session was determined by random allocation using a balanced incomplete block design (Cox 1958). Table 4.1 shows the 12 possible combinations of interview videotape pairs.

Once verbal consent to participate in the study was obtained by telephone, mothers were allocated to one of the six rows shown in Table 4.1 by throwing a die. Column allocation was then made by tossing a coin with heads indicating the left column, and tails the right. For example, if the die throw result was '1', the mother was allocated to view the HCHP and the LCLP interview videotapes. The order of viewing was then determined by a further coin toss to either 'Heads' (HCHP first then LCLP), or 'Tails' (LCLP first then HCHP). If more than one mother was attending the same videotape screening (that is had an appointment at the same time), random allocation was made only once for the session.

Power calculations based on results obtained from the pilot study indicated that a minimum of four mothers should evaluate each pair of videotapes (80% power to demonstrate a difference of half a standard deviation at $p<0.05$) (Armitage and Berry 1987). Recruitment of mothers continued until a total of 60 mothers were enrolled with five mothers in each group of videotape pairs.

## 4.3 Methods

The four interview videotapes (HCHP, HCLP, LCHP, LCLP) developed from the pilot study videotapes (A and B) (Section 2.3.2) were used in this study. The videotapes, whilst differing in the details of student dialogue, had almost identical maternal dialogue and clinical content.

### 4.3.1 Videotape screenings

The videotaped interviews were screened on a television monitor in the outpatient clinic waiting area so that the children could play with the toys provided. As in the pilot study, videotapes were immediately preceded by a pre-recorded orientation videotape, in which participating mothers were encouraged to imagine themselves as the 'mother' in the videotape.

Each videotape ran for approximately 7 minutes. Mothers viewed the first interview then rated that interview at its completion. They then viewed the second interview and rated that interview at its completion. Questionnaire completion by mothers after each videotape took approximately 15 minutes. The mothers could not re-view the videotapes.

### 4.3.2 Measures

As there was a high level of correlation between scores on the five scales used in the pilot study, two of the five scales from that study were selected for this study. These were the Medical Interview Satisfaction Scale (MISS), consisting of 29-items and scored using a 7-point response scale (Wolf et al. 1978; Kinnersley et al. 1996); and the Interpersonal Skills Rating Scale (IPS), consisting of 13-items and scored using a 7-point response scale (Schnabl et al. 1991). These two scales were selected because mothers had previously found them straightforward to use, and because they focussed on aspects of interview skills that were particularly relevant to medical students rather than qualified, experienced doctors. As previously, minor adjustments were made to each of the two scales by substituting the words 'medical

student' for 'doctor', and 'your child' for 'you' to ensure that the questions were relevant to the situation portrayed in the videotapes.

Following the second videotape, mothers were asked to state a preference for one of the two videotapes they had viewed, and were then asked their reasons for their preference. Mothers were offered the eight reasons recorded by mothers in the pilot study, and were asked to nominate which of these, if any, influenced their choice of videotape. In addition, mothers were able to describe any other reasons for their choice of one particular videotape over another.

Information was sought regarding maternal and child characteristics, and whether mothers had ever actually been interviewed about their child by a medical student. If a mother had been interviewed previously by a medical student, she was asked to rate this experience using a 7 point scale from 1-excellent to 7-poor. Mothers also completed the 4-item realism scale that was used in the pilot study. In this study mothers rated the realism of the videotape portrayals after each videotaped interview.

### 4.3.3 Statistical analyses

MISS, IPS and realism scores were compared for all 60 mothers across the four interview types, and when stratified according to either clinical competence or patient-centredness. The MISS, IPS and realism scores for each interview when viewed first were compared with scores reported when it was viewed as the second interview. Similarly, MISS, IPS and realism scores for all four interviews in each of the three possible combinations of pairings with the other interviews were compared. MISS and IPS scores were also compared according to a number of child characteristics (for example age, gender, siblings) and maternal characteristics (for

example previous experience of medical student interviews, occupational prestige and education).

Statistical comparisons of maternal scores (continuous variable) across all four interview types were made using Analysis of Variance (ANOVA). Paired comparisons of interview scores were tested for statistical significance using either paired or unpaired t-tests. For all comparisons the significance level was 0.05.

The relationships between maternal MISS and IPS scores were reviewed with scatter-plots. Pearsons correlation coefficients were calculated to determine the degree of correlation between scores on these scales.

Categorical variables relating to child characteristics between participating and nonparticipating mothers were compared using the Chi-square test.

## 4.4 Results

### 4.4.1 Enrolment

Letters were sent to 126 consecutive eligible mothers with subsequent telephone contact. Sixty-nine mothers agreed to participate (55%), and 57 declined (45%) usually citing work commitments, child related factors (other young children, medical or school needs), or that participation was not convenient for them on the particular day of their appointment. Nine mothers agreed to participate, but did not attend on the day of the videotape screening, or arrived too late to complete the study requirements, leaving the 60 participating mothers initially sought. There were no significant differences between the children of participating and nonparticipating mothers regarding gender, age or medical reason for the clinic attendance (Table

4.2). Of the participating mothers, 58 were the natural mother of the child attending the outpatient clinic, there was one foster mother and one grandmother.

There were 48 separate videotape screenings. The maximum number of mothers able to attend any one screening was three. Thirty-eight mothers watched their allocated videotapes alone, 16 watched their allocated videotapes with one other mother, and 6 mothers watched their videotapes in a group of three mothers. No discussion was permitted between the mothers regarding the videotape content if more than one mother was present.

### 4.4.2 Videotape realism

The mean±SD maternal rating of the realism of the four videotape interview recreations was 18.1 ±1.8 (maximum achievable score =20, minimum =4, with a higher score indicating greater realism). There were no significant differences between realism ratings by mothers for each of the four videotapes in the study;

HCHP 18.5 ±2.0

HCLP 18.5±1.5

LCHP 18.0±2.2

LCLP 17.6±3.0 ($F= 1.3$, $p = 0.28$)

Mean maternal realism scores were also not significantly different when first and second interview scores were compared (Table 4.3), nor if mothers had previous experience of medical student interviews (Table 4.4).

### 4.4.3 Maternal satisfaction ratings

The mean MISS and IPS scores for the total 120 maternal ratings are shown in Table 4.5. Maternal scores for each interview pairings were compared together with the mean differences between the scores to determine the main effects of clinical competence and patient-centredness (Table 4.6). Significant effects of clinical competence and patient-centredness were observed with both MISS and IPS scores. These effects appeared to be largely independent. When comparing the mean differences, the main effect of clinical competence was three times that observed with patient-centredness for MISS scores, and twice that observed with patient-centredness for IPS scores.

The distribution of maternal scores for the MISS and IPS scales are shown in Figures 4.1-4.4, with mean scores for the first interview and second interviews presented in Table 4.7. MISS and IPS scores after stratifying each interview by clinical competence, and then by patient-centredness are also shown, together with the total mean scores for interview 1 compared to those for interview 2. The effect of clinical competence was more consistently and strongly associated with maternal satisfaction ratings then was the effect of patient centredness when each was considered separately.

Although scores for each scale were not completely normally distributed, the use of a 7-point scale prevented any major outlying results. T-tests and ANOVA are known to be fairly robust statistical measures in these situations. For both the MISS and the IPS scales following the second interview, maternal scores show a right skew in their distribution which was not evident after the first interview. The differences in distributions between the first and second interviews suggests that viewing the first interview had an effect on subsequent maternal ratings.

Although, for individual interviews, no significant differences in maternal MISS or IPS scores were observed when first and second interview scores were compared, mean scores for the second interviews were always higher. The rank order however of scores was unchanged. There were no significant differences observed between scores for any of the particular pairings of the interviews. For example, the scores for the HCHP interview were the same whether it was seen after the HCLP, LCHP or LCLP interviews (Table 4.8).

Scatter-plots of the MISS and IPS scores following both the first and second interviews are shown in Figure 4.5. (Pearson Correlation Coefficients =0.93 after both interviews, $p<0.0001$).

The ranking of interviews according to the stated maternal preferences for one interview of each pair, was the same as the rankings of interviews observed with the maternal satisfaction scores. The HCHP interview was preferred most often (25 of a possible 30 mothers) and LCLP least often (4 of a possible 30 mothers), with the other two interviews between these (HCLP 16 mothers, LCHP 15 mothers). The reasons selected by mothers to explain their preferences were similar to those observed elsewhere (Smith et al. 1999). Mothers identified the following reasons for their preferences. Mothers were able to select more than one reason.

| | |
|---|---|
| better student interpersonal skills | 50 mothers |
| more information provided | 42 mothers |
| more caring | 34 mothers |
| more medical knowledge | 30 mothers |
| treated me as an equal | 32 mothers |
| listened more | 50 mothers |

| | |
|---|---|
| more confident | 42 mothers |
| included my opinions | 44 mothers |

In addition, 30 mothers further comments. These comments were amplifications of the above categories with particular emphases on:

| | |
|---|---|
| better listening | 10 mothers |
| more sympathetic and reassuring manner | 7 mothers |
| more professional | 6 mothers |
| better explanation | 4 mothers |

### 4.4.4 Maternal and child characteristics

Maternal satisfaction scores for the interview videotapes on both the MISS and IPS scales were compared according to the following maternal and child characteristics:

- the gender of the child attending the outpatient appointment
- the age of the child attending the outpatient appointment.
- the number of siblings in the child's family
- the age of the youngest child in the household
- the family structure
- maternal occupational prestige
- maternal education
- the health condition of the child who required the outpatient attendance.
- previous maternal experience of medical student interviews

(Tables 4.9-4.18).

Significant differences were noted in the mean scores of maternal MISS and IPS scores according to the child's health condition, maternal occupational prestige and previous maternal experience of medical student interviews. The MISS and IPS scores of mothers of children with complex medical conditions were lower after the second interview than were the scores of mothers of other children. MISS and IPS scores of mothers of low occupational prestige (based on stated maternal occupation) after the first interview were lower than those of the other mothers. Scores were also lower after the first interview for mothers who had previously been interviewed by a medical student about their child.

There was a general trend observed where maternal satisfaction ratings were higher after the second interview. These differences were statistically significant with both the MISS and IPS scores for particular groups of mothers. These groups were mothers of female children, one child families, children aged between 3 and 8 years, and children with respiratory or neurological illnesses, mothers of middle occupational prestige, mothers from two parent families, mothers who did not complete secondary education, and mothers with previous experience of medical student interviews (Table 4.19). A number of comparisons were required to examine these relationships which increased the likelihood that some observed associations may have represented chance significant findings. However, even if a p value of 0.01 is adopted rather than 0.05 to decrease this likelihood, the observed differences remain significant for mothers of female children, one child families, children with respiratory or neurological illnesses, mothers of middle occupational prestige, mothers from two parent families, and mothers with previous experience of medical student interviews.

Mothers were asked to rate any previous experiences of medical student medical interviews from 1-excellent to 7- poor. There was no significant relationship observed

between these maternal ratings of past experiences, and either the MISS or IPS scores recorded following the videotapes in this study (Table 4.20).

## 4.5 Discussion

This study sought to establish the relative effect on maternal satisfaction ratings of medical student clinical competence and patient-centredness. The methods used were the same as were used in the pilot study with the following refinements:

i) Four videotaped interviews were used to enable clinical competence and patient-centredness to be studied separately
ii) Mothers were randomly allocated to viewing groups
iii) A professional actor portrayed the medical student
iv) The questionnaire length was shortened

Maternal interview ratings were higher after a more competent interview, and after a more patient-centred interview. There were significant and independent effects of both clinical competence and patient-centredness, with mothers valuing clinical competence more highly. The effects of clinical competence on maternal ratings of student interpersonal skills, and on maternal satisfaction ratings, were present at both high and low levels of patient-centredness. The effects of patient-centredness after controlling for clinical competence were more variable.

Mean maternal ratings for both the MISS and the IPS scales were significantly higher after the second interview. This confirmed the trend observed in the pilot study for second interview ratings to be higher, but was not explained by any of the particular combinations of interviews seen by the mothers. Although the number of mothers viewing each interview pair was small, the balanced incomplete block design

employed for this study ensured all groups had equal numbers of subject mothers so no particular interview combination had a greater influence on the results than the others. The increase in the ratings observed following the second interview most probably represents a calibration or learning effect.

When MISS and IPS scores were compared according to child and maternal characteristics, three patterns emerged. Firstly, mothers of low occupational prestige and mothers with previous experience of medical student interviews had lower mean satisfaction scores after the first medical student interview than the other mothers. Secondly, one group of mothers (of children with a complex medical problem) had mean satisfaction scores following the second interview that were significantly lower than the second interview scores of the other mothers. Thirdly, certain groups of mothers showed a significant increase in their satisfaction ratings of the second interview as compared with their ratings for the first interview, apparently using the first interview to calibrate their perceptions.

The relationship observed between maternal satisfaction and both maternal occupational prestige and the health problem of the child is consistent with previous observations in adult patients where higher socioeconomic status and better health are associated with higher levels of patient satisfaction (Woolliscroft et al. 1994; Hall et al. 1996; Heffer et al. 1997; al-Doghaither et al. 2000; Jackson et al. 2001). The reason for a calibration effect in the ratings of some mothers was not explained. Except for mothers of children with complex medical conditions, the calibration effect was positive and resulted in higher maternal satisfaction ratings following a second medical student interview videotape. The satisfaction ratings of mothers with previous experience of real medical student interviews following the first videotape interview were lower than were the satisfaction ratings of other mothers. This group

of mothers may have formed different expectations of the videotape interviews prior to viewing, therefore rating the first one more severely than had the other mothers.

Whether mothers providing evaluations of medical student interviews should view one or more calibration interview videotapes first to reduce the impact of this order effect is an important issue. The amount of time required to provide evaluations of student interviews has already been identified as an impediment for a number of mothers and the addition of calibration interviews would increase the imposition on mothers.

The non-participation rate for mothers in this study was 45% and possible factors contributing to this were considered. Mothers were asked to attend for an additional 45 minutes prior to their child's appointment. This was a considerable imposition, especially on mothers with other young children, children with acute medical needs, and mothers taking time off work to attend the medical appointment. Mothers were also concerned at the extra school time that would have been lost for the older children. Previous studies of patient evaluations have reported similar participation rates to those observed in this study (Woolliscroft et al. 1994; Kinnersley et al. 1996; Black and Church 1998; Haddad et al. 2000). Future development of methods for obtaining patient perceptions of doctor or medical student interview skills will need to address these difficulties as the quality of the doctor or student's skills may be particularly important when mothers are rushed and possibly distracted.

Participating mothers were very supportive of the study aims, and a number of the mothers unable to participate on their designated day indicated a desire to participate at another time.

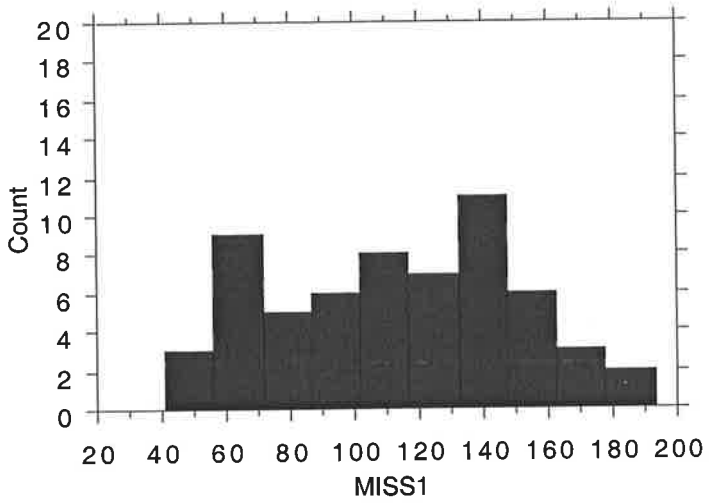
## 4.6 Conclusions

Maternal ratings clearly differentiated between the four interviews. Mothers, as active participants in medical consultations can provide evaluations of medical student clinical competence and patient-centredness. The extent to which mothers in this study valued clinical competence was unexpected. Assessment of clinical competence is traditionally the province of the professional, not the consumer, who by implication is assumed to be less skilled in this area.

Differences in the satisfaction rating scores for the medical student interview videotapes were observed in association with certain maternal and child characteristics consistent with observations in adult patients. In addition, a calibration effect was observed with some groups of mothers rating the second interview videotape more highly than the first.

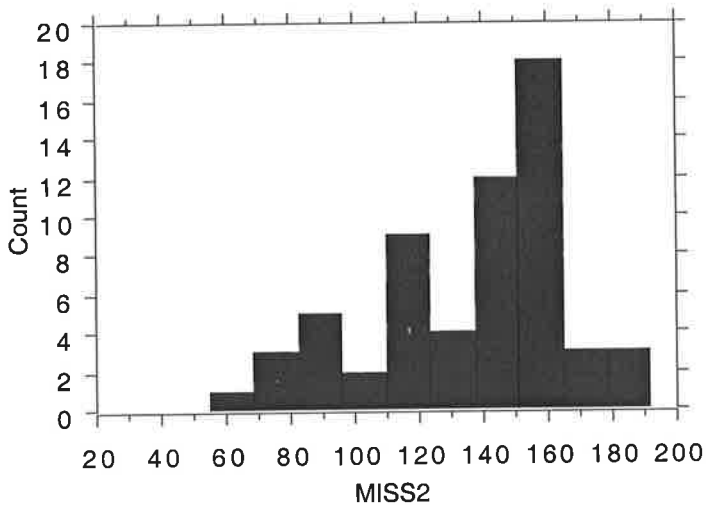
The time required to provide evaluations of medical student interviews was identified by mothers as a significant impediment to their participation in this study.

**Figure 4.1 Distribution of MISS scores for interview 1 (n=60)**



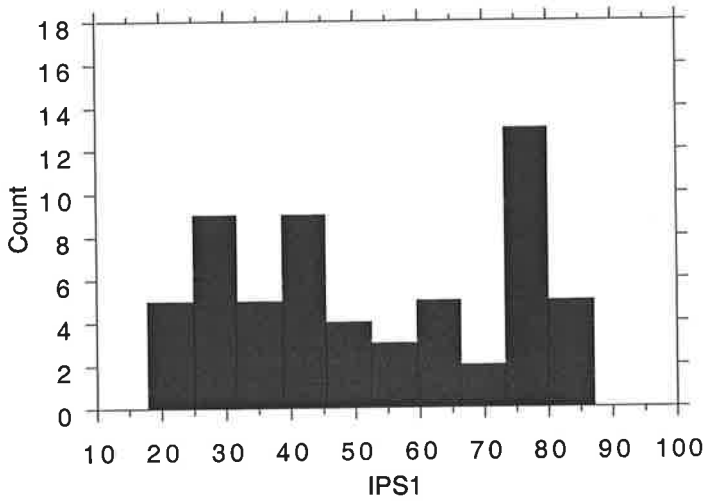

Count: number of mothers
MISS 1: Maternal MISS scores after interview 1

**Figure 4.2 Distribution of MISS scores for interview 2 (n=60)**



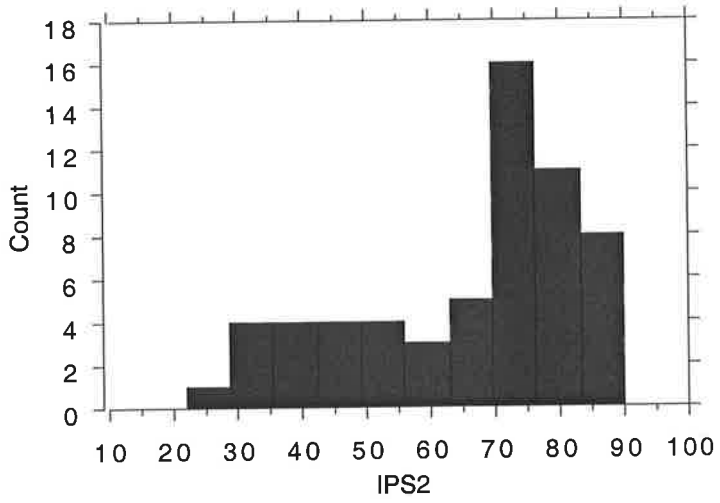

Count: number of mothers
MISS2: maternal MISS scores after interview 2

**Figure 4.3 Distribution of IPS scores for interview 1 (n=60)**



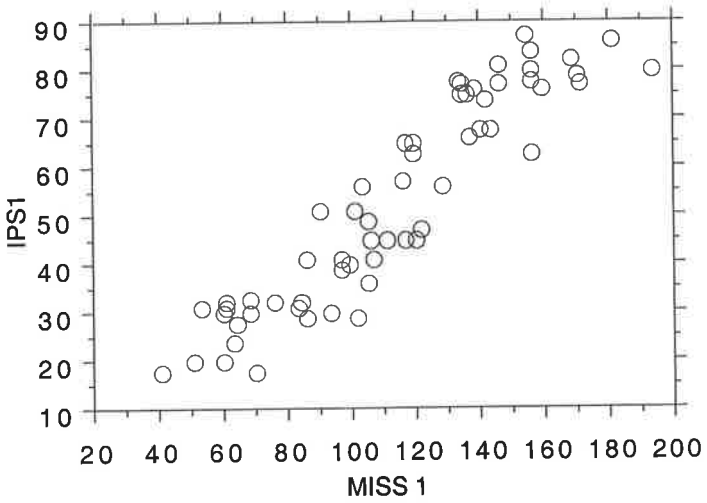

Count: number of mothers
IPS1: maternal IPS scores after interview 1

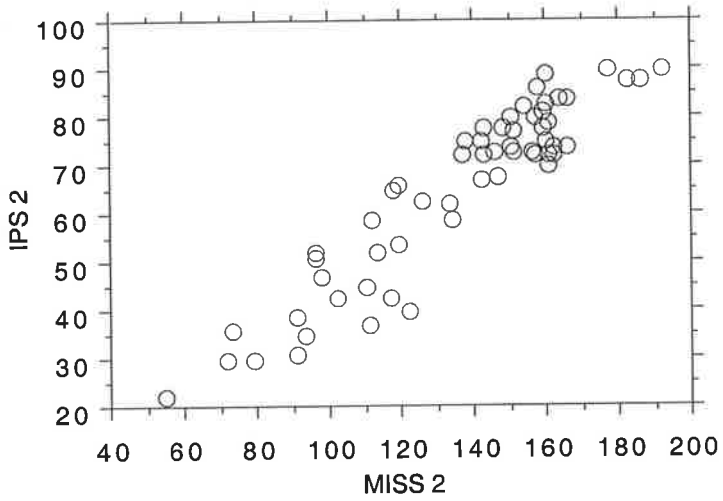
**Figure 4.4 Distribution of IPS scores for interview 2 (n=60)**




Count: number of mothers
IPS2: maternal IPS scores after interview 2

**Figure 4.5 Scatterplots of MISS and IPS scores for interviews 1 and 2**




| | |
|---|---|
| MISS 1 | Maternal MISS scores after interview 1 |
| MISS 2 | Maternal MISS scores after interview 2 |
| IPS 1 | Maternal IPS scores after interview 1 |
| IPS 2 | Maternal IPS scores after interview 2 |

Correlation coefficient = 0.093, $p<0.0001$ for both interviews

**Table 4.1 Allocation of mothers to videotape pairings**

| | | Coin toss result | |
|---|---|---|---|
| | | Heads | Tails |
| Die throw result | 1 | HCHP/LCLP | LCLP/HCHP |
| | 2 | HCHP/HCLP | HCLP/HCHP |
| | 3 | LCHP/LCLP | LCLP/LCHP |
| | 4 | HCHP/LCHP | LCHP/HCHP |
| | 5 | HCLP/LCLP | LCLP/HCLP |
| | 6 | HCLP/LCHP | LCHP/HCLP |

Mothers were initially allocated to view a pair of videotapes following a die throw (row 1-6). Subsequently a coin toss determined the order of viewing of the selected videotape pair with the first interview of each pair listed screened first. A throw of 1 and a subsequent coin toss result of heads would assign the mother to viewing the HCHP interview first, followed by the LCLP interview.

**Table 4.2 Comparison of child characteristics of participating and non-participating mothers.**

| Child | Mothers: Participating[a] n=60 | (%) | Mothers: Non-participating n=57 | (%) |
|---|---|---|---|---|
| **Gender** | | | | |
| **Male** | 37 | (62) | 37 | (65) |
| **Female** | 23 | (38) | 20 | (35) |
| $X^2$=0.13, df 1, p=0.85 (Fisher's exact method) | | | | |
| **Age in years (Mean±SD)** p=0.16** | 6.4±4.9 | | 5.1±3.9 | |
| **Reason for clinic attendence** | **n=60** [b] | | **n=42**[c] | |
| **Developmental/behavioural** | 10 | (16) | 13 | (31) |
| **Renal** | 7 | (12) | 4 | (10) |
| **Neurological** | 6 | (10) | 4 | (10) |
| **Respiratory** | 24 | (40) | 10 | (23) |
| **Gastro-intestinal/nutritional** | 4 | ( 7) | 6 | (14) |
| **Complex medical condition** | 9 | (15) | 5 | (12) |
| $X^2$=5.9, df 5, p=0.31 | | | | |

[a] Nine mothers who agreed to participate did not attend on the day of the videotape screenings or were too late to complete the study requirements and were therefore excluded from the study.
[b] Reasons for the clinic attendance was obtained from mothers in the questionnaire.
[c] Reasons for the clinic attendance were obtained from the casenotes. This information was not available for 15 children.

**unpaired t-test

**Table 4.3 Maternal realism ratings by order of viewing (Mean±SD)**

| Interview | Order of viewing | | p** |
|---|---|---|---|
| | First n=15 | Second n=15 | |
| HCHP | 18.6±2.3 | 18.5±1.7 | 0.86 |
| HCLP | 18.2±1.5 | 18.8±1.4 | 0.27 |
| LCHP | 17.3±2.5 | 18.7±1.7 | 0.09 |
| LCLP | 17.1±3.0 | 18.1±2.9 | 0.37 |

**unpaired t-test

**Table 4.4 Maternal realism ratings by past maternal experience of medical student interviews (Mean±SD)**

| | Previous student interview | | |
|---|---|---|---|
| | **No** | **Yes** | **p**** |
| **HCHP** | 18.3±2.5<br>n=15 | 18.8±1.4<br>n=15 | 0.47 |
| **HCLP** | 17.9±1.7<br>n=13 | 19.0±1.2<br>n=17 | 0.06 |
| **LCHP** | 17.9±2.1<br>n=11 | 18.0±2.4<br>n=19 | 0.92 |
| **LCLP** | 16.9±3.4<br>n=11 | 17.9±2.7<br>n=18[a] | 0.37 |

[a] One maternal response was missing

** unpaired t-test

**Table 4.5 Maternal MISS and IPS scores (n=30) (Mean±SD)**

| | Maternal scores | |
|---|---|---|
| | **MISS** | **IPS** |
| **HCHP** | 155±17 | 78±7 |
| **HCLP** | 143±24 | 68±14 |
| **LCHP** | 109±33 | 53±20 |
| **LCLP** | 90±24 | 38±12 |
| | F = 42.1<br>p <0.0001[#] | F = 49.3<br>p<0.0001[#] |

[#]ANOVA

**Table 4.6 Mean differences in maternal MISS and IPS scores**

| | MISS | | IPS | |
|---|---|---|---|---|
| **Interview** | **MD** | **p**** | **MD** | **p**** |
| **HCHP vs HCLP** | 12 | 0.03 | 10 | 0.0007 |
| **LCHP vs LCLP** | 19 | 0.01 | 15 | 0.0009 |
| **HCLP vs LCHP** | 34 | <0.0001 | 16 | 0.0008 |
| **HCHP vs LCHP** | 46 | <0.0001 | 26 | <0.0001 |
| **HCLP vs LCLP** | 53 | <0.0001 | 31 | <0.0001 |
| **HCHP vs LCLP** | 64 | <0.0001 | 41 | <0.0001 |

**MD** Mean difference

** unpaired t-test

**Table 4.7 Maternal MISS and IPS scores (Mean±SD)**

| | Interview 1 | | Interview 2 | |
|---|---|---|---|---|
| | MISS | IPS | MISS | IPS |
| HCHP (n=15) | 150±18 | 77± 7 | 160±16 | 80± 7 |
| HCLP (n=15) | 130±26 | 60±14 | 156±11 | 77± 7 |
| LCHP (n=15) | 91± 30 | 42±20 | 127±24 | 63±14 |
| LCLP (n=15) | 80± 21 | 32± 7 | 101±23 | 43±13 |
| | F=27.06 p<0.0001# | F=34.84 p<0.0001# | F=30.66 p<0.0001# | F=35.40 p<0.0001# |
| Total Mean (n=60) | 113±37 | 53±21 | 136±31 | 66±18 |
| Interview 1 MISS vs Interview 2 MISS | | p*<0.001 | | |
| Interview 1 IPS vs Interview 2 IPS | | p*=0.001 | | |
| Effect of patient-centredness controlling for clinical competence | | | | |
| HCHP vs HCLP | p**=0.02 | p**=0.002 | p**=0.43 | p**=0.26 |
| LCHP vs LCLP | p**=0.25 | p**=0.08 | p**=0.005 | p**=0.0004 |
| Effect of clinical competence controlling for patient-centredness | | | | |
| HCHP vs LCHP | p**<0.0001 | p**<0.0001 | p**=0.001 | p**=0.0004 |
| HCLP vs LCLP | p**=0.0001 | p**<0.0001 | p**<0.0001 | p**<0.0001 |

#ANOVA
* paired t-test
**unpaired t-test

**Table 4.8 maternal interview 2 MISS and IPS scores (Mean±SD)**

| | Interview 2 scores | |
|---|---|---|
| | **MISS** | **IPS** |
| **HCHP following:** | | |
| **HCLP (n=15)** | 165±21 | 81±9 |
| **LCHP (n=15)** | 154±8 | 78±3 |
| **LCLP (n=15)** | 160±16 | 80±9 |
| | F=0.65 | F=0.25 |
| | p=0.54# | p=0.78# |
| **HCLP following:** | | |
| **HCHP (n=15)** | 156±7 | 78±7 |
| **LCHP (n=15)** | 156±9 | 78±2 |
| **LCLP (n=15)** | 157±16 | 74±10 |
| | F=0.01 | F=0.45 |
| | p=0.99 # | p=0.65# |
| **LCHP following:** | | |
| **HCHP (n=15)** | 135±17 | 67±6 |
| **HCLP (n=15)** | 124±28 | 60±18 |
| **LCLP (n=15)** | 122±29 | 62±17 |
| | F=0.41 | F=0.25 |
| | p=0.67# | p=0.78# |
| **LCLP following:** | | |
| **HCHP (n=15)** | 102±20 | 41±10 |
| **HCLP (n=15)** | 113±23 | 48±17 |
| **LCHP (n=15)** | 88±23 | 41±13 |
| | F=1.7 | F=0.41 |
| | p=0.23 # | p=0.67# |

For each interview, maternal rating scores are compared by ANOVA according to which of the other three interviews was seen immediately before it as the first interview. For example, with the HCHP interview when it was seen as the second interview, maternal scores were compared for this interview according to whether it had been preceded by the HCLP interview, the LCHP or the LCLP interview.

#ANOVA

**Table 4.9 Maternal MISS and IPS scores by child gender (Mean±SD)**

| | Child gender | | |
|---|---|---|---|
| | **Male n=37** | **Female n=23** | **p**** |
| **MISS 1** | 116±40 | 108±31 | 0.4 |
| **MISS 2** | 137±31 | 134±30 | 0.5 |
| **IPS 1** | 56±22 | 47±19 | 0.1 |
| **IPS 2** | 66±19 | 65±17 | 0.9 |
| **MISS 1 vs MISS 2** | p*=0.03 | p*=0.006 | |
| **IPS 1 vs IPS 2** | p*=0.07 | p*=0.003 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

*paired t-test
**unpaired t-test

**Table 4.10 Maternal MISS and IPS scores by child age (Mean±SD)**

| | Child age | | | |
|---|---|---|---|---|
| | **0-2 years n=20** | **3-8 years n=21** | **9-16 years n=19** | **p#** |
| **MISS 1** | 109±37 | 113±38 | 116±38 | 0.9 |
| **MISS 2** | 135±34 | 145±28 | 127±28 | 0.2 |
| **IPS 1** | 51±20 | 52±20 | 55±25 | 0.8 |
| **IPS 2** | 63±19 | 69±17 | 64±18 | 0.5 |
| **MISS 1 vs MISS 2** | p*=0.02 | p*=0.02 | p*=0.4 | |
| **PS 1 vs IPS 2** | p*=0.06 | p*=0.02 | p*=0.2 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

The age range of attending children was 0-16 years. Child ages were categorised into one of three groups:

0-2 years Included children up to the approximate age of the child in the videotaped interviews.

3-8 years Children who were older than the videotaped interview child, however still young enough to be encountering similar childhood illness as depicted in the videotapes.

9-16 years Older age group children.

#ANOVA
*paired t-test

**Table 4.11 Maternal MISS and IPS scores by number of siblings (Mean±SD)**

| | Number of siblings | | | |
|---|---|---|---|---|
| | **0 n=23** | **1 n=24** | **2 or more n=13** | **p#** |
| **MISS 1** | 116±38 | 108±33 | 116±44 | 0.9 |
| **MISS 2** | 149±27 | 124±32 | 137±27 | 0.9 |
| **IPS 1** | 55±22 | 49±20 | 56±24 | 0.1 |
| **IPS 2** | 72±16 | 58±19 | 68±16 | 0.3 |
| **MISS 1 vs MISS 2** | p*=0.001 | p*=0.2 | p*=0.3 | |
| **IPS 1 vs IPS 2** | p*=0.003 | p*=0.2 | p*=0.2 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

#ANOVA
*paired t-test

**Table 4.12 Maternal MISS and IPS scores by age of the youngest child in the household (Mean±SD)**

| | Age of youngest sibling | | | |
|---|---|---|---|---|
| | **0-2 years n=26** | **3-8 years n=20** | **9-16 years n=14** | **p#** |
| **MISS 1** | 108±36 | 121±39 | 110±36 | 0.5 |
| **MISS 2** | 137±33 | 139±31 | 131±27 | 0.8 |
| **IPS 1** | 50±19 | 55±22 | 54±25 | 0.2 |
| **IPS 2** | 65±18 | 65±20 | 69±15 | 0.8 |
| **MISS 1 vs MISS 2** | p*=0.004 | p*=0.2 | p*=0.4 | |
| **IPS 1 vs IPS 2** | p*=0.06 | p*=0.02 | p*=0.2 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

The same age categories as were used to group the age range of attending children in Table 4.11 were used to group the age of the youngest sibling, 0-2 years, 3-8 years, 9-16 years.

#ANOVA
* paired t-test

**Table 4.13 Maternal MISS and IPS scores by child's health condition (Mean±SD)**

| | | Child's health condition | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 n=10 | 2 n=7 | 3 n=6 | 4 n=24 | 5 n=4 | 6 n=9 | p# |
| **MISS 1** | | 111±35 | 121±41 | 92±33 | 105±31 | 158±18 | 124±48 | 0.07 |
| **MISS 2** | | 133±35 | 131±26 | 150±19 | 146±26 | 151±12 | 102±31 | 0.004 |
| **IPS 1** | | 55±19 | 53±26 | 39±17 | 51±19 | 80±3 | 53±27 | 0.1 |
| **IPS 2** | | 62±22 | 65±20 | 73±11 | 71±14 | 77±4 | 48±19 | 0.01 |
| **MISS 1 vs MISS 2** | p*= | 0.3 | 0.7 | 0.009 | <0.0001 | 0.3 | 0.3 | |
| **IPS 1 vs IPS 2** | p*= | 0.6 | 0.5 | 0.01 | <0.0001 | 0.3 | 0.6 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

#ANOVA
*paired t-test

**Classification of health problems**
1 Developmental
2 Renal
3 Neurological
4 Respiratory
5 Gastrointestional
6 Complex

**Table 4.14 Maternal MISS and IPS scores by family structure (Mean±SD)**

| | Family structure | | | |
|---|---|---|---|---|
| | **2 natural parents n=37** | **Step-blended[a] n=7** | **Single mother n=15** | **p[#]** |
| **MISS 1** | 106±33 | 137±36 | 116±44 | 0.1 |
| **MISS 2** | 136±33 | 133±27 | 138±27 | 0.9 |
| **IPS 1** | 50±20 | 56±19 | 57±27 | 0.5 |
| **IPS 2** | 66±19 | 62±21 | 67±17 | 0.8 |
| **MISS 1 vs MISS 2** | p*=0.0005 | p*=0.9 | p*=0.2 | |
| **IPS 1 vs IPS 2** | p*=0.001 | p*=0.7 | p*=0.3 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

[a] Families with a natural mother and a defacto father.

One child lived with a foster mother and family and was omitted from this analysis.

[#]ANOVA
*paired t-test

**Table 4.15 Maternal MISS and IPS scores by maternal occupational prestige (based on stated maternal occupation) (Mean±SD)**

| | Maternal occupational prestige | | | |
|---|---|---|---|---|
| | **Middle n=28** | **Low n=5** | **Homeduties n=23** | **p#** |
| **MISS 1** | 106±35 | 81±19 | 134±39 | 0.03 |
| **MISS 2** | 133±31 | 112±37 | 144±2 | 0.08 |
| **IPS 1** | 49±20 | 32±5 | 60±21 | 0.01 |
| **IPS 2** | 64±19 | 54±20 | 69±16 | 0.2 |
| **MISS 1 vs MISS 2** | p*=0.007 | p*=0.2 | p*=0.1 | |
| **IPS 1 vs IPS 2** | p*=0.01 | p*=0.05 | p*=0.2 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

Maternal occupational prestige levels were derived from stated maternal occupation according to the criteria described by Daniel (1983). Only 1 mother was categorised as high socioeconomic status and these data were not included in the analysis. 3 mothers did not state their occupation and were omitted from the analysis.

#ANOVA
*paired t-test

**Table 4.16 Maternal MISS and IPS scores by maternal occupational prestige (based on maternal occupation, paternal occupation and maternal education) (Mean±SD)**

| | Maternal occupational prestige | | | |
|---|---|---|---|---|
| | **High n=3** | **Middle n=43** | **Low n=13** | **p#** |
| **MISS 1** | 151±45 | 110±36 | 107±37 | 0.2 |
| **MISS 2** | 131±27 | 139±31 | 131±30 | 0.2 |
| **IPS 1** | 71±13 | 53±21 | 46±20 | 0.7 |
| **IPS 2** | 55±21 | 67±18 | 64±17 | 0.4 |
| **MISS 1 vs MISS 2** | p*=0.7 | p*=0.0007 | p*=0.07 | |
| **IPS 1 vs IPS 2** | p*=0.5 | p*=0.003 | p*=0.2 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

Maternal occupational prestige levels in table 4.15 were derived from stated maternal occupation. Because there were a large number of 'homeduties' mothers, a second comparison was made where paternal occupation was used to derive maternal occupational prestige where no maternal occupation was stated. For five sole parent mothers, maternal education was used to derive maternal occupational prestige. One mother did not provide any information regarding either herself or her child's father and was omitted from the analysis.

#ANOVA
*paired t-test

**Table 4.17 Maternal MISS and IPS scores by maternal education (Mean±SD)**

| | Highest level of maternal education | | | | |
|---|---|---|---|---|---|
| | **Some secondary n=19** | **Secondary completed n=15** | **Trade qualification n=9** | **Tertiary education n=15** | **p#** |
| **MISS 1** | 108±34 | 108±34 | 131±43 | 109±40 | 0.4 |
| **MISS 2** | 138±30 | 133±36 | 133±35 | 139±25 | 0.9 |
| **IPS 1** | 51±22 | 49±20 | 65±21 | 49±21 | 0.3 |
| **IPS 2** | 68±16 | 63±22 | 63±19 | 68±17 | 0.8 |
| **MISS 1 vs MISS 2** | p*=0.02 | p*=0.05 | p*=0.9 | p*=0.05 | |
| **IPS 1 vs IPS 2** | p*=0.02 | p*=0.09 | p*=0.8 | p*=0.04 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

Two mothers did not state their education and these data were omitted from the analysis.

#ANOVA
*paired t-test

**Table 4.18 Maternal MISS and IPS scores by previous medical student interview (Mean±SD)**

| | Previous interview | | |
|---|---|---|---|
| | **No n=25** | **Yes n=35** | **p#** |
| **MISS 1** | 129±29 | 101±38 | 0.003 |
| **MISS 2** | 132±29 | 139±32 | 0.4 |
| **IPS 1** | 61±19 | 47±21 | 0.008 |
| **IPS 2** | 63±18 | 68±18 | 0.4 |
| **MISS 1 vs MISS 2** | p*=0.7 | p*=0.0001 | |
| **IPS 1 vs IPS 2** | p*=0.7 | p*=0.0002 | |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

#ANOVA
*paired t-test

**Table 4.19 Summary of maternal and child characteristics associated with significant order effects**

Second interview MISS and IPS scores were significantly higher after the second interview for the mothers in the following groups:

**Child Characteristics**

- Male (MISS only)
- Female
- Age under 2 years (MISS only)
- Age 3-8 years
- No siblings
- Youngest child in the household under 2 years (MISS only)
- Youngest child in the household 3-8 years (IPS only)
- Neurological illness
- Respiratory illness

**Maternal characteristics**

- 2 parent family
- Middle occupational prestige
- Some secondary schooling only
- Tertiary education (IPS only)
- Previous medical student interview

No differences were noted between first and second interview MISS and IPS scores for mothers in the following groups:

**Child characteristics**

- Age 9-16 years
- One or more siblings
- Youngest child in the household over 8 years of age
- Developmental, renal, gastrointestinal or complex medical illness

**Maternal characteristics**

- Blended-step or single mother family
- Low occupational prestige
- Home duties
- High occupational prestige
- Education to at least completion of secondary schooling
- No previous experience of medical student interviews

**Table 4.20 Correlation between MISS, IPS and maternal ratings of previous medical student interviews**

| | MISS 1 | MISS 2 | IPS 1 | IPS 2 |
|---|---|---|---|---|
| **Previous Experience** | 0.08 | 0.03 | 0.12 | 0.03 |
| ***p*** | *0.64* | *0.89* | *0.50* | *0.85* |

MISS1 Maternal MISS scores after interview 1
MISS2 Maternal MISS scores after interview 2
IPS1 Maternal IPS scores after interview 1
IPS2 Maternal IPS scores after interview 2

# Chapter 5 The relationships between student clinical competence, patient-centredness, and maternal recall

## 5.1 Introduction

Maternal information recall is a crucial determinant of child health outcomes. If mothers do not remember information provided by their children's doctors, they will be unable to comply with treatment instructions, and risk compromising effective management of their child's illness.

The aim of this study was to examine the effects of medical student clinical competence and patient-centredness on maternal recall of information when the levels of clinical competence and patient-centredness were varied independently. In addition to the effects of clinical competence and patient-centredness, this study also examined the relationship between maternal information recall and:

i) maternal and child characteristics

ii) previous maternal experiences of medical student interviews.

The hypotheses of this study were:

- Maternal recall of information is greater following interviews in which a medical student demonstrates higher levels of clinical competence and patient-centredness, and these effects are independent.
- The quality of maternal information recall is associated with maternal and child characteristics and previous experience of medical student interviews.

## 5.2 Study location and subjects

The participants in this study were the 60 mothers of children attending the paediatric medical outpatient clinic who provided satisfaction ratings of videotaped medical student interviews described in Chapter 4.

## 5.3 Methods

As described in Chapter 4, mothers were randomly allocated to view two of the four medical student interview videotapes in which the level of clinical competence and patient-centredness displayed by the student were varied independently (HCHP, HCLP, LCHP, LCLP). After viewing each videotaped interview, each mother completed a recall questionnaire (in addition to the MISS, IPS and realism questionnaires). As the core diagnostic and management information provided by the medical 'student' in all four interviews was identical, the same recall questionnaire was used after each videotaped interview.

Although all four videotaped interviews had the same core information content, the exact wording of student information statements differed between the high clinical competence and low clinical competence interviews. In the high clinical competence interviews, the student sometimes provided core information with more explanation and additional related information. The student in the high clinical competence interviews also provided explanations that were more concise and clear. Although there was variation in the 'student' dialogue according to the level of patient-centredness of the interview, there was no variation in the specific wording of any of the 'student' information statements used for the recall questionnaire according to patient-centredness.

### 5.3.1 Measures

The pilot study had used six open-ended questions to assess maternal recall of information. It had not been possible however to be confident that the mothers had fully understood the requests for specific information. It was also difficult to determine the degree of accuracy of the maternal responses. Therefore to improve the accuracy of maternal information recall assessment, direct questions regarding specific information were asked rather that the open-ended questions of the pilot study. Seven direct questions were framed around seven specific items of diagnostic or management information that had been identified by the independent assessor, Ms J Clifford. Another three direct questions asked if a specific abnormality had been detected when no abnormality had been identified with the child. Finally a more general question was included asking mothers to identify any other information supplied by the 'student' in the interview.

Three question forms were used (Table 5.1):

- request for verbatim recall of student dialogue (four questions)
- forced choice option with request for verbatim recall of student dialogue if any abnormality was recalled by the mother (six questions)
- open-ended, free response (1 question)

Two psychology graduates, blinded to both the study hypotheses and the differences in the videotapes, independently coded all maternal responses to the student information recall questionnaire. Five levels of coding were used to allow better differentiation of the level of completeness as well as the level of correctness of the maternal responses. The coders were provided with excerpts from the transcripts of

each interview so that they could compare maternal recall responses with the actual 'student' dialogue.

Maternal recall responses were coded by the two independent coders as follows:

- 'verbatim' where the mother wrote down exactly what the 'student' had said
- 'correct' where the mother had written down everything the 'student' had said, but in the mother's own words, not the 'student's'
- 'partially correct' where the mother had written down some of the 'student' dialogue correctly in the her own words, but also had omitted some information
- 'partially incorrect', where the mother had written down some of the 'student' dialogue correctly (either verbatim or in her own words), but also had included in her response, information not given by the 'student'
- 'incorrect' where the mother identified information the 'student' had not given without any correct recall

In the subsequent analysis of maternal recall responses, the 'verbatim' and 'correct' response categories were combined and presented as 'correct'.

For the question regarding recall of more general information ("Did the medical student identify any other problems with your child?"), the independent coders were provided with all the information given by the 'student' in each of the interview transcripts. They then counted the number of recall responses in each questionnaire that were either verbatim, correct or incorrect.

There was complete agreement in the codings of the two independent coders regarding maternal information recall responses for 87.7% of the 1,320 responses. In 6.3% there was only a one-point difference in the two codings and in 3% a two point difference. In 1% (12 questions), no comparisons were possible as one of the coders

had initially judged that there was inadequate information in the maternal response to code the response. After completion of independent coding, the two coders discussed individual items where their ratings had differed, and a consensus rating was determined by mutual agreement.

### 5.3.2 Statistical analyses

Maternal recall responses for each of the 11 questions were compared for all 60 mothers across the four interview types, and when stratified according to levels of clinical competence or patient-centredness demonstrated in the interviews. To assess any order effect, maternal recall following each interview when it was viewed first was compared with recall for the same interview when it was viewed second. Maternal recall responses to individual questions were at times incomplete, so the total maternal responses following each of the four interview types did not always total 30 responses when interviews 1 and 2 were combined, or 15 responses when interviews 1 and 2 were considered separately.

Maternal recall responses for each of the 11 questions were also compared according to a number of child characteristics (for example age, gender, siblings), and maternal characteristics (for example previous experience of medical student interviews, occupational prestige and education).

Statistical comparisons of maternal information recall responses for each of the individual questions (categorical variables) were made using the Chi-square test.

## 5.4 Results

### 5.4.1 Maternal recall responses

The recall responses for each of the 11 recall questions are shown in Tables 5.2-5.12, and are summarised in Table 5.13. For each question maternal recall responses were compared across the four interview types (HCHP, HCLP, LCHP, LCLP) separately following the first interview and following the second interview. Comparisons were then made according to the level of clinical competence and patient-centredness. Finally, a comparison was made of total recall following interview 1 and following interview 2 regardless of interview type. The relevant 'student' dialogue from each interview transcript is included except when no abnormality was identified by the 'student'. As was explained previously, the exact wording of student dialogue sometimes varied between the high competence interviews (HCHP and HCLP) and the low competence interviews (LCHP and LCLP). There were no differences in maternal recall responses between any of the four interview types when no abnormality was identified by the 'student' (Tables 5.10-5.12).

Maternal information recall was more correct or partially correct, and less incorrect after the high clinical competence interviews for five of the eight questions which required maternal recall of specific information provided by the 'student' in the interview (Table 5.2-5.6). These eight questions included the seven direct questions that were framed around specific items of diagnostic and management information, and also the final open-ended question regarding recall of any other information.

In the maternal responses to one question regarding treatment of the child's illness, there was more correct and less incorrect maternal recall of information seen

following the low clinical competence interviews (LCHP and LCLP). This was observed even though the student repeated the relevant information at the conclusion of the interview in the high competence but not the low competence interviews (Table 5.7). In the low clinical competence interviews (LCHP and LCLP), the student provided the core treatment information (panadol and fluids) in two simple statements. By contrast the student in the high clinical competence interviews (HCHP and HCLP) provided the core management information together with additional explanatory information (when to give the panadol, fluids were more important than food). Consequently, the more competent student's information statements were longer, more complex, and may have been more difficult for the mothers to remember correctly.

The more competent student also used simpler dialogue to explain the abnormality observed with the child's throat (Table 5.2). Use of less complex dialogue may therefore have assisted maternal recall following the more competent interviews (HCHP and HCLP) for this question. However, this effect was not observed with the question regarding the requirements for review of the child (Table 5.3). For this question better maternal recall was observed following the more competent student interviews (HCHP and HCLP) where more complex student dialogue was used to provide information.

A weak association between patient-centredness and recall was observed with one question only (Table 5.8) and this may have occurred due to chance. Low levels of completely correct recall were observed with maternal recall responses to most questions.

More accurate recall was observed after the second interview for only four questions in which the student provided information regarding an abnormality in the child

(Tables 5.3, 5.4, 5.7, 5.9). This order effect was especially associated with the LCHP interview for two questions (5.13). Three of these questions related to management information and one to diagnostic information.

### 5.4.2 Maternal and child characteristics

Maternal information recall response scores were compared by child and maternal characteristics. The same categories were used for these characteristics as were used for the comparisons of MISS and IPS scores reported in Chapter 4. No consistent pattern of significant association was observed between maternal recall responses and any of these maternal or child characteristics.

As described previously, a significant order effect in maternal recall responses was observed with maternal responses to four questions. More correct (or fewer incorrect) maternal recall responses were observed following the second interview in association with one or more of the following five maternal characteristics for at least one of these questions:

- No previous experience of a medical student interview
- Maternal home duties
- Middle occupational prestige status
- No education beyond secondary school
- Two parent families

(Table 5.14).

As in Chapter 4, the number of comparisons required to examine these relationships increased the likelihood that some observed associations may have represented chance significant findings. If a p value of 0.01 was adopted rather than 0.05 to

decrease this likelihood, more correct (or fewer incorrect) maternal recall responses were observed following the second interview in association with no previous experience of a medical student interview (1 question) and maternal home duties (1 question).

More correct (or fewer incorrect) maternal recall responses were observed following the second interview in association with one or more of the following four child characteristics for at least one of the four recall questions in which an order effect was observed:

- Respiratory illness
- Children aged 3 years or older
- One or two child families
- Male child

(Table 5.15)

If a p value of 0.01 was adopted as above, more correct (or fewer incorrect) maternal recall responses were observed following the second interview in association with respiratory illness (2 questions), children aged 3 years or older (1 question) and two child families (1 question).

When maternal recall responses for interview 1 and interview 2 were compared according to maternal characteristics for the question regarding recall of any other information, the mothers of middle occupational prestige and those whose stated occupation was home duties recalled significantly more correct information following the second interview ($p<0.0001$) (Table 5.16).

## 5.5 Discussion

Patient understanding and recall of diagnostic information and management recommendations are prerequisites for effective implementation of treatment and therefore, optimal health outcomes. The study of interview outcomes other than information recall such as management recommendation compliance and illness recovery were not appropriate to this study because of the recreated interview simulations used.

There was a relationship observed between maternal information recall and the level of clinical competence displayed by the 'student'. However, better maternal information recall was not consistently associated with interviews in which the 'student' demonstrated higher levels of clinical competence. The level of complexity of the student dialogue may have had some influence also, although better maternal recall was not uniformly associated with simpler student dialogue. No significant association between patient-centredness and maternal information recall was observed.

In comparing the maternal recall responses for interview 1 and interview 2, evidence of an order effect was less obvious than had been observed with the maternal satisfaction rating responses (Chapter 4). Some improvement in maternal information recall following the second interview would have been expected because the same information was re-presented by the 'student' with the same recall questions asked subsequently. In fact, improved recall was observed in only four of the recall questions. Simple repetition was insufficient to improve recall of all the information provided by the student. Improved recall by mothers after the second interview was particularly evident for the questions relating to management

information, and repetition of management information is recommended to enhance management recommendation compliance (Stewart 1995c).

No clear association was observed between any particular maternal or child characteristics and maternal recall of specific diagnostic and management information. However greater recall after the second interview was associated with maternal occupational prestige and is consistent with the findings of other studies (Heffer et al. 1997, Worchel et al. 1997). Better maternal recall of information following the second interview was associated also with no previous experience of a medical student interview, and the age, number of siblings and health problem of the child. It was unclear why mothers of children with respiratory illness, mothers of one or two child families, or mothers whose children were aged 3 years or older demonstrated this improvement in recall. Previous maternal experiences of child health consultations may be a contributing factor to these findings.

Although greater accuracy in maternal information recall was noted for some questions following the second interview, there were still large numbers of mothers who did not provide correct recall responses. Irrespective of the interview style, correct information recall was recorded for only 61% of the total maternal responses. Partially correct information recall was observed in a further 18% of maternal recall responses, and partially incorrect information recall in 6% of maternal responses. Completely incorrect maternal information recall was observed with 15% of the total maternal responses.

Poor patient recall of diagnostic and management information has been previously documented (Stewart 1995c; Fogarty et al. 1999; Lloyd et al. 1999). Clearly factors other than clinical competence and patient-centredness are important determinants of patient recall (Rost et al. 1990, Roter et al. 1987). The complexity of student

dialogue is possibly an important factor. In addition, the relative importance of each separate item of information to individual mothers may also have affected information recall. In using surrogate methods for this study it is possible that mothers did not attach quite the same significance to information as would have occurred normally if the consultation had actually involved the health of their own child.

## 5.6 Conclusions

Patient recall of information following a medical consultation is necessary for optimal treatment implementation and health outcomes. The level of demonstrated 'student' clinical competence was significantly associated with the quality of maternal recall.

In contrast to maternal satisfaction ratings, the level of patient-centredness within the context of these highly structured interviews was not associated with the quality of maternal recall.

Evidence of a calibration or learning effect in maternal information recall responses was observed, however it is likely that other influences, not measured in this study, have a significant impact on maternal information recall following a child health consultation.

**Table 5.1 Recall questionnaire**

| |
|---|
| **Requests for verbatim recall of student dialogue** |
| What did the medical student say caused your child's temperature, coughing and being off her food? |
| What did the medical student say you should do to treat your child's temperature, coughing and being off her food? |
| How long did the medical student say it would take for your child to recover? |
| Did the medical student tell you to bring your child back to be seen again? |
| **Forced choice options**<br>(yes/no answers, qualification of yes requested) |
| Did the medical student identify any problems with your child's nose? |
| Did the medical student identify any problems with your child's throat? |
| Did the medical student identify any problems with your child's ears? [a] |
| Did the medical student identify any problems with your child's glands? |
| Did the medical student identify any problems with your child's tummy? [a] |
| Was your child dehydrated? [a] |
| **Free response question**<br>(yes/no answer, qualification of yes requested) |
| Did the medical student give you any other information about your child's illness? |

[a] No abnormality was identified by the student for these questions.

**Table 5.2 Accuracy of maternal responses to the question " *Did the medical student identify any problems with your child's throat?"***

**Student dialogue**

HCHP+HCLP "very red and sore looking"
LCHP+LCLP "mucus, a lot of white coating her tongue, probably very sore"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1** | 6 | 3 | 5 | 1 |
| **n=15** | **2** | 7 | 2 | 6 | 0 |
| **HCLP** | **1** | 6 | 5 | 3 | 1 |
| **n=15** | **2** | 7 | 5 | 2 | 1 |
| **LCHP** | **1** | 0 | 7 | 1 | 6 |
| **n=15** | **2** | 0 | 10 | 1 | 4 |
| **LCLP** | **1** | 1 | 10 | 1 | 4 |
| **n=15** | **2** | 0 | 10 | 0 | 4 |
| **Total[a]** | 1 | 12 | 25 | 10 | 12 |
| **n=60** | 2 | 14 | 27 | 9 | 9 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2=24.2$, df 9, $p=0.004$
ii) after the second interview $X^2=35.8$, df 9, $p<0.0001$

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2=21.5$, df 3, $p<0.0001$
ii) after the second interview $X^2=31.0$, df 3, $p<0.0001$

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i) after the first interview $X^2=1.7$, df 3, $p=0.6$
ii) after the second interview $X^2=3.2$, df 3, $p=0.4$

[a]Comparison of total recall following the first and second interview $X^2=0.71$, df 3, $p=0.9$

**Table 5.3 Accuracy of maternal responses to the question *"Did the medical student tell you to bring your child back to be seen again?"***

**Student dialogue**

HCHP+HCLP "i) if not getting better, ii) if gets worse, iii) won't drink, iv) if you are worried"
LCHP+LCLP "i) if not getting better, ii) if you are worried"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | 1 | 0 | 13 | 1 | 1 |
| **n=15** | 2 | 0 | 11 | 0 | 3 |
| **HCLP** | 1 | 0 | 13 | 0 | 1 |
| **n=15** | 2 | 0 | 12 | 2 | 1 |
| **LCHP[b]** | 1 | 1 | 5 | 0 | 9 |
| **n=15** | 2 | 2 | 11 | 0 | 2 |
| **LCLP** | 1 | 0 | 6 | 1 | 8 |
| **n=15** | 2 | 2 | 4 | 0 | 8 |
| **Total[a]** | 1 | 1 | 37 | 2 | 19 |
| **n=60** | 2 | 4 | 38 | 2 | 14 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2$=23.0, df 9, p=0.006
ii) after the second interview $X^2$=22.6, df 9, p=0.007

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2$=18.9, df 3, p=0.0003
ii) after the second interview $X^2$=10.3, df 3, p=0.02

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i) after the first interview $X^2$=1.1, df 3, p=0.8
ii) after the second interview $X^2$=4.1, df 3, p=0.3

[a]Comparison of total recall following the first and second interviews $X^2$=2.6, df 3, p=0.5
[b]Comparison of recall following the first and second LCHP interview $X^2$=7.0, df 2, p=0.03

**Table 5.4 Accuracy of maternal responses to the question *"How long did the medical student say it would take for your child to recover?"***

**Student dialogue**

HCHP+HCLP "get better...in the next few days"
LCHP+LCLP "she'll be right in a day or two"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP[b]** | **1** | 7 | 0 | 1 | 5 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **HCLP** | **1** | 7 | 1 | 1 | 5 |
| **n=15** | **2** | 12 | 1 | 0 | 2 |
| **LCHP** | **1** | 8 | 4 | 0 | 3 |
| **n=15** | **2** | 8 | 3 | 0 | 2 |
| **LCLP** | **1** | 6 | 3 | 0 | 6 |
| **n=15** | **2** | 8 | 3 | 0 | 3 |
| **Total[a]** | **1** | 28 | 8 | 2 | 19 |
| **n=60** | **2** | 42 | 7 | 0 | 8 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2=8.1$, df 9, p=0.5
ii) after the second interview $X^2=7.2$, df 6, p=0.3

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2=6.4$, df 3, p=0.09
ii) after the second interview $X^2=6.3$, df 2, p=0.04

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i) after the first interview $X^2=0.6$, df 2, p=0.9
ii) after the second interview $X^2=0.7$, df 2, p=0.7

[a]Comparison of total recall following the first and second interviews $X^2=9.3$, df 3, p=0.03

**Table 5.5 Accuracy of maternal responses to the question " *Did the medical student identify any problems with your child's glands?"***

**Student dialogue**

HCHP+HCLP "swollen"
LCHP+LCLP "swollen"

| Interview | Order of viewing | Recall responses | | | |
|---|---|---|---|---|---|
| | | Correct | Partially correct | Partially incorrect | Incorrect |
| **HCHP** | **1** | 15 | 0 | 0 | 0 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **HCLP** | **1** | 12 | 0 | 2 | 1 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **LCHP** | **1** | 11 | 1 | 0 | 3 |
| **n=15** | **2** | 12 | 0 | 0 | 1 |
| **LCLP** | **1** | 10 | 0 | 0 | 5 |
| **n=15** | **2** | 11 | 1 | 1 | 2 |
| **Total[a]** | **1** | 48 | 1 | 2 | 9 |
| **n=60** | **2** | 51 | 1 | 1 | 7 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2$=16.7, df 9, p=0.05
ii) after the second interview $X^2$=6.8, df 9, p=0.7

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2$=9.2, df 3, p=0.03
ii) after the second interview $X^2$=2.3, df 3, p=0.5

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i) after the first interview $X^2$=4.3, df 3, p=0.2
ii) after the second interview $X^2$=2.2, df 3, p=0.5

[a]Comparison of total recall following the first and second interviews $X^2$=0.7, df 3, p=0.9

**Table 5.6 Accuracy of maternal responses to the question *"Did the medical student give you any other information about your child's illness?"***

**Student dialogue**

HCHP+HCLP contained 13 items of additional information
LCHP+LCLP contained 6 items of additional information

| Interview | Order of viewing | Number of correct recall responses | | | | Incorrect only |
|---|---|---|---|---|---|---|
| | | Three | Two | One | Nil | |
| **HCHP** | **1** | 0 | 0 | 3 | 11 | 1 |
| **n=15** | **2** | 2 | 2 | 4 | 4 | 2 |
| **HCLP** | **1** | 0 | 2 | 3 | 8 | 2 |
| **n=15** | **2** | 0 | 3 | 8 | 2 | 2 |
| **LCHP** | **1** | 0 | 0 | 1 | 11 | 3 |
| **n=15** | **2** | 0 | 2 | 2 | 11 | 0 |
| **LCLP** | **1** | 0 | 1 | 1 | 11 | 2 |
| **n=15** | **2** | 0 | 0 | 0 | 15 | 0 |
| **Total[a]** | **1** | 0 | 3 | 8 | 41 | 8 |
| **n=60** | **2** | 2 | 7 | 14 | 32 | 4 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);

i) after the first interview $X^2=7.3$, df 9, p=0.6
ii) after the second interview $X^2=36.3$, df 12, p=0.0003

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);

i) after the first interview $X^2=3.1$, df 3, p=0.4
ii) after the second interview $X^2=26.9$, df 4, p<0.0001

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);

i) after the first interview $X^2=3.2$, df 3, p=0.4
ii) after the second interview $X^2=2.5$, df 4, p=0.6

[a]Comparison of total recall following the first and second interviews $X^2=7.7$, df 4, p=0.1

**Table 5.7 Accuracy of maternal responses to the question *"What did the medical student say you should do to treat your child's temperature, coughing and being off her food?"***

**Student dialogue**

HCHP+HCLP "i) panodol each 4 hours if hot and miserable, ii) drinks are more important than food, iii) panodol before food if throat pain is bad"
LCHP+LCLP "i) Panodol 4 hourly, ii) keep her fluids up"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| HCHP | 1 | 0 | 8 | 7 | 0 |
| n=15 | 2 | 4 | 7 | 3 | 1 |
| HCLP | 1 | 1 | 7 | 7 | 0 |
| n=15 | 2 | 3 | 7 | 5 | 0 |
| LCHP[b] | 1 | 2 | 8 | 5 | 0 |
| n=15 | 2 | 10 | 2 | 2 | 0 |
| LCLP | 1 | 5 | 2 | 6 | 0 |
| n=15 | 2 | 6 | 6 | 1 | 0 |
| Total[a] | 1 | 8 | 25 | 25 | 0 |
| n=60 | 2 | 23 | 22 | 11 | 1 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2$=11.9, df 6, p=0.06
ii) after the second interview $X^2$=14.0, df 9, p=0.1

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2$=5.8, df 2, p=0.06
ii) after the second interview $X^2$=8.3, df 3, p=0.04

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i) after the first interview $X^2$=3.9, df 2, p=0.1
ii) after the second interview $X^2$=2.9, df 3, p=0.4

[a]Comparison of total recall following the first and second interviews $X^2$=13.9, df 3, p=0.003
[b]Comparison of recall following the first and second LCHP interview $X^2$=10.2, df 2, p=0.006

**Table 5.8 Accuracy of maternal responses for the question "*What did the medical student say caused your child's temperature, coughing and your child being off her food?***

**Student dialogue**

HCHP+HCLP "A virus"
LCHP+LCLP "A viral upper respiratory tract infection"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1** | 10 | 2 | 1 | 2 |
| **n=15** | **2** | 7 | 4 | 3 | 0 |
| **HCLP** | **1** | 10 | 3 | 2 | 0 |
| **n=15** | **2** | 13 | 2 | 0 | 0 |
| **LCHP** | **1** | 11 | 1 | 2 | 1 |
| **n=15** | **2** | 11 | 1 | 2 | 0 |
| **LCLP** | **1** | 7 | 1 | 1 | 5 |
| **n=15** | **2** | 8 | 4 | 0 | 3 |
| **Total[a]** | **1** | 38 | 7 | 6 | 8 |
| **n=60** | **2** | 39 | 11 | 5 | 3 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2$=10.4, df 9, p=0.3
ii) after the second interview $X^2$=19.0, df 9, p=0.03

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2$=3.4, df 3, p=0.3
ii) after the second interview $X^2$=3.3, df 3, p=0.3

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i ) after the first interview $X^2$=1.0, df 3, p=0.8
ii) after the second interview $X^2$=8.3, df 3, p=0.04

[a]Comparison of total recall following the first and second interviews $X^2$=3.3, df 3, p=0.4

**Table 5.9 Accuracy of maternal responses to the question *" Did the medical student identify any problems with your child's nose?"***

Student dialogue

HCHP+HCLP "runny"
LCHP+LCLP "runny"

| Interview | Order of viewing | Recall responses | | | |
|---|---|---|---|---|---|
| | | Correct | Partially correct | Partially incorrect | Incorrect |
| **HCHP** | **1** | 5 | 0 | 0 | 10 |
| **n=15** | **2** | 6 | 0 | 0 | 8 |
| **HCLP** | **1** | 7 | 0 | 0 | 8 |
| **n=15** | **2** | 12 | 0 | 0 | 3 |
| **LCHP** | **1** | 8 | 0 | 0 | 6 |
| **n=15** | **2** | 12 | 0 | 0 | 3 |
| **LCLP** | **1** | 4 | 0 | 0 | 10 |
| **n=15** | **2** | 10 | 0 | 0 | 5 |
| **Total[a]** | **1** | 24 | 0 | 0 | 34 |
| **n=60** | **2** | 40 | 0 | 0 | 19 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);

i) after the first interview $X^2$=3.0, df 3, p=0.4
ii) after the second interview $X^2$=6.0, df 3, p=0.1

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);

i) after the first interview $X^2$=0.05, df 1, p>0.9*
ii) after the second interview $X^2$=0.86, df 1, p=0.4*

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);

i) after the first interview $X^2$=0.6, df 1, p=0.8*
ii) after the second interview $X^2$=0.86, df 1, p=0.4*

[a]Comparison of total recall following the first and second interviews $X^2$=8.2, df 1, p=0.005*

*Fisher's exact method

**Table 5.10 Accuracy of maternal responses to the question " *Did the medical student identify any problems with your child's ears?"***

**Student dialogue**

No problem was identified by the student

| Interview | Order of viewing | Recall responses: Correct | Partially correct | Partially incorrect | Incorrect |
|---|---|---|---|---|---|
| **HCHP** | **1** | 13 | 0 | 0 | 1 |
| **n=15** | **2** | 13 | 0 | 0 | 2 |
| **HCLP** | **1** | 14 | 0 | 0 | 1 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **LCHP** | **1** | 11 | 0 | 0 | 4 |
| **n=15** | **2** | 14 | 0 | 0 | 0 |
| **LCLP** | **1** | 13 | 0 | 0 | 1 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **Total[a]** | **1** | 51 | 0 | 0 | 7 |
| **n=60** | **2** | 55 | 0 | 0 | 4 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);

i) after the first interview $X^2=4.1$, df 3, p=0.3

ii) after the second interview $X^2=2.0$ df 3, p=0.6

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);

i) after the first interview $X^2=1.5$, df 1, p=0.4*

ii) after the second interview $X^2=1.0$, df 1, p=0.6*

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);

i) after the first interview $X^2=1.5$, df 1, p=0.4*

ii) after the second interview $X^2=0.001$, df 1, p>0.9*

[a]Comparison of total recall following the first and second interviews $X^2=0.96$, df 1, p=0.4*

*Fisher's exact method

**Table 5.11 Accuracy of maternal responses to the question " *Did the medical student identify any problems with your child's tummy?"***

**Student dialogue**

No problem was identified by the student

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1** | 15 | 0 | 0 | 0 |
| **n=15** | **2** | 15 | 0 | 0 | 0 |
| **HCLP** | **1** | 15 | 0 | 0 | 0 |
| **n=15** | **2** | 15 | 0 | 0 | 0 |
| **LCHP** | **1** | 15 | 0 | 0 | 0 |
| **n=15** | **2** | 14 | 0 | 0 | 0 |
| **LCLP** | **1** | 14 | 0 | 0 | 1 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **Total[a]** | **1** | 59 | 0 | 0 | 1 |
| **n=60** | **2** | 58 | 0 | 0 | 1 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2$=3.1, df 3, p=0.4
ii) after the second interview $X^2$=3.0, df 3, p=0.4

Comparison of high and low clinical competence interviews (HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2$=1.0, df 1, p>0.9*
ii) after the second interview $X^2$=1.1, df 1, p=0.5*

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i) after the first interview $X^2$=1.0, df 1, p>0.9*
ii) after the second interview $X^2$=1.0, df 1, p>0.9*

[a]Comparison of total recall following the first and second interviews $X^2$<0.001, df 1, p>0.9*

*Fisher's exact method

**Table 5.12 Accuracy of maternal responses to the question *"Was your child dehydrated?"***

**Student dialogue**

No problem was identified by the student

| Interview viewing | Order of | Recall responses: Correct correct | Partially incorrect | Partially | Incorrect |
|---|---|---|---|---|---|
| **HCHP** | **1** | 14 | 0 | 0 | 1 |
| **n=15** | **2** | 13 | 0 | 0 | 2 |
| **HCLP** | **1** | 15 | 0 | 0 | 0 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **LCHP** | **1** | 12 | 0 | 0 | 2 |
| **n=15** | **2** | 14 | 0 | 0 | 1 |
| **LCLP** | **1** | 13 | 0 | 0 | 2 |
| **n=15** | **2** | 13 | 0 | 0 | 1 |
| **Total[a]** | **1** | 57 | 0 | 0 | 3 |
| **n=60** | **2** | 55 | 0 | 0 | 3 |

Comparison of recall responses across the four interviews (HCHP vs HCLP vs LCHP vs LCLP);
i) after the first interview $X^2$=2.5, df 3, p=0.5
ii) after the second interview $X^2$=0.6, df 3, p=0.9

Comparison of high and low clinical competence interviews(HCHP+HCLP vs LCHP+LCLP);
i) after the first interview $X^2$=1.8, df 1, p=0.4*
ii) after the second interview $X^2$=0.18, df 1, p>0.9*

Comparison of high and low patient-centredness interviews (HCHP+LCHP vs HCLP+LCLP);
i) after the first interview $X^2$=0.26, df 1, p=0.7*
ii) after the second interview $X^2$=0.18, df 1, p>0.9*

[a]Comparison of total recall following the first and second interviews $X^2$=0.002, df 1, p>0.9*

*Fisher's exact method

**Table 5.13 Summary of maternal recall responses by clinical competence and order of viewing**

| Recall question | Clinical competence or Patient-centredness | Order of viewing |
|---|---|---|
| Did the medical 'student' identify any problems with your child's throat? | More completely correct recall after the high clinical competence 'student' ($p<0.0001$) | No association |
| Did the medical 'student' tell you to bring your child back to be seen again? | More incorrect recall after the low clinical competence 'student' ($p<0.05$) | More correct recall after the second interview for LCHP ($p=0.03$) |
| How long did the medical 'student' say it would take for your child to recover? | More correct recall after the high clinical competence 'student', for the second interview ($p=0.04$) | More correct recall after the second interview ($p=0.03$) |
| Did the medical 'student' identify any problems with your child's glands? | More correct recall after the high clinical competence 'student' for the first interview ($p=0.03$) | No association |
| Did the medical 'student' give you any other information about your child's illness? | More correct recall after the high clinical competence 'student' for the second interview ($p<0.0001$) | No association |
| What did the medical 'student' say you should do to treat your child's temperature, coughing and being off her food? | More correct recall after the low clinical competence 'student' after the second interview ($p=0.04$) | More correct recall after the second interview ($p=0.003$), especially the LCHP interview ($p=0.006$) |
| What did the medical 'student' say caused your child's temperature, coughing and being off her food? | More incorrect recall after the low patient-centred 'student'for the second interview ($p=0.04$) | No association |
| Did the medical 'student' identify any problems with your child's nose? | No association | More correct recall after the second interview ($p=0.005$) |

**Table 5.14 Order effects on maternal recall scores associated with maternal characteristics**

| Question[a] | Interview[b] | Recall responses C | PC | PI | I | p^ |
|---|---|---|---|---|---|---|
| **No previous medical student interview experience n=25** | | | | | | |
| **Nose** | **1** | 10 | 0 | 0 | 15 | |
| | **2** | 20 | 0 | 0 | 5 | 0.009 |
| **Treat** | **1** | 3 | 12 | 9 | 0 | |
| | **2** | 12 | 9 | 3 | 0 | 0.012 |
| **Recovery** | **1** | 13 | 1 | 1 | 8 | |
| | **2** | 18 | 4 | 0 | 1 | 0.03 |
| **Maternal home duties n=23** | | | | | | |
| **Nose** | **1** | 7 | 0 | 0 | 16 | |
| | **2** | 17 | 0 | 0 | 6 | 0.007 |
| **Treat** | **1** | 1 | 12 | 7 | 0 | |
| | **2** | 7 | 13 | 2 | 0 | 0.03 |
| **Middle occupational prestige (by maternal occupation) n=26** | | | | | | |
| **Treat** | **1** | 3 | 9 | 14 | 0 | |
| | **2** | 11 | 7 | 6 | 0 | 0.02 |
| **Mother did not complete secondary education n=19** | | | | | | |
| **Nose** | **1** | 7 | 0 | 0 | 12 | |
| | **2** | 15 | 0 | 0 | 4 | 0.02 |
| **Mother completed secondary education without further education n=15** | | | | | | |
| **Treat** | **1** | 2 | 6 | 7 | 0 | |
| | **2** | 8 | 4 | 2 | 0 | 0.03 |
| **Household comprises 2 natural parents n=37** | | | | | | |
| **Nose** | **1** | 15 | 0 | 0 | 22 | |
| | **2** | 24 | 0 | 0 | 12 | 0.04 |

| | | | |
|---|---|---|---|
| **C** | **Correct** | **PI** | **Partially incorrect** |
| **PC** | **Partially correct** | **I** | **Incorrect** |

[a] Abbreviated description of each of the recall questions as follows:

| | |
|---|---|
| **Nose** | Did the medical 'student' identify any problems with your child's nose? |
| **Recovery** | How long did the medical 'student' say it would take for your child to recover? |
| **Treat** | What did the medical 'student' say you should do to treat your child's temperature, coughing and being off her food? |

[b] 1=the first interview, 2=the second interview

^Chi square test with Fisher's exact method for 2x2 tables

**Table 5.15 Order effects on maternal recall scores associated with child characteristics**

| Question[a] | Interview[b] | Recall responses C | PC | PI | I | p^ |
|---|---|---|---|---|---|---|
| **Respiratory illness n=24** | | | | | | |
| **Review** | **1** | 14 | 1 | 0 | 8 | |
| | **2** | 2 | 15 | 2 | 4 | <0.0001 |
| **Nose** | **1** | 8 | 0 | 0 | 16 | |
| | **2** | 18 | 0 | 0 | 5 | 0.003 |
| **Youngest child in the family aged 3-8 years n=21** | | | | | | |
| **Treat** | **1** | 1 | 10 | 8 | 0 | |
| | **2** | 10 | 10 | 0 | 1 | 0.001 |
| **Child attending the clinic had 1 sibling n=24** | | | | | | |
| **Treat** | **1** | 2 | 12 | 8 | 0 | |
| | **2** | 12 | 6 | 4 | 1 | 0.009 |
| **Nose** | **1** | 10 | 0 | 0 | 14 | |
| | **2** | 17 | 0 | 0 | 6 | 0.04 |
| **Male child n=37** | | | | | | |
| **Treat** | **1** | 4 | 17 | 15 | 0 | |
| | **2** | 12 | 19 | 5 | 0 | 0.011 |
| **Child attending the clinic aged 3-8 years n=21** | | | | | | |
| **Recovery** | **1** | 7 | 3 | 1 | 8 | |
| | **2** | 16 | 0 | 0 | 3 | 0.02 |
| **Child attending the clinic had no siblings n=23** | | | | | | |
| **Nose** | **1** | 8 | 0 | 0 | 15 | |
| | **2** | 17 | 0 | 0 | 6 | 0.02 |
| **Child attending the clinic aged 9-16 years n=19** | | | | | | |
| **Nose** | **1** | 9 | 0 | 0 | 10 | |
| | **2** | 15 | 0 | 0 | 3 | 0.04 |

| | | | |
|---|---|---|---|
| **C** | **Correct** | **PI** | **Partially incorrect** |
| **PC** | **Partially correct** | **I** | **Incorrect** |

[a] Abbreviated description of each of the recall questions as follows:

| | |
|---|---|
| **Review** | Did the medical 'student' tell you to bring your child back to be seen again? |
| **Nose** | Did the medical 'student' identify any problems with your child's nose? |
| **Recovery** | How long did the medical 'student' say it would take for your child to recover? |
| **Treat** | What did the medical 'student' say you should do to treat your child's temperature, coughing and being off her food? |

[b] 1=the first interview, 2=the second interview ^Chi square test with Fisher's exact method for 2x2 tables

**Table 5.16 Order effects on maternal recall scores associated with maternal characteristics regarding recall of any other information**

| Interview[b] | Number of correct recall responses[a] | | | Incorrect only | p^ |
|---|---|---|---|---|---|
| | Two+ | One | Nil | | |
| **Middle occupational prestige (by maternal occupation) n=26** | | | | | |
| **1** | 2 | 3 | 18 | 3 | |
| **2** | 0 | 18 | 3 | 4 | <0.0001 |
| **Home duties n=23** | | | | | |
| **1** | 1 | 4 | 15 | 3 | |
| **2** | 2 | 12 | 0 | 8 | <0.0001 |

[a] The number of correct maternal information recall responses.

[b] 1=the first interview, 2=the second interview

^Chi square test with Fisher's exact method for 2x2 tables

# Chapter 6 Maternal perceptions in medical student learning

## 6.1 Introduction

The development of good interview skills is an important component of medical student learning in paediatrics and child health (Lewis and Pantell 1995). Students practice and refine their skills through interviewing parents about their child's health and illness, and by obtaining feedback on these skills (Evans et al. 1993; Kendrick and Freeling 1993; van Dalen et al. 2001). Parents as active participants in child health consultations are ideally placed to evaluate the quality of student interviews and to provide feedback to students.

The preceding chapters have described maternal evaluations of simulated medical student interviews that were depicted on videotapes. These studies confirmed that mothers are willing to provide evaluations of medical student interview skills. It was demonstrated also that mothers recognise both clinical competence and patient-centredness, and are able to rate these qualities independently. In addition, a relationship between student clinical competence and maternal recall was demonstrated.

This further study was designed to assess the use of maternal perceptions of medical student interviews to enhance student learning about child heath interviewing. The aim of this study was to integrate maternal perspectives of medical student interviews into student learning programs through:

- a Child Health Interview seminar
- a standardised patient interview with 'maternal' feedback

The videotaped 'student' interviews used previously in the studies of maternal satisfaction and recall formed the basis of the Child Health Interview seminar. This seminar gave medical students the opportunity to evaluate interview qualities from a mother's perspective. The standardised patient interview was developed to provide students with direct 'maternal' feedback regarding their interview skills.

The hypothesis of this study was: Focussing on maternal perceptions of medical student interview qualities assists students to understand the importance of these skills.

## 6.2 Study location and subjects

The study was conducted in the University of Adelaide Department of Paediatrics at the Women's and Children's Hospital, Adelaide, South Australia between February and June 2001. Final year medical students attached to the Department of Paediatrics were invited to participate in this study. The University academic year consists of two semesters, each of which contains two eight week paediatric teaching terms that are conducted consecutively. Each class of final year medical students is divided evenly between the four terms of the academic year to complete their clinical training in child health. All students in semester 1 (terms 1 and 2) of 2001 were invited to participate in this study. There were 27 eligible students in term 1, and 28 eligible students in term 2.

In addition to participation in the Child Health Interview seminar, one quarter of the class from each term was randomly selected to participate in two focus group discussions and a standardised patient interview. Students were allocated consecutively to one of four clinical teaching groups from an alphabetical list of student names each term. The starting point for this consecutive group allocation

was determined by a die throw. If for example a five was thrown, the fifth student on the list was allocated to the first group, the sixth student to the second group and so on until all students were allocated. One group was selected then for participation in the focus group discussions and the standardised patient interview by drawing a number (1-4) from a hat. For both terms 1 and 2 there were seven eligible students in each selected group.

Participation was voluntary and students were not required to attend the seminar, the focus groups or the standardised patient interviews. Medical students were provided with an information sheet regarding the study on the first day of their paediatric attachment. Written consent to participate was obtained from those students attending the focus group discussions and standardised patient interviews. No aspect of this study contributed to the formal teaching program student assessment process in Paediatrics and Child Health.

## 6.3 Methods

The study comprised the following components, a Child Health Interview seminar, focus group discussions and a standardised patient interview. A timeline of the study components for each term is displayed in Figure 6.1.

### 6.3.1 Child Health Interview seminar

To demonstrate the relationship between particular interview skills and interview outcomes to medical students, a seminar was developed based on the studies reported in Chapters 4 and 5. In this seminar, students in each term viewed the HCHP interview videotape (high clinical competence, high patient-centredness) and the LCLP interview videotape (low clinical competence, low patient-centredness).

The videotape interviews were shown in the middle of the first week of each of the two paediatric terms that comprised Semester 1 (Figure 6.1). The first term students viewed the HCHP interview first, followed by the LCLP interview. Students in the second paediatric term of the semester viewed the LCLP interview first, followed by the HCHP interview.

The format used to show these two videotape interviews was identical to that of the earlier studies with mothers. The videotapes were screened on a television monitor in the Department of Paediatrics seminar room. Students first viewed the introductory videotape that encouraged them to identify with the 'mother' shown in the interview videotapes. After the introductory videotape, students were shown the two videotape interviews in which a male actor portrayed the role of the medical student.

To enable a comparison of student and maternal perceptions of the two interviews, and to assist students in their evaluation of the interview skills demonstrated in each interview, students were asked to rate their satisfaction with the interview, and to recall items of specific information. Students viewed the first interview and then rated that interview at its completion as if they were the mother in the interview. They then viewed the second interview and rated that interview at its completion, again as if they were the mother in the interview. After each videotape interview the students were asked also to recall specific management and diagnostic information provided by the 'student'. Questionnaire completion by students following each of the videotapes took approximately 8-10 minutes. All student responses were anonymous.

Following completion of the second videotape interview and questionnaire, students were invited to discuss their evaluations of the two interviews with the rest of the class. This discussion was facilitated by review of the actual interview transcripts.

Satisfaction ratings and information recall from mothers for each interview were described also to the students. In particular, insights concerning different interview qualities that were gained by the medical students through rating the 'student' from a mother's perspective were explored during the discussion. The relationship between the levels of clinical competence and patient-centredness demonstrated in the videotapes, and the real students' satisfaction ratings and information recall was discussed. Styles of communication used by the videotape 'student' to elicit information and to explain diagnosis and management recommendations were identified and discussed.

### 6.3.2 Focus group discussions

The author convened and facilitated two focus group discussions during each term in which a number of issues relating to student interview skills training and assessment were explored (Figure 6.1). The first of these was held on the first day of each of the two terms prior to the Child Health Interview seminar later in the week. The second focus group was conducted during the fifth week of each of the two paediatric teaching terms. The same students who participated in the first focus group were invited to reconvene. Each focus group session was audiotaped.

### 6.3.3 Standardised patient interview

Students participating in the focus group discussions were offered the opportunity to conduct a medical interview with a female standardised patient 'mother'. These standardised 'mother' interviews occured in the second week of each of the paediatric teaching terms, after both the first focus group discussion and the Child Health Interview seminar were completed (figure 6.1).

The role of the standardised 'mother' was played by the same person for all the student interviews. She had extensive previous training in clinical case re-enactment and in interview skills evaluation. In addition, further training with the author was undertaken to ensure the consistency of her presentation.

The standardised 'mother' presented the same history of her child's illness to every student. This clinical scenario was developed from one of the real medical student interviews videotaped for the pilot study but not subsequently used. The standardisd 'mother' was given the transcript of this interview (with all identifying features changed) and developed her maternal dialogue from this transcript.

The standardised 'mother' interviews were conducted in the Paediatric Emergency Department to enhance the realism of the situation. Students had been told the general presenting problem (an 18 month old boy with vomiting) the week before the interview, but not any specific features of the presentation. Students were introduced to the 'mother' by the author who started the video/audiotaping equipment (videotape term 1, audiotape term 2 due to technical difficulties) and then left the room. Students were instructed to take a full history from the 'mother', to relate this history to the examination findings, and to provide the 'mother' with diagnostic and management information.

After each student had completed the medical history from the 'mother', they briefly left the consultation room to obtain the examination findings. A pre-prepared summary of all relevant clinical findings for the case was read to each student. Students then returned immediately to the consultation room and explained these examination findings to the 'mother' together with their management recommendations.

At the conclusion of the interview and before the student left the interview room the standardised 'mother' provided each student with verbal feedback on their interview. Using the rating score she had awarded, their performance in relation to each item of the scale was discussed. The audiotape/videotape equipment was turned off during this feedback session. The interviews were reviewed subsequently by the author to confirm the consistency and accuracy of the standardised 'mother's' presentation of the clinical case. The author also provided each student with detailed written feedback regarding the quality of their medical history, the accuracy of their diagnosis and the appropriateness of their management plan.

### 6.3.4 Measures

*Child Health Interview seminar*

Students rated their satisfaction with the videotaped interviews using the IPS scale (Schnabl et al. 1991). In view of the high correlation observed between maternal scores on the IPS and the MISS scales in the previous study (Schnabl et al. 1991; Kinnersley et al. 1996), use of both scales was considered unnecessary. The IPS scale was selected for this study because of its shorter length and because it had been developed specifically to evaluate medical student interviews.

Students also completed the recall questionnaire regarding recall of diagnostic and management information that was used in the earlier study of maternal information recall. Student responses to the 11 recall questions were coded independently by the same two psychology graduates who coded maternal information recall responses previously using the same coding instructions.

The Department of Paediatrics routinely surveys all medical students regarding student evaluations of the clinical attachments in Paediatrics. Students participating in this study in both Terms 1 and 2, 2001 completed the standard evaluation questionnaire at the end of their 8 week attachment. An additional question relating to this study was included in this evaluation. Students were asked to indicate their level of agreement (1=strongly disagree, 7=strongly agree) with the following statement:

"The Child Health Interview seminar in week 1 assisted the development of my clinical interview skills".

*Standardised patient interviews*

The standardised 'mother' rated her satisfaction with each student interview by completing the IPS rating scale (Schnabl et al. 1991).

*Focus group discussions*

Student focus group discussions were conducted using a semi-structured format with general inquiry by the facilitator. Specific follow-up questions were used as required for clarification, or for further information on a particular subject. The facilitator allowed the students whenever possible to direct the discussion so that all areas of interest to them were included. The following general areas of inquiry were explored:

- Previous student experiences with interview training programs
- Student expectations of interview skills training
- Student preferences for interview skills learning and assessment
- Student knowledge of patient-centred interviewing

- Student comparisons of the Child Health Interview seminar and standardised 'mother' interviews
- Student opinion of obtaining parent feedback on their interview skills

A transcript was prepared following each audiotaped focus group session. The author reviewed student responses and key themes were identified. First, all student dialogue that related to any of the specific areas of inquiry listed above was identified. These identified comments were then grouped together with other student comments of similar content and subject matter. Finally these groupings were examined to identify common themes (Royston 1997; Thistlethwaite and Jordan 1999).

### 6.3.4 Statistical analyses

Student IPS scores and information recall responses were compared for the two videotaped 'student' interviews. IPS scores and information recall responses for each interview when it was viewed as the first interview were also compared with scores and recall when it was viewed as the second interview. Student IPS scores and recall for each interview were compared with maternal scores and recall for the same interviews from the previous studies.

Statistical comparisons of IPS scores (continuous variable) were made with t-tests. Student recall of information following each interview (categorical variable) was compared using the Chi-square test. Student recall responses to individual questions were at times incomplete, therefore the total student information recall responses following each interview did not always total 45.

## 6.4 Results

### 6.4.1 Subjects

The participation rate by students in each of the study components is shown in Table 6.1. There were high participation levels for both the whole class components (the Child Health seminar, 75-89%) and the randomly selected quarter of each class components (the focus groups and standardised patient interviews, 71-100% ).

### 6.4.2 Child Health Interview seminar

The mean (±SD) student IPS score for the HCHP (high clinical competence, high patient-centredness) interview was 74±10, and for the LCLP (low clinical competence, low patient-centredness) interview 33±9 ($p<0.0001$). Student IPS scores according to the order of viewing the interview videotapes are shown in Table 6.2. Significantly higher scores were observed following the HCHP interview when this was viewed as the second interview. In Table 6.3 student IPS scores are compared with the maternal IPS scores reported in Chapter 4, and although there was a trend for students to allocate lower scores, this was not statistically significant.

All students preferred the HCHP interview. The reasons selected by students for this preference are listed in Table 6.4, together with additional comments by individual students. It was evident in the additional comments that the students could identify with the 'mother', even to the extent of providing their written responses in the first person in several instances.

Student recall responses by interview type and order of viewing are shown in Tables 6.5-6.15, and are summarised in Table 6.16. The same response categories and

coding instructions provided in the earlier study (Chapter 5) were used in this study. As previously, there was a high level of agreement between the two independent coders with exact numerical agreement for 85.1% of the 990 responses.

Significant differences in student information recall responses in relation to interview types were noted with five of the eight questions for which the 'student' had provided either diagnostic or management information during the interview. As previously noted with maternal information recall, there were no differences in student information recall responses for either interview observed with the three questions in which no abnormality was identified by the 'student' (Tables 6.13-6.15). Better student recall was associated with the high clinical competence, high patient-centred interview for four questions (Tables 6.5-6.8), and with the low clinical competence, low patient-centred interview for another two questions (Tables 6.9 and 6.10).

An order effect where student recall was greater after the second interview was seen for three of the eight questions in which the 'student' provided information. In each instance this effect was observed only with the HCHP interview (Table 6.16). The high level of incorrect recall observed following both interviews for the question regarding possible abnormalities with the child's nose (Table 6.12) was unexplained by levels of clinical competence or patient centredness, or by differences in student dialogue. Similar levels of incorrect recall were observed also in the maternal information recall responses for this question, especially after the first interview (Table 5.9).

A comparison was made between student recall of information for each question and maternal recall of information for the same question in the earlier study reported in Chapter 5 (Table 6.17). For this comparison, first and second interview student recall responses and first and second interview maternal recall responses were combined

for each interview (HCHP and LCLP). Although significant differences in recall responses were noted for five questions, there was no clear pattern associated with either maternal or student recall or interview type.

Student responses to the end of term evaluation question regarding the Child Health Interview seminar are shown in Table 6.18. Fifty percent (11/22) of responding Term 1 students and 64% (14/22) of responding Term 2 students agreed that the seminar provided them with opportunities to improve their interview skills.

### 6.4.3 Standardised patient interviews

The standardised 'mother' IPS scores for the medical students ranged between 73-89, with a mean (±SD) of 84±5.

### 6.4.4 Focus group discussions

Three main themes emerged during review of the medical student focus group transcripts:

1. A description of the students' previous experiences of interview training.
2. An articulation of student expectations regarding interview training and preferences for interview skills assessment.
3. Student feedback on components of the present study.

Each of the three themes identified in the student responses is discussed separately together with illustrative examples of student dialogue. Because patient-centredness was a key variable in the development of the 'student' interview videotapes and subsequent studies of maternal satisfaction ratings and recall of information, specific

inquiry was made of the students regarding their knowledge of patient-centred interviewing techniques. However, the students had very little theoretical knowledge of patient-centred interviewing, and were unable to describe any of its practical applications. Limited student exposure to patient-centred interview techniques especially within teaching hospital settings has been found previously (Thistlethwaite and Jordan 1999).

*Theme 1. Student interview training experiences*

Students were asked to describe their previous experiences of interview training. They identified two distinct phases of interview training in their six year medical course. In the first 2-3 years they described training in general communication skills:

*"we were walked through it (interview skills) step by step, talking to patients, introducing yourself, starting to discuss the problems and managing emotions".*

Some students found this, on reflection, to have been valuable:

*" I found the 2nd year interview skills (teaching program) was actually quite useful even though at the time I thought it was a waste of time."*

Others students found the structured approach to interview training that characterised their early learning to be artificial and difficult to apply to their own experiences:

*" many of the patients we had in 2nd year (of the medical course) never really matched the emotion of patients I have come across in the wards, they just always seemed to be a little bit too exaggerated."*

In the subsequent years of the medical course, students found a shift in the emphasis of interview skills training:

*"more emphasis on the medical aspects of the interview than the actual communication side".*

*"in (the) 2nd year (interview skills teaching program) the interview technique was quite emotionally based, whereas subsequently it is more medically based...the people teaching us are coming from two separate backgrounds."*

During their current paediatric term students stated that they had enjoyed the opportunities to speak with parents and children in the hospital. The students found that most parents were happy to speak with them. The difficulties associated with involving sick children in conversation were also noted.

*Theme 2. Student expectations regarding interview training and their preferences for interview skills assessment*

Students were asked to describe their expectations regarding training and their preferences for assessment. Students believed they should receive interview training that assisted them to identify key clinical information efficiently:

*"I found it took me quite a while to sort out what I needed to ask and what I didn't."*

They also valued opportunities to practice their medical history taking skills with standardised patients. Students placed more emphasis on the development of their medical history-taking skills than on the development of their general interview skills.

Students acknowledged that assessment of interview skills was a complex undertaking that often involved subjective assessments. They indicated a strong preference for continuous assessments, undertaken in situations that were as close to actual clinical interviews as possible. Many of their previous interview skills assessments had been made using checklists which resulted, they believed, in more stereotyped student interview behaviours:

*"in (the) 2nd year (interview skills training program) we had a checklist for the assessor to cross or tick which area we did well and which we should explore more. They got to be really formalised though, you ended up memorising these lists."*

*"everybody has a different style.....in communication skills they've tried to get us in this particular mould, and everyone has gone through like robots."*

Regarding feedback on their interview skills, although the students said they welcomed feedback from medical staff, most preferred to monitor their own performances through their personal feelings, and the reactions of the parents and children that they interviewed:

*"the parents don't come out and say 'good interviewing skills' but you get a feeling that you're not having any problems communicating with this person."*

*"There is one (parent) that stands out which I don't think I was getting to, and I suppose that was my own feedback. It was just very clinical, just answer my questions, examine my child and move on."*

*"I felt pretty good about the interviews that I did."*

Students were however not comfortable with formal self assessment of interview skills:

*"You don't know if you are being arrogant, or whether you are confident that you are that level."*

*Theme 3. Student feedback on components of the present study*

Students were asked to contrast the learning opportunities offered by the seminar with those offered by the individual feedback from the standardised 'mother'. Students found the Child Health Interview seminar to be interesting and to have provided useful child health interview information:

*"I found it (the seminar) helpful for my interview with the standardised patient. I followed some of the points in there (the seminar), like at the end, not giving a summary but dot points or rephrasing myself. I found the patient did remember."*

*"I think it was really helpful when you go through the transcript (of the videotaped interviews) so we can see how it's happened."*

*"really interesting for me when you pointed out that both (videotaped 'student') interviews had exactly the same information and had drawn out the same histories, but because one was so much worse, I didn't remember the advice he gave."*

*"talking about the bad 'student' reinforced what not to do. Then when you see the good 'student' then you think, yes, that's good to do - that's really useful."*

Students also found the standardised 'mother' interview which gave them feedback on their interview skills provided useful learning opportunities:

*"I think it (the standardised 'mother' interview) was just quite a good experience. It would be good to have regular feedback, not just on patient communication, but also on the clinical content of the interview."*

*"I definitely agree with having 'rented patients' (and obtaining feedback on) the clinical content as well as the style."*

*"What I actually liked was that we taped the interview, and someone could give us feedback from the patient's point of view, and from the clinical viewpoint."*

Students believed it was a good idea to obtain feedback about their interview skills from real patients. Standardised patient interviews often felt contrived to students and they believed that real patient feedback would be more meaningful. However, they found this concept quite confronting:

*"I think it is difficult in the Paediatric Emergency Department because parents are worried about their child, and its such a short time you have to talk to them."*

*"All parents are different, there is no way of standardising it, one parent's opinion may be different to anothers."*

## 6.5 Discussion

This study explored two methods for including maternal perceptions of medical student interviews in learning programs. Firstly, the students were asked to assume

the role of a mother and to then evaluate two 'medical student' videotaped interviews from her perspective. Secondly, medical students had their interview skills evaluated by a 'mother' whom they were interviewing. There were reasonably high student participation rates in each of the study components.

Students indicated that experiencing maternal perceptions of interview skills either directly through the Child Health Interview seminar, or through standardised patient feedback provided them with useful insights and opportunities to improve their own interview skills. The seminar was instructive to students in two main ways. In reviewing the structure of the interviews (both through verbal reflections in the class after the videotape screenings and through the transcript review) specific interviewer qualities associated with either a 'good' or 'bad' interview were illustrated. Actually realising that they could not remember information after the 'bad' interview, and then viewing the 'good' interview and becoming more aware of the reasons why this was a better interview provided a highly successful demonstration of the importance of good interview skills. The seminar also provided an opportunity to demonstrate patient-centred techniques to the students. Student satisfaction ratings and information recall following each of the videos were very similar to those observed with real mothers, suggesting that students were able to identify closely with the videotape 'mother' in their assessments of the interviews.

Students also found that examining their reactions to the interviews as the 'mother' enabled them to reflect on their own interview techniques and individual styles. It is important to provide opportunities for and support of student reflection and self-evaluation in learning programs (Hays 1990; Royston 1997). Similar short course interview training programs for medical students that use videotape examples to stimulate large group interaction and discussion have been used successfully in other clinical settings (Maguire et al. 1977; Kendrick and Freeling 1993).

Whilst a calibration effect was observed also with student satisfaction ratings, this was only following the more competent and more patient-centred interview. It is possible that viewing the low clinical competence, low patient-centredness interview first provided students with a 'benchmark' which they recognised as a poor example of interview skills. Following this interview, students were able then to demonstrate a better appreciation of the greater skill level in the high clinical competence and high patient-centredness interview. Videotape 'bench mark' interviews have been associated previously with similar improvements in junior doctor self-evaluation regarding their interview skills (Martin et al. 1998).

Medical student information recall was very similar to that of the mothers in the previous study. Better recall was associated with the low clinical competence interview (and in this case low patient-centred also) for the question concerning treatment in which the student provided instructions in simpler language. Better student (but not maternal) recall was seen also with the low competence low patient-centred interview for the question concerning the cause of the illness. The 'student' in the low clinical competence low patient-centred interview used more technical language to explain this information and students may have been more familiar with the terms used than were the mothers. Student information recall following the second interview showed less improvement than was seen with the mothers. This is likely to be due at least in part to greater student familiarity with the diagnostic and management information dialogue used.

Students valued the opportunity to conduct an interview with a standardised 'mother' parent and to receive individual feedback on both their interview and clinical skills. Although they had previously interviewed standardised patients, they had not had the opportunity to conduct a child health consultation and receive individual feedback.

Standardised patient interviews are an important component of interview skills training programs (van Dalen et al. 2001). The IPS scores awarded by the standardised 'mother' to the students were higher than were the ratings of any of the videotaped interviews by either the mothers and or the medical students. However, the differences in the contexts of these interviews need to be recognised. When mothers and students were rating videotapes they were not interacting personally with the 'student'. The standardised 'mother' on the other hand was participating in a far more intimate and interactive relationship with each of the students. Such a personal relationship may have predisposed her to a more favourable perception of each of the students than that experienced by viewers of a videotape recreation. In addition, although care was taken to select a standardised 'mother' who was experienced in the evaluation of student interviews, her ability to discriminate different levels of student ability was not tested prior to the interviews.

In the focus group discussions, students acknowledged the importance of interview skills training. Students identified a lack of perceived relevance in some of their previous training which concentrated on basic communication skills. They admitted that the value of this earlier training often was only evident many years later when as senior medical students they were interacting with patients on a daily basis. Royston in a similar study of medical student interview training identified the dilemma for students as "feeling unconfident of their own communication skills but cynical about the value of format teaching in this area" (Royston 1997). Students preferred their communication skills training to be clearly linked with their clinical teaching programs, a practice that is becoming more common in many medical school curricula (Evans et al. 1993).

Students also expressed concerns regarding the subjective nature of some interview skills assessments, and their perceived vulnerability to unreliable measures.

Students demonstrated a degree of self-monitoring of their own interview skills, and welcomed the concept of obtaining real parent feedback on their interview skills if they could be confident of fair and relevant assessments.

## 6.6 Conclusions

In this study medical students successfully assumed the role of a mother in the evaluation of videotaped 'student' interviews. Student satisfaction ratings and information recall were very similar to those of mothers. Through their evaluations of the videotaped interviews, students experienced insights into important interview skills. The students valued receiving individual feedback on their interview skills, and expressed a desire for more opportunities to conduct practice interviews. They emphasised the importance of clinical relevance in interview skills training programs.

The integrity of interview assessment procedures was of concern to the students because of the extensive use of checklists. Students believed that such assessments may result in rigid and stereotypic student behaviours that attempt to demonstrate a range of checklist components. Students were supportive of obtaining real parent evaluations of their interview skills as part of student training programs, but expressed concerns regarding the subjective nature of many interview skills assessment methods.

**Figure 6.1 Timeline of study components for each term**

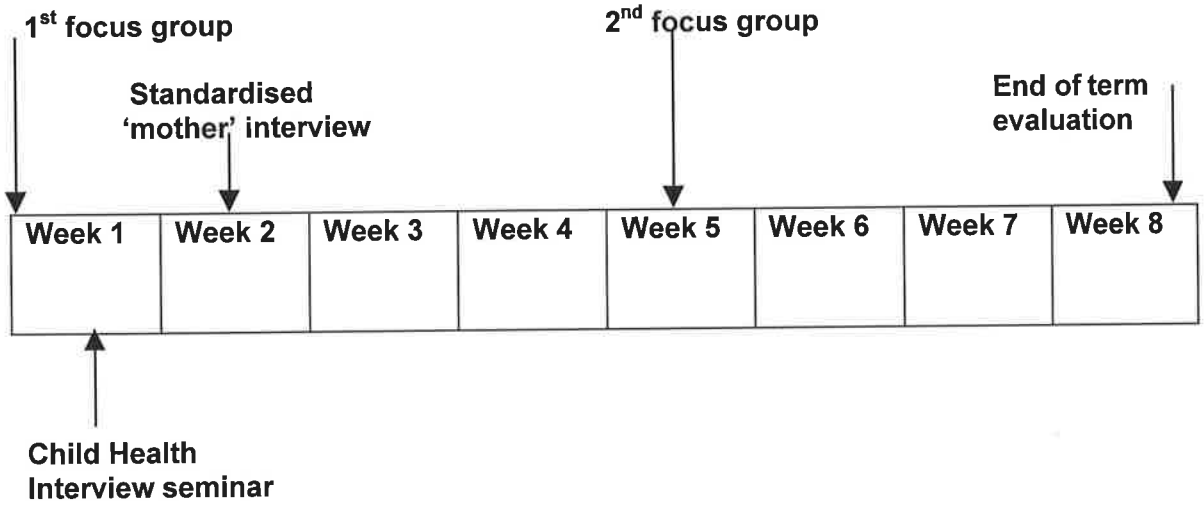


**Table 6.1 Medical student participation in each component of the study**

| | Students (n=45) | | | | | |
|---|---|---|---|---|---|---|
| | Term 1 | | | Term 2 | | |
| | T[a] | P[b] | % | T[a] | P[b] | % |
| **Whole class** | | | | | | |
| Child Health Interview seminar week 1 | 27 | 24 | 89 | 28 | 22[c] | 79 |
| Completed satisfaction and recall questionnaires | 27 | 24 | 89 | 28 | 21 | 75 |
| End of attachment seminar evaluation week 8 | 27 | 22 | 81 | 28 | 22 | 79 |
| **Quarter of class[d]** | | | | | | |
| First focus group week 1 | 7 | 7 | 100 | 7 | 5 | 71 |
| Second focus group week 5 | 7 | 6 | 86 | 7 | 5 | 71 |
| Standardised patient interview week 2 | 7 | 6[e] | 86 | 7 | 6[f] | 86 |

[a] The total number of medical students invited to participate in each component of the study.
[b] The number of students actually participating in each component of the study.
[c] One student who attended the seminar in Term 2 did not complete the satisfaction and recall questionnaire, however did complete the end of term evaluation in week 8.
[d] A quarter of each class of students were randomly selected to participate in both the two focus groups and the standardised patient interview. The same students were invited to participate in all three study components in each term.
[e] These were the same 6 students as attended the second focus group.
[f] One student attended the standardised patient interview but neither of the focus groups.

**Table 6.2 Effect of order of viewing on student IPS scores (Mean±SD)**

| | Interview | | |
|---|---|---|---|
| | First | Second | p** |
| **HCHP** | 71±11 (n=24) | 77±6 (n=21) | 0.02 |
| **LCLP** | 33±9 (n=21) | 33±10 (n=24) | 0.8 |

** unpaired t-test

**Table 6.3 Comparison of maternal and student IPS scores (Mean±SD)**

| | Maternal (n=30) | Student (n=45) | p** |
|---|---|---|---|
| **HCHP** | 78±7 | 74±9 | 0.07 |
| **LCLP** | 37±12 | 33±9 | 0.07 |

** unpaired t-test

**Table 6.4 Reasons for student preference for the HCHP interview**

| Checklist reasons for preference | Students[a] |
|---|---|
| The 'student' had better interpersonal skills. | 45 (100%) |
| The 'student' listened to me more. | 43 (96%) |
| The 'student' provided me with more information about what to do. | 42 (93%) |
| The 'student' was more caring. | 36 (80%) |
| The 'student' was more confident. | 35 (78%) |
| The 'student' included my opinions in diagnosis. | 35 (78%) |
| The 'student' had more medical knowledge. | 23 (51%) |
| The 'student' treated me more as an equal. | 21 (47%) |

**Additional comments by individual students[b]**

"more at ease, less rushed, more comfortable"
"Better at communication, addressed all ***my*** concerns, made ***me*** feel more comfortable"
"More professional"
"More friendly, less incompetent"
"Asked more relevant questions at more appropriate times"
"No repetition, really listened to the responses of the mother"
"Mainly more confident and a better listener. More open questions, less useless closed questions"
"Gave more time to answer"
"Asked ***me*** what ***I*** thought was the cause, listened and responded appropriately. Instilled confidence in ***me*** at a worrying time"
"Used open ended questions"

[a] The number of students who agreed with each of these statements. Students could agree with more than one statement.

[b] Use of the first person by the student is highlighted in these verbatim student responses.

**Table 6.5 Accuracy of student responses to the question "*Did the medical student identify any problems with your child's throat?*"**

**Student dialogue**

HCHP "very red and sore looking"
LCLP "mucus, a lot of white coating her tongue, probably very sore"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 5 | 9 | 2 | 5 |
| | **2 (n=24)** | 10 | 11 | 2 | 1 |
| **LCLP** | **1 (n=24)** | 0 | 9 | 4 | 11 |
| | **2 (n=21)** | 0 | 5 | 1 | 15 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =28.7, df 3, p<0.0001

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=4.4,df 3, p=0.2
LCLP 1 vs LCLP 2 $X^2$=3.4, df 2, p=0.2

**Table 6.6 Accuracy of student responses to the question "*Did the medical student give you any other information about your child's illness*?"**

**Student dialogue**

HCHP contained 13 items of additional information
LCLP contained 6 items of additional information

| Interview | Order of viewing | Number of correct recall responses | | | | |
|---|---|---|---|---|---|---|
| | | Three | Two | One | Nil | Incorrect only |
| **HCHP** | **1 (n=21)** | 0 | 1 | 6 | 11 | 3 |
| | **2 (n=24)** | 0 | 5 | 13 | 5 | 0 |
| **LCLP** | **1 (n=24)** | 0 | 0 | 2 | 21 | 1 |
| | **2 (n=21)** | 0 | 0 | 2 | 18 | 1 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =25.6, df 3, p<0.0001

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=10.4, df 3, p=0.02
LCLP 1 vs LCLP 2 $X^2$=0.03, df 2, p>0.9

**Table 6.7 Accuracy of student responses to the question "*Did the medical student tell you to bring your child back to be seen again?*"**

**Student dialogue**

HCHP "i) if not getting better, ii) if gets worse, iii) won't drink, iv) if you are worried"
LCLP "i) if not getting better, ii) if you are worried"

**Recall responses**

| Interview | Order of viewing | Correct | Partially correct | Partially incorrect | Incorrect |
|---|---|---|---|---|---|
| **HCHP** | **1 (n=21)** | 0 | 14 | 0 | 7 |
| | **2 (n=24)** | 0 | 14 | 0 | 10 |
| **LCLP** | **1 (n=24)** | 3 | 5 | 0 | 15 |
| | **2 (n=21)** | 2 | 6 | 0 | 14 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =15.5, df 2, p=0.0004

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=0.3, df 1, p=0.8*
LCLP 1 vs LCLP 2 $X^2$=0.3, df 2, p=0.9

* Fisher's exact method

**Table 6.8 Accuracy of student response to the question "*Did the medical student identify any problems with your child's glands?*"**

**Student dialogue**

HCHP "swollen"
LCLP "swollen"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 17 | 0 | 3 | 1 |
| | **2 (n=24)** | 18 | 0 | 1 | 4 |
| **LCLP** | **1 (n=24)** | 18 | 1 | 0 | 5 |
| | **2 (n=21)** | 13 | 0 | 0 | 7 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =8.1, df 3, p=0.04

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=2.7, df 2, p=0.3
LCLP 1 vs LCLP 2 $X^2$=1.8, df 2, p=0.4

**Table 6.9 Accuracy of student responses to the question "*What did the medical student say you should do to treat your child's temperature, coughing and being off her food?*"**

**Student dialogue**

HCHP "i) panadol each 4 hours if hot and miserable, ii) drinks are more important than food, iii) panodol before food if throat pain is bad"
LCLP "i) panadol 4 hourly, ii) keep her fluids up"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 0 | 5 | 0 | 16 |
| | **2 (n=24)** | 1 | 10 | 13 | 0 |
| **LCLP** | **1 (n=24)** | 9 | 4 | 11 | 0 |
| | **2 (n=21)** | 10 | 5 | 6 | 0 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =34.2, df 3, p<0.0001

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=31.6, df 3, p<0.0001
LCLP 1 vs LCLP 2 $X^2$=1.4, df 2, p=0.5

**Table 6.10 Accuracy of student responses to the question "*What did the medical student say caused your child's temperature, coughing and being off her food?*"**

**Student dialogue**

HCHP "a virus"
LCLP "a viral upper respiratory tract infection"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 13 | 5 | 3 | 0 |
| | **2 (n=24)** | 18 | 1 | 5 | 0 |
| **LCLP** | **1 (n=24)** | 22 | 0 | 2 | 0 |
| | **2 (n=21)** | 20 | 0 | 1 | 0 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =9.9, df 2, p=0.007

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=3.8, df 2, p=0.2
LCLP 1 vs LCLP 2 $X^2$=0.2, df 1, p>0.9*

*Fisher's exact method

**Table 6.11 Accuracy of student responses to the question "*How long did the medical student say it would take for your child to recover?*"**

**Student dialogue**

HCHP "get better...in the next few days"
LCLP "she'll be right in a day or two"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 11 | 1 | 2 | 7 |
| | **2 (n=24)** | 22 | 0 | 0 | 2 |
| **LCLP** | **1 (n=24)** | 14 | 0 | 0 | 6 |
| | **2 (n=21)** | 15 | 1 | 0 | 5 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =2.3, df 3, p=0.5

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=9.3, df 3, p=0.03
LCLP 1 vs LCLP 2 $X^2$=1.1, df 2, p=0.6

**Table 6.12 Accuracy of student responses to the question *"Did the medical student identify any problems with your child's nose?"***

**Student dialogue**

HCHP "runny"
LCLP "runny"

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 6 | 0 | 0 | 15 |
| | **2 (n=24)** | 13 | 0 | 0 | 11 |
| **LCLP** | **1 (n=24)** | 11 | 0 | 0 | 13 |
| | **2 (n=21)** | 11 | 0 | 0 | 10 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =0.4, df 1, p=0.7*

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=3.0, df 1, p=0.1*
LCLP 1 vs LCLP 2 $X^2$=0.2, df 1, p=0.8*

*Fisher's exact method

**Table 6.13 Accuracy of student responses to the question "*Did the medical student identify any problems with your child's ears?*"**

**Student dialogue**

No problem was identified by the student

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 16 | 0 | 0 | 5 |
| | **2 (n=24)** | 23 | 0 | 0 | 1 |
| **LCLP** | **1 (n=24)** | 23 | 0 | 0 | 1 |
| | **2 (n=21)** | 20 | 0 | 0 | 1 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =2.2, df 1, p=0.3*

Comparison of recall responses by order of viewing for each interview:
HCHP 1 vs HCHP 2 $X^2$=3.7, df 1, p=0.08*
LCLP 1 vs LCLP 2 $X^2$=0.01, df 1, p>0.9*

*Fisher's exact method

**Table 6.14 Accuracy of student responses to the question "*Did the medical student identify any problems with your child's tummy?*"**

**Student dialogue**

No problem was identified by the student

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 20 | 0 | 0 | 1 |
| | **2 (n=24)** | 24 | 0 | 0 | 0 |
| **LCLP** | **1 (n=24)** | 23 | 0 | 0 | 0 |
| | **2 (n=21)** | 19 | 0 | 0 | 2 |

Comparison of recall responses HCHP vs LCLP (n=45)< $X^2$ =0.4, df 1, p=0.6*

Comparison of recall responses by order of viewing for each interview:

HCHP 1 vs HCHP 2 $X^2$=1.2, df=1, p=0.5*

LCLP 1 vs LCLP 2 $X^2$=2.3, df 1, p=0.2*

*Fisher's exact method

**Table 6.15 Accuracy of student responses to the question "*Was your child dehydrated?*"**

**Student dialogue**

No problem was identified by the student

| | | Recall responses | | | |
|---|---|---|---|---|---|
| **Interview** | **Order of viewing** | **Correct** | **Partially correct** | **Partially incorrect** | **Incorrect** |
| **HCHP** | **1 (n=21)** | 18 | 0 | 0 | 3 |
| | **2 (n=24)** | 22 | 0 | 0 | 2 |
| **LCLP** | **1 (n=24)** | 21 | 0 | 0 | 3 |
| | **2 (n=21)** | 18 | 0 | 0 | 2 |

Comparison of recall responses HCHP vs LCLP (n=45), $X^2$ =0.001, df 1, p>0.9*

Comparison of recall responses by order of viewing for each interview:

HCHP 1 vs HCHP 2 $X^2$=0.4, df 1, p=0.7*
LCLP 1 vs LCLP 2 $X^2$=0.07, df 1, p>0.9*

*Fisher's exact method

**Table 6.16 Summary of medical student recall responses by interview type and order of viewing**

| Recall question | Interview | Order of viewing |
|---|---|---|
| Did the medical 'student' identify any problems with your child's throat? | More correct recall after the high clinical competence, high patient-centred interview (p<0.0001) | No association |
| Did the medical 'student' give you any other information about your child's illness? | More correct recall after the high clinical competence, high patient-centred interview (p<0.0001) | More correct recall after the second interview for the high clinical competence, high patient-centred interview (p=0.02) |
| Did the medical 'student' tell you to bring your child back to be seen again? | More incorrect recall after the low clinical competence, low patient-centred interview (p=0.0004) | No association |
| Did the medical 'student' identify any problems with your child's glands? | More correct and less incorrect recall after the high clinical competence, high patient-centred interview (p=0.04) | No association |
| What did the medical 'student' say you should do to treat your child's temperature, coughing and being off her food? | More correct recall after the low clinical competence, low patient-centred interview (p<0.0001) | More correct recall after the second interview for the high clinical competence high patient-centred interview (p<0.0001) |
| What did the medical 'student' say caused your child's temperature, coughing and being off her food? | More correct recall after the low clinical competence, low patient-centred interview, (p=0.007) | No association |
| How long did the medical 'student' say it would take for your child to recover? | No association | More correct recall after the second interview for the high clinical competence, high patient-centred interview (p=0.03) |

**Table 6.17 Comparison of maternal and student recall responses**

| | | Recall responses[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Interview** | **Viewer[b]** | **C** | **PC** | **PI** | **I** | **$X^2$** | **df** | **p*** |
| *What did the medical 'student' say caused your child's temperature, coughing and being off her food?* | | | | | | | | |
| **LCLP** | **mother** | 15 | 5 | 1 | 8 | 24.4 | 3 | <0.0001 |
| | **student** | 42 | 0 | 3 | 0 | | | |
| *Did the medical student identify any problems with your child's throat?* | | | | | | | | |
| **HCHP** | **mother** | 13 | 5 | 11 | 1 | 13.5 | 3 | 0.004 |
| | **student** | 15 | 20 | 4 | 6 | | | |
| **LCLP** | **mother** | 0 | 20 | 1 | 8 | 10.3 | 2 | 0.006 |
| | **student** | 0 | 14 | 5 | 26 | | | |
| *How long did the medical student say it would take for your child to recover?* | | | | | | | | |
| **LCLP** | **mother** | 14 | 6 | 0 | 9 | 7.2 | 2 | 0.03 |
| | **student** | 29 | 1 | 0 | 11 | | | |
| *What did the medical student say you should do to treat your child's temperature, coughing and being off her food?* | | | | | | | | |
| **HCHP** | **mother** | 4 | 5 | 10 | 1 | 8.7 | 3 | 0.03 |
| | **student** | 1 | 15 | 29 | 0 | | | |
| *Did the medical student tell you to bring your child back to be seen again?* | | | | | | | | |
| **HCHP** | **mother** | 0 | 24 | 1 | 4 | 6.2 | 2 | 0.04 |
| | **student** | 0 | 28 | 0 | 17 | | | |

Maternal and student information recall responses were not significantly different for all other comparisons.

[a] Recall responses categories:

| | | | |
|---|---|---|---|
| C | Correct | PI | Partially incorrect |
| PC | Partially correct | I | Incorrect |

[b] Mothers n=30, students n=45

*Chi square test

**Table 6.18 Student evaluation of the Child Health Interview seminar**

| | Students | | |
|---|---|---|---|
| | **Term 1 n=22** | **Term 2 n=22** | **Total** |
| *"The Child Health Interview seminar in week 1 assisted the development of my clinical interview skills"*[a] | | | |
| Disagree | 6 | 4 | 10 |
| Undecided | 5 | 4 | 9 |
| Agree | 11 | 14 | 25 |

[a] Students were asked to indicate their level of agreement with the statement above.

# Chapter 7 Discussion and conclusions

## 7.1 Introduction

This thesis opened with a choice of three doctor responses to a concerned mother who presented with her acutely ill young child. These doctor responses were each taken from one of the interviews used in the studies described in subsequent chapters. Results from this thesis show that more mothers will prefer the first response (taken from the high clinical competence and high patient-centredness interview) than the other two responses.

The level of doctor clinical competence and patient-centredness in medical interviews is important to patients, and also is associated with the outcomes of medical consultations (Wensing et al. 1998; Kinnersley et al. 1999; Stewart et al. 2000; Sullivan et al. 2000; Katic et al. 2001; Markson et al. 2001). However prior to the studies described in this thesis, little information had been available about the relationship between parent evaluations of medical student interviews and specific levels of student clinical competence and patient-centredness. In addition, the separation and individual manipulation of these two interview elements had not been reported, and the relative contributions of each of these qualities to the success or otherwise of a medical interview was unknown.

The effect of individual characteristics such as socioeconomic status or previous experience of medical student interviews on parent evaluations of student interview skills is unclear and may be significant (Hall et al. 1988; Heffer et al. 1997; Cooper-Patrick et al. 1999; Jackson et al. 2001). Finally, specific educational roles for parent

evaluations are still to be developed, and the acceptability to students of having parents evaluate their skills established.

This thesis was therefore designed to examine the relative effect of student clinical competence and patient-centredness on maternal satisfaction and recall of information following a child health consultation. The relationships between maternal and child characteristics and maternal satisfaction ratings were studied also. In a separate study, the value of integrating maternal perceptions into medical student learning was evaluated.

## 7.2 Development of the recreated medical student interview videotapes

In order to study the effects of medical student clinical competence and patient-centredness on parent evaluations of child health consultations, videotaped interviews were made and shown to groups of mothers. The use of videotaped interviews permitted control of all student and maternal non-verbal behaviours and individual characteristics within the consultation. This control ensured that these variables did not influence the effects noted in the studies. It was also arranged that each interview contained the same clinical content and provided the same diagnostic and management information to the mother.

Recently, three other studies have been published which used similar videotape manipulations of medical interviews to assess the relationship between doctor verbal behaviours and patient evaluations (Fogarty et al. 1999; Smith et al. 1999; Dowsett et al. 2000). These studies are summarised and compared with the study reported in this thesis in Table 7.1. Each of the studies reported that patients preferred more patient-centred / compassionate doctors. However, because of the limitations imposed by their design, none of these previous studies were able to study the

independent effects of separate interview elements in the detail that was possible in this thesis, nor the effects of the characteristics of the individual patients who viewed and rated the tapes.

The capacity of the studies described in this thesis to demonstrate an independent effect of both clinical competence and patient-centredness on maternal satisfaction ratings was due largely to the careful development of the videotaped interviews. Every effort was taken to ensure authenticity of the recreated scenarios. Rather than using a single real student interview as the template for all four interviews, two separate real student interviews were faithfully transcribed. The subsequent manipulations of dialogue then consisted of interchanges between the two transcripts rather than the invention of new dialogue.

The independent assessment of clinical competence, patient-centredness and information content was carefully planned and executed. Rigorous and independent assessment of recreated videotaped interviews for a study of this kind is unique. The use of five published satisfaction scales in the pilot study, and subsequently two of these scales in the definitive study sought to identify the best possible measurement scales available for these studies. In addition, demonstrating the realism of the videotape recreations to the viewing mothers was important because this meant mothers would be more likely to respond in similar ways to real student interviews.

## 7.3 Key findings

The key findings of this thesis relate to the three hypotheses articulated at the conclusion of the literature review.

*Hypothesis: Maternal satisfaction and recall are greater following interviews in which students demonstrate higher levels of clinical competence and patient-centredness, and these effects are independent.*

Maternal satisfaction ratings were greater following interviews in which the student demonstrated higher levels of clinical competence and patient-centredness, and the effects of clinical competence and patient-centredness on maternal ratings were independent. Clinical competence was a more important determinant of maternal satisfaction than was patient-centredness. The relationship between maternal recall and clinical competence was less clear, with maternal recall being greater following a more competent interview for only some items of information provided by the student. The level of student patient-centredness did not effect maternal recall of information.

A calibration or learning effect was observed with mean maternal satisfaction ratings for all 60 mothers being higher for the second interview. The ranking of interviews was however unchanged: mothers still rated the high clinical competence, high patient-centredness interview highest of the interviews, and the low clinical competence, low patient-centredness interview lowest. A similar learning effect was observed for maternal information recall which was greater following the second interview, however not consistently so.

*Hypothesis: Child and maternal characteristics, previous maternal experience of medical student interviews and the health problem of the child are associated with different maternal ratings of student interviews.*

Mothers of low occupational prestige gave lower satisfaction ratings to medical student videotape interviews than did the other mothers. Higher satisfaction ratings

after the second interview were associated with a number of maternal and child characteristics, including previous maternal experience of a medical student interview. Mothers of children with complex medical problems were the only group of mothers to rate their satisfaction with the second interview lower than for the first. These results are all consistent with results of previous studies of adult patients (Hall et al. 1988; Woolliscroft et al. 1994; Hall et al. 1996; Heffer et al. 1997; al-Doghaither et al. 2000; Jackson et al. 2001).

*Hypothesis: Focussing on maternal perceptions of medical student interview qualities assists students to understand the importance of these skills.*

By assuming the role of a mother in the evaluation of a medical interview, new insights into important interview skills were available to the medical students. Students were able also to compare their own interview evaluations with those of mothers. In discovering the similarities that they had with mothers, and becoming more familiar with the process of obtaining parent feedback and evaluations, students became more comfortable with the concept of including parent evaluations in their learning. Student child health interview skills learning was enhanced by the inclusion of maternal perceptions.

## 7.4 Strengths and limitations of these studies

The studies reported in this thesis demonstrate that it is possible to manipulate clinical competence and patient-centredness independently in medical interviews, and for parents and professionals to subsequently evaluate these interviews. The methods developed were rigorous, yet easily amenable to replication and use in related studies of medical interviews.

The importance of the exact wording used to provide information in the interviews might have been underestimated. It was not possible to vary clinical competence without varying student dialogue slightly, even though the information content was unchanged. These slight variations may have affected maternal recall and may have explained the contradictory findings regarding maternal recall and student clinical competence.

Measurement of patient-centredness is more complex than measurement of clinical competence due predominantly to continuing debate regarding operationalisation of the basic constructs of patient-centredness (Mead and Bower 2000a; Mead and Bower 2000b). In the absence of a generally accepted measure of patient-centredness, three separate measures of patient-centredness were used in the development and independent assessment of the interviews.

The design used in the studies reported in this thesis permitted comparison of multiple maternal ratings of a single interview, and also the direct comparison of two interviews by mothers. This is a particular strength of this work because from this it has been possible to compare differences in maternal ratings for the same interview with maternal characteristics. In most studies of the relationship between patient characteristics and patient evaluations of medical interviews, the evaluations of individual patients are compared for different interviews and usually different doctors. The control exercised over so many interview variables allowed confidence in the significance of the calibration effect observed in the evaluations of certain mothers. The reasons for these observed effects could not however be fully explained in this study.

The videotaped interviews in combination with the results of the independent content assessment and the satisfaction ratings of real mothers provided a valuable teaching

tool. When viewing the videotaped interviews, medical students undertook a 'passive' role playing exercise. Showing the videotapes to a group of students allowed them to simultaneously share in the mother's experiences. In the subsequent discussions, students were able to reflect together on their perceptions of the interviews and share information. They were able also to review the results of the independent assessment of clinical competence, patient-centredness and information content, and the satisfaction ratings and information recall of real mothers following the same interviews.

Whilst obtaining 'parent' feedback from a standardised patient was useful to the students, it was not a true replication of a real parent evaluation and could not therefore test the acceptability to medical students of obtaining such evaluations. It did however allow some exploration of possible methods for including parent evaluations in medical student learning programs.

## 7.5 Directions for further research

Medical school curricula need to prepare students for a lifetime of medical practice. The growing prevalence of a client-provider model of health care services provision will increase the requirement for doctors, and those responsible for medical student training programs, to both foster the development of interview skills, and to heed the perceptions of patients and their families.

Parents are able to evaluate the clinical interview skills of medical students. However, if obtaining parent evaluations of child health consultations is too difficult, then students and their teachers will not embrace it. Similarly, if these groups have significant philosophical objections to the obtaining of parent perceptions regarding

the quality of their care, then irrespective of the quality of the information obtained, it will be disregarded.

Challenges therefore remain in the promotion of this form of interview performance evaluation amongst medical students. Suitable administrative procedures must also be developed and tested, and the importance of the calibration effect observed in maternal ratings needs further exploration. The methods developed for this thesis will permit further study of each of these identified challenges.

*Real parent evaluation of medical students*

A study of real parent evaluations of medical student interviews could provide information regarding the feasibility and acceptability to both parents and students of including these evaluations in medical student learning. Development of the study design would include attention to methods to identify eligible parents and to obtain informed consent. Parents could complete the IPS scale (Schnabl et al. 1991) which was used successfully in the standardised 'mother' interviews when evaluating the medical students. Methods for retrieving completed parent evaluations would be required, and the manner of provision of student feedback of evaluations determined. By conducting a pilot study initially, the exact level of administrative support could be ascertained and the numbers of parent evaluations required per student established. A balance between acceptable reliability and administrative feasibility could also be sought.

Student attitudes to parent evaluations of interview skills should also be surveyed and, if required, specific programs devised to promote the acceptability of this form of assessment to students.

*Test-retest reliability*

This form of reliability testing is rarely conducted in relation to patient evaluations of medical interviews. This could be assessed easily using the videotapes developed for the studies reported in this thesis. Parents could provide a baseline evaluations of one of the videotaped 'student' interviews, and then re-evaluate the same interview two weeks later. Parent satisfaction scores following both viewings could then be compared.

*Manipulation of other interview variables*

The effects of manipulation of other interview variables on parent evaluations of student interviews could also be explored. For example, using the original transcripts, modifications could be made to the exact wording of the information statements so that they were varied independently of the level of clinical competence across the interviews. By repeating the study with these new videotapes the importance of the wording could be assessed.

## 7.6 Final conclusions

Parents continuously evaluate the medical interviews in which they participate. They form opinions regarding doctor competence and other characteristics, and use these assessments to decide whether to believe the doctor, to comply with treatment recommendations, and even whether to continue attending a particular doctor. Seeking the evaluations of parents does not ask them to undertake new procedures, but rather requests access to information that already exists.

The methods developed for the studies reported in this thesis have shown that mothers can evaluate the interview skills of medical students. The studies have identified clearly aspects of the incorporation of parent evaluations in medical student learning programs that require further study. These include the importance of the calibration effect observed in maternal ratings and recall, the effects of maternal and child characteristics on maternal interview evaluations and information recall, and the feasibility and acceptability to medical students of obtaining parent evaluations. Using the methods developed for this thesis, many of these can be specifically addressed.

The comments below relate to the importance of this continued work:

"The development of reliable measures of student performance with predictive validity of subsequent clinical competencies and a simultaneous educational role is a gold standard yet to be achieved." (Wass et al. 2001).

**Table 7.1 Comparison of methods in studies of patient evaluations using manipulated videotaped medical interviews**

| | Fogarty et al. 1999 | Smith et al. 1999 | Dowsett et al. 2000 | O'Keefe et al. |
|---|---|---|---|---|
| **Independent variables** | "enhanced compassion " | Patient-centred/ doctor-centred interviewing techniques | Patient-centred/doctor-centred interview techniques | Clinical competence, and patient-centred interview techniques |
| **Dependent variables** | Patient assessment of physician compassion | Patient assessment of physician expertise and interview skills including patient-centred skills | Patient satisfaction | Parent satisfaction and recall of information |
| **Realism** | Transcripts based on actual consultations<br>Focus group pilot viewings | Not reported | Not reported | Transcripts based on actual consultations<br>Parent ratings and independent expert assessment |
| **Information on script development** | Insertion of two "enhanced compassion" segments | Not provided | Not provided | Manipulations fully described |
| **Control of other variables** | Same videotape footage re-used except for inserted segments | Not undertaken | Actors used<br>Gender, clarity and information content controlled | Actors used<br>Gender, information content, nonverbal behaviours and context controlled |
| **Independent assessment** | Not reported | Independent assessment of patient-centred techniques | Not undertaken | Independent assessment of clinical competence, patient-centredness and information content |

**Table 7.1 Comparison of methods in studies of patient evaluations using manipulated videotaped medical interviews (continued)**

| | Fogarty et al. 1999 | Smith et al. 1999 | Dowsett et al. 2000 | O'Keefe et al. |
|---|---|---|---|---|
| **Measurement scale** | Developed by the authors for the study | Published scale translated into Chinese | Developed by the authors for the study | Two published scales used for satisfaction<br>Recall questions developed by the authors for the study |
| **Independent response coding** | Not undertaken | Not undertaken | Not undertaken | Two independent coders of recall responses |
| **Comparison of interviews** | Not undertaken | Two videotapes were compared | Two videotapes were compared | Two interviews were compared |

## Appendix 1 Medical student interview transcripts

### App 1.1 HCHP Interview: High clinical competence, high patient-centredness

**S: Hello my name's Mark. I'm a 6th year medical student and I'm just gonna talk to you about what's going on.**

M: So your gonna have a look at her?

**S: Yeh and then I'm gonna talk to the doctor about her and then we'll come back with the um, doctor and see, OK?**

M: So what is first?

**S: Well maybe you could tell me a bit about what made you um, bring Susan in today?**

M: She's had a temperature since Monday, she's been coughing and she's gone right off her food, she only fed twice yesterday.

**S: Aha, how high has her temperature been do you know?**

M: Err the highest it went was 40. We gave panadol, normally it does work but it wouldn't work.

**S: So has that been a concern to you?**

M: Yes, it always works so I am afraid there is something seriously wrong now. Are you going to take her temperature again?

**S: The nurses have got a temperature of 38 about 15 minutes ago, when they gave her another dose of panadol. I agree with you that she still seems hot, but the panadol usually takes about 30 minutes to work so we could perhaps check her temperature when I examine her in a little while. How often are you giving the panadol?**

M: 4 hourly. And she only took about 60mls of milk yesterday.

**S: For the whole day?**

M: Yes. And she had like, um, one mouthful of one piece of toast that's all she ate.

**S: Right.**

M: She's gone right off her solids.

**S: How old is she now?**

M: Um, she's 18 months, and also this morning we could only get about 20mls of juice into her, she won't take any solids.

**S: Right. Is that very unusual?**

M: Yeh, yeh. Yeh it doesn't usually matter whether she's sick or not she's usually good and takes her milk.

**S: How much does she normally drink?**

M: Between 100 and 150mls, Yes, this is not like her.

**S: What about her weight, how's she going with that?**

M: Well usually.

**S: Right.**

M: She's the sort of child if she wants to eat it she wants to eat it. We usually give her a Wheatbix or a dry toast with Vegemite on it for breakfast. This morning when she tried to eat it, it was like she just couldn't, I don't know whether her throat was too dry or what it was. But when she put it in her mouth and sucked on it, she like started to gag on it.

**S: Right.**

M: That's just not like her at all.

**S: No, now can you tell me about the cough?**

M: She's had a really bad cough for most of the night and she's very irritable which is just not like her, yesterday she was coughing a little bit but last night we really noticed it. It was really bad.

**S: Right. So there's been a real difference and that, so that's been just since yesterday?**

M: Well, the last two nights she's been a bit iffy with her sleep. And last night the coughing was waking her up more than anything.

**S: Right.**

M: Which is out of character, unusual for her because she a fine sleeper, all night doesn't wake up.

**S: Oh right. So what do you think the problem is?**

M: She is teething too. Yeh, I only noticed that 4 days ago and basically since I noticed that till now she's just been haywire.

**S: Right.**

M: And really, really upset.

**S: Yeh, children do that, do get a bit irritated when they're teething.**

M: Yeh, we took her to the doctor the other day. He said she had a bit of a cold with maybe a sore throat and she was teething. He explained that's why she was running a fever.

**S: Right, Yeh, some doctors say that a fever can be caused by the teeth coming out and some doctors say not.**

M: But yeh like I could tell it was obviously distressing her a lot.

**S: Right.**

M: And I believe that her temperature probably did come from that. But I mean like, if you stuck anything in her mouth now she'd scream and like um, now she's not eating at all so I don't think it's just teeth.

**S: So how was her health before?**

M: Health's been alright.

**S: Right. So does she have any asthma or epilepsy?**

M: No she's doesn't have fits or anything.

**S: Has she had anything like this previously? Has she had high temperatures recently?**

M: Yes 3 or 4 weeks ago, we took her to the doctor who said it was just a cold.

**S: Do you think that this is the same problem again?**

M: Last time her fever was not so high and she could drink and eat so this seems different.

**S: So is there any history of any problems in your family or your husband's family?**

M: No.

**S: Right. Do you have any other children?**

M: No.

**S: OK, right. So what do you do?**

M: Oh me? Oh well I'm not working at present.

**S: And her father?**

M: He works as a builder.

**S: No problems. And um, during the pregnancy were there any problems?**

M: No, I was healthy during the pregnancy.

**S: Does she take any medicines when she is well?**

M: No.

**S: Does she have any allergies to anything?**

M: No.

**S: Has she had her immunizations?**

M: Yes.

**S: Right um, now just a couple of questions just to, um like, um, work out if like she's got any other problems. Ah, have you noticed if her urine is a bit smelly?**

M: No.

**S: Right. And have you um, noticed her having any ear infections or throat infection?**

M: Well she's been pulling at her ears quite a lot.

**S: Right, do you think there might be an ear infection?**

M: Yeh maybe, like the past 4 to 5 days she's been really pulling at her ears.

**S: Yeh. So has she been complaining of sore throat or ……..**

M: No, only that I can sort of tell that the throat looks sore.

**S: Right.**

M: Just the look on her face, the distress when she coughs.

**S: Uhum Aha, OK. Um, so um, have you found her breathing faster or um……**

M: No it seems normal

**S: Um, has she ever gone blue with feeding?**

M: Nah.

**S: Does she ever get sweaty for no reason?**

M: Oh no, no.

**S: No. Now what I'd like to do is to examine her over on the examination couch here…….**

**********EXAMINATION**********

**S: Right, um. Please come and sit down. Ah, examining Susan she has a mild fever now, 37.8 and a runny nose. There's no sign of ear infection but um, her throat's very red and sore looking. The glands in her neck are also a little swollen.**

M: Oh.

**S: These are infection fighting glands and they swell up with throat infections. I think this is um, all caused by um, a virus and that she will get better all by**

**herself in the next few days without needing antibiotics. Sometimes viruses cause very high fevers. I don't think teething is causing the fever but she may be a bit sore from this. Um, she's not dehydrated which means she's getting enough fluids, though it doesn't seem she's drinking much.**

M: Why isn't she drinking or eating?

**S: Right, um, her throat is very sore but I think she'll get better soon.**

M: OK.

**S: Give her panadol each 4 hours if she is hot and miserable. Maybe before she eats if her throat pain's bad. Drinks are more important than food for the next few days, um, any sort's OK, water, milk, juice. If her fever's very high the panadol may not bring it back to normal, but this is OK because we believe fever is useful in fighting infections. Does this all sound OK to you?**

M: Uh ha OK.

**S: So panadol each 4 hours if she's hot and miserable and um, has a sore throat. Drinks are more important than food and she should be better in a few days. If she is not getting better, or if she seems to become worse, she won't drink or if you are worried, then she needs to be checked again by a doctor. Do you understand all that?**

M: Yes, thankyou.

**S: Do you have anything you want to ask me?**

M: No um, I don't think so.

**S: I have a sheet here with some information about looking after fever in young children. Now I'm going to ask one of the other doctors to some in and have a chat with you too. It will be like repeating everything.**

M: Oh that's OK, that's fine.

## App 1.2 HCLP interview: High clinical competence, low patient-centredness

** Maternal offers of information and student dialogue that are different to that of the HCHP interview are indicated with an asterisk.*

**S: Hello my name's Mark. I'm a 6th year medical student and I'm just gonna talk to you about what's going on.**

M: So your gonna have a look at her?

**S: Yeh and then I'm gonna talk to the doctor about her and then we'll come back with the um, doctor and see, OK?**

M: So what is first?

**S: Well maybe you could tell me a bit about what made you um, bring Susan in today?**

M: She's had a temperature since Monday, she's been coughing and she's gone right off her food, she only fed twice yesterday.

**S: Aha how high has her temperature been do you know?**

*M: Err the highest it went was 40. We gave panadol, normally it does work but it wouldn't work.

***S: How often are you giving the panadol?**

*M: 4 hourly. It always works so I am afraid there is something seriously wrong now.

***S: 4 hourly panadol?**

*M: Are you going to take her temperature again?

***S: The nurses have got a temperature of 38 about 15 minutes ago, when they gave her another dose of panadol. The panadol usually takes about 30 minutes to work.**

*M: And she only took about 60mls of milk yesterday.

***S: Was that 60ml for the whole day?**

M: Yes. And she had like, um, one mouthful of one piece of toast that's all she ate.

**S: Right.**

M: She's gone right off her solids.

**S: How old is she now?**

M: Um, she's 18 months, and also this morning we could only get about 20mls of juice into her, she won't take any solids.

***S: Right.**

M: Yeh, yeh. Yeh it doesn't usually matter whether she's sick or not she's usually good and takes her milk.

**S: How much does she normally drink?**

M: Between 100 and 150mls, Yes, this is not like her.

**S: What about her weight, how's she going with that?**

M: Well usually.

**S: Right.**

M: She's the sort of child if she wants to eat it she wants to eat it. We usually give her a Wheatbix or a dry toast with Vegemite on it for breakfast. This morning when she tried to eat it, it was like she just couldn't, I don't know whether her throat was too dry or what it was. But when she put it in her mouth and sucked on it, she like started to gag on it. *That's just not like her at all.

**S: Can you tell me about the cough?**

M: She's had a really bad cough for most of the night and she's very irritable which is just not like her, yesterday she was coughing a little bit but last night we really noticed it. It was really bad.

***S: So that's been just since yesterday?**

M: Well, the last two nights she's been a bit iffy with her sleep. And last night the coughing was waking her up more than anything.

**S: Right.**

M: Which is out of character, unusual for her because she a fine sleeper, all night doesn't wake up.

***S: Oh right.**

M: She is teething too. Yeh, I only noticed that 4 days ago and basically since I noticed that *till now she's just been haywire, and really, really upset.

***S: Does she have a runny nose?**

*M: No, we took her to the doctor the other day. He said she had a bit of a cold with maybe a sore throat and she was teething. He explained that's why she was running a fever.

***S: Right.**

M: But yeh like I could tell it was obviously distressing her a lot.

**S: Right.**

M: And I believe that her temperature probably did come from that. But I mean like, if you stuck anything in her mouth now she'd scream and like um, now she's not eating at all so I don't think it's just teeth.

**S: So how was her health before?**

M: Health's been alright.

**S: Right. So does she have any asthma or epilepsy?**

M: No she's doesn't have fits or anything.

**S: Has she had anything like this previously? Has she had high temperatures recently?**

M: Yes 3 or 4 weeks ago, we took her to the doctor who said it was just a cold.

***S: Just a cold?**

M: Last time her fever was not so high and she could drink and eat so this seems different.

**S: So is there any history of any problems in your family or your husband's family?**

M: No.

**S: Right. Do you have any other children?**

M: No.

**S: OK right. So what do you do?**

M: Oh me? Oh well I'm not working at present.

**S: And her father?**

M: He works as a builder.

**S: No problems. And um, during the pregnancy were there any problems?**

M: No, I was healthy during the pregnancy.

**S: Does she take any medicines when she is well?**

M: No.

**S: Does she have any allergies to anything?**

M: No.

**S: Has she had her immunizations?**

M: Yes.

**S: Right um, now just a couple of questions just to, um like, um, work out if like she's got any other problems. Ah, have you noticed if her urine is a bit smelly?**

M: No.

**S: Right. And have you um, noticed her having any ear infections or throat infection?**

*M: Well she's been pulling at her ears quite a lot, yeh, maybe, like the past 4 to 5 days she's been really pulling at her ears.

***S: So has she been complaining of sore throat or .....**

M: No, only that I can sort of tell that the throat looks sore.

**S: Right.**

M: Just the look on her face, the distress when she coughs.

**S: Uhum. Aha, OK. Um, so um, have you found her breathing faster or um .....**

M: No its seems normal.

**S: Um, has she ever gone blue with feeding?**

M: Nah

**S: Does she ever get sweaty for no reason?**

M: Oh no, no.

**S: No. Now what I'd like to do is to examine her over on the examination couch here .....**

**********EXAMINATION**********

**S: Right, um. Please come and sit down. Ah, examining Susan she has a mild fever now, 37.8 and a runny nose. There's no sign of ear infection but um, her throat's very red and sore looking. The glands in her neck are also a little swollen.**

M: Oh.

**S: These are infection fighting glands and they swell up with throat infections. I think this is um, all caused by um, a virus and that she will get better all by herself in the next few days without needing antibiotics. Sometimes viruses cause very high fevers. I don't think teething is causing the fever but she may be a bit sore from this. Um, she's not dehydrated which means she's getting enough fluids, though it doesn't seem she's drinking much.**

M: Why isn't she drinking or eating?

**S: Right, um, her throat is very sore but I think she'll get better soon.**

M: OK.

**S: Give her panadol each 4 hours if she is hot and miserable. Maybe before she eats if her throat pain's bad. Drinks are more important than food for the next few days, um, any sort's OK, water, milk, juice. If her fever's very high the**

**panadol may not bring it back to normal, but this is *OK because we believe fever is useful in fighting infections.**

M: Uh ha OK.

**S: So panadol each 4 hours if she's hot and miserable and um, has a sore throat. Drinks are more important than food and she should be better in a few days. If she is not getting better, or if she seems to become worse, she won't drink or if you are worried, then she needs to be checked again *by a doctor.**

M: OK.

***S: I have a sheet here with some information about looking after fever in young children. Now I'm going to ask one of the other doctors to some in and have a chat with you too. It will be like repeating everything.**

M: Oh that's OK, that's fine.

## App 1.3 LCHP interview: Low clinical competence, high patient-centredness

** Maternal offers of information and student dialogue that are different to that of the LCLP interview are indicated with an asterisk.*

**S: So Mrs Smith is it?**

M: Yes.

**S: Is that your name?**

M: Smith, yes.

**S: Right err, so how olds the, how old is Susan?**

M: 18 months.

**S: 18 months is she? OK, so what's err, what's been the problem with err Susan?**

M: Ahh .....

**S: Err recently err .....**

M: She has had a temperature since err.....

**S: So she's got a bit of a fever?**

M:.....Monday, and she's been coughing and she's gone right off her food, she fed only twice yesterday.

**S: Since Monday? Now, err, and um, how, how high has her temperature been do you know?**

M: Err the highest it went was 40.

**S: Really?**

M: Yeh.

**S: And what's it generally?**

M: Generally its always err, around 36 not over 38. We give panadol, normally it does work but it wouldn't work.

***S: Ohh, so has that been a concern to you?**

M: It always works.

**S: So on Monday her temperature was up?**

M: Is it serious?

***S: I don't know at the moment... and then it got worse?**

M: Yes last night, she was coughing.

***S: So there's been a real difference and that, so that's just been since yesterday?**

*M: Yes.

***S: Right, so what do you think the problem is?**

M: Are you going to take her temperature again?

***S: She's just had some panadol, so we could perhaps check her temperature in a bit. So it was up around 40 again on Tuesday?**

M: Yes.

**S: Yes.**

M: Aha.

**S: Aha. And you've been giving her err, periodic panadol since?**

M: Yes.

**S: Yeh, uh ha. Are you giving it 4 hourly?**

M: Yeh, and she only took about 30mls of milk yesterday.

***S: For the whole day, is that very unusual?**

*M: Yes. And she had like, um, one mouthful of one piece of toast and that's all she ate.

**S: OK, so has she had any err, has she been rubbing her ears or, or complaining of a sore throat or any cough?**

M: She's been pulling at her ears quite a lot.

***S: Do you think there might be an ear infection?**

*M: Yeh, maybe, like the past 4 to 5 days she's really pulling at her ears.

***S: But she's not complaining of earache or sore throat or anything? Does she say much?**

M: She talks yeh. She's not complaining of sore throat but I can sort of tell that the throat looks sore, the look on her face.

***S: Right, but she hasn't complained of earache or anything like that. What about tummy pain? Pain in the stomach?**

M: No pain in the stomach but she has had a bad cough and she won't eat, This morning when she tried to eat breakfast, it was like she just couldn't, I don't know whether her throat was too dry or what it was. But when she put it in her mouth and sucked on it, she like started to gag on it.

**S: Has she had any nausea or vomiting?**

M: No.

**S: Any diarrhoea?**

M: No.

**S: OK. Right, has she complained of any pain or have you noticed any strange smell to her urine?**

M: No.

**S: Err, what about headaches, has she complained of any headaches?**

M: It's hard to tell, ha ha, she can't tell what her head is.

**S: That's fair enough! Mmm. Is she err, err, so she hasn't been coughing up any phlegm or anything like that?**

M: She's had a really bad cough for most of the night. She's very irritable which is just not like her, yesterday she was coughing a little bit but last night we really noticed it. It was really bad. She is teething too. Like she's got two teeth in the front and four at the back and she's cutting one of these eye teeth at the back. I only noticed it 4 days ago and basically since I noticed that till now she's just been haywire, and really upset.

***S: Yeah, children do that, do get upset with teething. What about a runny nose?**

M: No.

**S: No runny nose, right.**

M: She went to see the doctor the other day. He said she had a bit of a cold with maybe a sore throat and she was teething. He explained that's why she was running a fever the other day.

**S: He looked in her mouth and it was a bit red?**

M: Yeh, he said it was a bit red.

**S: So the doctor said it was just a cold right. OK cold.**

M: Yeh, but that was at first, now its gone right down to the fact that she's not eating at all so I don't think it's just teething and a cold.

**S: Has she had anything like this previously? Has she err had high temperatures recently?**

M: Yes.

**S: Before this episode?**

M: Yeh, err 3 or 4 weeks ago.

**S: Was it up around 40° or so?**

M: No.

**S: So it wasn't as bad?**

M: No.

**S: So did you find out what was wrong with her then? Did she go to see the doctor?**

M: Oh yeh.

**S: And what did they say?**

M: Last time it was just a cold.

***S: Do you think its the same thing this time?**

*M: Last time her fever was not so high and she could drink so this seems different.

**S: Has she had any other problems in the past? Other medical problems, asthma, diabetes?**

M: No.

**S: Nothing like that, she's healthy generally?**

M: Yep.

**S: Has she had any operations?**

M: No.

**S: Is she allergic to anything that you know of?**

M: No.

**S: No. Is she on any medications?**

M: What is medications?

**S: Err, is she on any tablets?**

M: No.

**S: No. Err so what about immunisation, is .....**

M: Fully.

**S: She's up to date?**

M: Yes is up to date.

**S: Is there any family history of any err, medical conditions in the err family?**

M: No.

**S: Anything like that?**

M: No.

**S: So what do you do?**

M: Oh, me? Oh well I'm not working at present.

**S: And her father?**

M: He works as a builder.

**S: Yeh. OK I think I've just about asked everything I want to. How about her appetite?**

M: Um what do you mean?

**S: Has she been eating?**

M: No not much because she's been sick. Like I said she's hardly eating or drinking anything at the moment.

**S: Ah, she's lost her appetite. So alright, has she had any .....look we might get her up on the bed and have a look.**

**********Examination**********

**S: She hasn't err, she err, she doesn't complain of headaches?**

M: I don't know.

**S: You don't know or she doesn't say?**

M: Kids don't know.

**S: OK. That's fine um, well her ears look normal and her nose looks fine, its just a bit runny, and her um tummy feels fine err, it was a bit difficult to see in her mouth.**

M: It was hard to see?

**S: Yeh, she had a lot of um, err like, white um, coating her tongue, it could be that she's got um, um .....**

M: Mucus?

**S: Mucus there um, yeh she's probably got a viral upper respiratory tract infection which has caused her high temperature um, yeh that's probably the most likely cause. Yeh cause she err has already had one 3 or 4 weeks ago and her temperature was up cause like um, a common cold like that can cause temperature to rise up quite significantly. Her lymph nodes are swollen too. Her hydration is OK.**

M: Why isn't she drinking or eating?

***S: Right, um, like you said her throat is probably very sore.**

*M: OK.

***S: I'm sure she'll be right in a day or two. Give her panadol 4 hourly and keep her fluids up. Come back if you're worried or she's not getting better. Fever can be good for infections. Does this all sound OK to you, and do you understand?**

*M: Uh, ha,OK.

***S: I'll get one of the other doctors and he'll come in and have a look at her as well and he'll finalise that err, any questions?**

*M: Not at the moment.

***S: So I'll just go and get him. So if you just want to have a seat I'll be back.**

## App 1.4 LCLP interview: Low clinical competence, low patient-centredness

**S: So Mrs Smith is it?**

M: Yes.

**S: Is that your name?**

M: Smith, yes.

**S: Right err, so how olds the, how old is Susan?**

M: 18 months.

**S: 18 months is she? OK, so what's err, what's been the problem with err Susan?**

M: Ahh.....

**S: Err recently err .....**

M: She has had a temperature since err.....

**S: So she's got a bit of a fever?**

M: .....Monday, and she's been coughing and she's gone right off her food, she fed only twice yesterday.

**S: Since Monday? Now, err, and um, how, how high has her temperature been do you know?**

M: Err the highest it went was 40.

**S: Really?**

M: Yeh.

**S: And what's it generally?**

M: Generally its always err, around 36 not over 38. We give panadol, normally it does work but it wouldn't work.

**S: Ohh, it hasn't been working?**

M: It always works.

**S: So on Monday her temperature was up?**

M: Is it serious?

**S: Yeh, yeh, and then it got worse?**

M: Yes last night, she was coughing.

**S: Yeh.**

M: Are you going to take her temperature again?

**S: So it was up around 40 again on Tuesday?**

M: Yes.

**S: Yes.**

M: Aha.

**S: Aha. And you've been giving her err, periodic panadol since?**

M: Yes.

**S: Yeh, uh ha. Are you giving it 4 hourly?**

M: Yeh, and she only took about 30mls of milk yesterday.

**S: Right 4 hourly panadol. OK, so has she had any, err has she been rubbing her ears or, or complaining of a sore throat or any cough?**

M: She's been pulling at her ears quite a lot.

**S: So she's not complaining of earache or sore throat or anything? Does she say much?**

M: She talks yah. She's not complaining of sore throat but I can sort of tell that the throat looks sore, the look on her face.

**S: She talks a bit, but she hasn't complained of earache or anything like that. What about tummy pain? Pain in the stomach?**

M: No pain in the stomach but she has had a bad cough and she won't eat, This morning when she tried to eat breakfast, it was like she just couldn't, I don't know whether her throat was too dry or what it was. But when she put it in her mouth and sucked on it, she like started to gag on it.

**S: Has she had any nausea or vomiting?**

M: No.

**S: Any diarrhoea?**

M: No.

**S: OK. Right, has she complained of any pain or have you noticed any strange smell to her urine?**

M: No.

**S: Err, what about headaches, has she complained of any headaches?**

M: It's hard to tell, ha ha, she can't tell what her head is.

**S: That's fair enough! Mmm. Is she err, err, so she hasn't been coughing up any phlegm or anything like that?**

M: She's had a really bad cough for most of the night. She's very irritable which is just not like her, yesterday she was coughing a little bit but last night we really noticed it. It was really bad. She is teething too . Like she's got two teeth in the front and four at the back and she's cutting one of these eye teeth at the back. I only noticed it 4 days ago and basically since I noticed that till now she's just been haywire, and really upset.

**S: What about a runny nose?**

M: No.

**S: No runny nose, right.**

M: She went to see the doctor the other day. He said she had a bit of a cold with maybe a sore throat and she was teething. He explained that's why she was running a fever the other day.

**S: He looked in her mouth and it was a bit red?**

M: Yeh, he said it was a bit red.

**S: So the doctor said it was just a cold right. OK cold.**

M: Yeh, but that was at first, now its gone right down to the fact that she's not eating at all so I don't think it's just teething and a cold.

**S: Has she had anything like this previously? Has she err had high temperatures recently?**

M: Yes.

**S: Before this episode?**

M: Yeh, err 3 or 4 weeks ago.

**S: Was it up around 40° or so?**

M: No.

**S: So it wasn't as bad?**

M: No.

**S: So did you find out what was wrong with her then? Did she go to see the doctor?**

M: Oh yeh.

**S: And what did they say?**

M: Last time it was just a cold.

**S: Just a cold.**

M: Yeh, yeh.

**S: Has she had any other problems in the past? Other medical problems, asthma, diabetes?**

M: No.

**S: Nothing like that, she's healthy generally?**

M: Yep.

**S: Has she had any operations?**

M: No.

**S: Is she allergic to anything that you know of?**

M: No.

**S: No. Is she on any medications?**

M: What is medications?

**S: Err, is she on any tablets?**

M: No.

**S: No. Err so what about immunisation, is .....**

M: Fully.

**S: She's up to date?**

M: Yes is up to date.

**S: Is there any family history of any err, medical conditions in the err family?**

M: No.

**S: Anything like that?**

M: No.

**S: So what do you do?**

M: Oh, me? Oh well I'm not working at present.

**S: And her father?**

M: He works as a builder.

**S: Yeh. OK I think I've just about asked everything I want to. How about her appetite?**

M: Um what do you mean?

**S: Has she been eating?**

M: No not much because she's been sick. Like I said she's hardly eating or drinking anything at the moment.

**S: Ah, she's lost her appetite. So alright, has she had any ..... look we might get her up on the bed and have a look.**

**********Examination**********

**S: She hasn't err, she err, she doesn't complain of headaches?**

M: I don't know.

**S: You don't know or she doesn't say?**

M: Kids don't know.

**S: OK. That's fine um, well her ears look normal and her nose looks fine, its just a bit runny, and her um tummy feels fine err, it was a bit difficult to see in her mouth.**

M: It was hard to see?

**S: Yeh, she had a lot of um, err like, white um, coating her tongue, it could be that she's got um, um .....**

M: Mucus?

**S: Mucus there um, yeh she's probably got a viral upper respiratory tract infection which has caused her high temperature um, yeh that's probably the most likely cause. Yeh cause she err has already had one 3 or 4 weeks ago and her temperature was up cause like um, a common cold like that can cause temperature to rise up quite significantly. Her lymph nodes are swollen too. Her hydration is OK.**

M: Why isn't she drinking or eating?

**S: I'm sure she'll be right in a day or two. Give her panadol 4 hourly and keep her fluids up. Come back if you're worried or she's not getting better. Fever can be good for infections. I'll get one of the other doctors and he'll come in and have a look at her as well and he'll finalise that err, so I'll just go and get him. So if you just want to have a seat I'll be back.**

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## Errata

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|---|---|
| page 25 line 5 | 'al-Doghaither' in place of 'al-Doughaither' |
| page 53 line 23 | 'affected' in place of 'effected' |
| page 100 line 13 | A security listing in a hospital casenote record indicates that the availability of personal information including address and telephone numbers regarding that particular patient is restricted |
| page 142 line 8 | omit 'the' |
| page 186 line 4 | 'and/or' in place of 'and or' |