PHYSICIAN-PATIENT COMMUNICATION:

PATTERNS OF RESIDENT SPEECH AND PATIENT SATISFACTION

by

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ABSTRACT

The objectives of this study were to quantify and examine patterns of speech among 1st and 2nd year family practice residents and their patients, to measure patient satisfaction, and elucidate significant correlations between them. 5 female and 4 male residents took part in the study and provided 40 audiotapes of interviews (10 of each dyad type: F/F, F/M, M/M, and M/F) for analysis. The communicative behavior of both residents and patients was analyzed using the Roter Interaction Analysis System (RIAS). Positive talk and biomedical-information giving were the major speech categories for both residents and patients. Residents asked four times as many questions as patients, whereas patients made an average of four times the amount of psychosocial comments than residents. Male residents made twice as many psychosocial comments as female residents and conducted longer interviews. Only resident positive-talk was negatively correlated with patient overall satisfaction and communication satisfaction.

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Introduction

Health communication is a highly complex and expanding field, and has received a tremendous amount of attention in the last several decades. Numerous theories on the styles and patterns of communication, and many more on the effect of the medical visit on patient health outcomes, have resulted. Training programs for physicians as well as patients have been designed and implemented with the aim of improving the communication between health practitioners and patients. The quality of the medical visit is directly related to patient outcomes such as satisfaction and compliance with physician treatment decisions (Bertakis, Roter & Putnam, 1991), making health communication an attractive field of study.

It is widely accepted that effective communication between health professionals and patients is essential for successful health care (Brink-Muinen, 2002). Verbal communication in the physician-patient relationship is perhaps the most important factor in delivering health care and maintaining a healthy relationship (Bain, 1979). Interestingly, research in this area constituted only 1% of the articles in medical journals as of 1991 (Wyatt, 1991). Since then, many new and exciting studies have been undertaken and the literature in this field has increased.

Medical communication can be argued to have a number of purposes. According to Ong, de Haes, Hoos and Lammes (1995), the three main purposes of the physicianpatient interaction are to create a good interpersonal relationship, exchange information, and make medical decisions. A good inter-personal relationship helps the patient and the physician to talk frankly, and it is this type of relationship which is most conducive to the delivery of optimal medical care (Ong et al., 1995).

Over the last several decades, research has examined the dynamics of this relationship and has helped health practitioners and educators to work towards more effective and 'holistic' interactions. 'Paternalistic' attitudes to patient health no longer apply; there has been a shift towards a 'patient-centred' approach to health care (Deveugele, Derese, Bacquer, Brink-Muinen, Bensing & Maeseneer, 2004). Deveugele et al. assert that the focus of health care delivery by physicians has shifted from the disease to the patient as a whole. Furthermore, physicians have begun attending to patient psychosocial concerns as well as traditional medical care (2004). In this type of interaction, the physician is on a more equal level with the patient, rather than using the inherent power differential in the relationship to achieve their objectives. Patients no longer have to view physicians as authority figures and follow all advice without questions. The patient-centred approach has proven to be superior to the 'physiciancentred' style or paternalistic model; it has been shown that 'physician-centred encounters using biomedical models can interfere with the disclosure of problems and concerns' (Suarez-Almazor, 2004). This shift has been constructive and has resulted in positive outcomes for patients (Bertakis, Roter & Putnam, 1991). Ultimately, patients are more relaxed and the interaction is more pleasant, leading to better communication outcomes.

As has been mentioned above, a large contributing factor to the medical visit being complex is that there is a power differential (Beisecker, 1990). The patient seeks information about their physical or mental state from a health professional that is in a position to provide such information or withhold it (Ong et al., 1995). Even in a patientcentred approach there will be inherent discrepancies between the wants and needs of both parties, and sometimes the clash between these desires leads to negative outcomes. Physicians, on one hand, may require a certain amount of information from the patient in order to do their job best. This information may sometimes come at the cost of seeming abrupt and focusing on the physical attributes of the patient's problem. On the other hand, patients may be in need of reassurance and support from the physician before they begin their discussion of their physical ailment. Or, the scenario may be the exact opposite, with the physician focusing too much on affective problems and the patient wanting to discuss predominantly medically related issues. Owing to the myriad of different physician and patient characteristics, circumstances and the combination of all other factors, it is obvious that the dynamics of no single encounter between a health-care practitioner and patient are the same. Rigid expectations and styles on the part of either party may lead to problems in communication, and worse, patient health. It is the goal of health communication research to address these problems and help to find ways to improve communication between the patient and physician to ensure positive health outcomes.

The research already done in the field has provided us with insights on the nature and patterns of physician-patient communication. The following are three important areas in which work has been done and is continuing: the patterns of physician-patient communication, variables affecting patient satisfaction, and the effects of the gender of physicians and patients.

Patterns of Physician-Patient Communication

The physician-patient relationship is complicated and dynamic. Researchers over the past three decades have tried to determine the most effective and desirable forms of the relationship (Roter, 1997), and much debate has ensued.

Meeuwesen and colleagues (1991) proposed two competing theories with respect to physician-patient relationships: Parsons' consensus-model, and Freidson's discrepancy-model. The consensus model assumes an amicable relationship between the physician and the patient, one characterized by the physician leading and patient following (Meeuweson et. al., 1991). In this type of relationship, the physician has greater power, but he or she acts in the patient's best interests and is sensitive to the needs of the patient (Meeuweson et. al., 1991). Another feature of this theory is that the patient must follow the instructions set forth by the physician at all times in order to make recovery swift (Meeuweson et al., 1991). Freidson's discrepancy-model is quite the opposite of the consensus model, and posits that there is an intrinsic incongruity between the patient's expectations and the actual ability of the physician to satisfy those expectations (Meeuweson et. al., 1991). This model also stresses that there is a power differential between the physician and the patient, but that only a part of that power is used to further the patient's interests. Further, the power differential is used by the physician to reinforce his or her institutionalized authority (Meeuweson et. al., 1991). In contrast to these two theories in which the relationship is asymmetrical (the physician leads and patient follows), the authors present a third theoretical view of the physicianpatient relationship: the patient-centered approach (Meeuweson et. al., 1991). In this theory the patient is viewed as having unique needs and a life history, and differs from

the other two theories in that the patient is the center of attention, not the disease (Meeuweson et. al., 1991). The idea of patient-centeredness has sparked much debate and fueled a great deal of inquiry. As such, other researchers have since proposed other, different models of the relationship which try to get away from the extreme types mentioned above.

Emanuel and Emanuel have presented four models of the physician-patient relationship which add to work previously done. The authors note, however, that the models may not describe actual interactions in reality, but highlight the 'different visions of the essential characteristics of the physician-patient interaction' (Emanuel & Emanuel, 1992). The four models (in no particular order) are: paternalistic, informative, interpretive, and deliberative (Emanuel & Emanuel, 1992). According to the authors, the models were proposed by 'emphasizing the different understandings of (1) the goals of the physician–patient interaction, (2) the physician's obligations, (3) the role of patient values, and (4) the conception of patient autonomy' (Emanuel & Emanuel, 1992). A brief summary of the models and a table (Table 1, page 7) are presented:

The Paternalistic model. The interaction between the physician and patient ensures that the patient receives the treatment or intervention that is best suited to promoting his or her health and wellness. The physician uses his or her skills in order to determine the best way to go about restoring the health of the patient or to alleviate pain and suffering. The physician chooses which information the patient will hear and may sometimes act in an authoritative manner in regards to treatment initiation. The physician can determine what is in the best interests of the patient, even without patient participation. As an example of the physician's attitude towards the relationship,

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Emanuel and Emanuel (1992) state that, 'in the tension between the patient's autonomy and well-being, between choice and health, the paternalistic physician's main emphasis is toward the latter.'

The Informative model. Also known as the consumer model, this view asserts that the physician's role is to provide all the necessary information in order for the patient to choose which intervention suits him or her, and for the physician to carry out the patient's wishes. As much data on the disease state and possible interventions are presented to the patient, and he or she is able to make an informed and educated decision based on the information given to them. This view holds that the patient's views and values are known to the physician; the only thing they need is the facts. Further, the physician's views, experience and values are not taken into consideration; he or she is just a vehicle to provide technical information to the patient.

The Interpretive model. In this model, the goal of the medical visit is to determine the patient's values and needs, and help the patient to select the treatment option which is most congruent with these beliefs. According to this model, the patient may not have concrete ideas about treatment options before the medical visit. The physician must work with the patient to make these choices by taking into account the unique life history of the patient. Under no circumstances does the physician dictate anything to the patient. Furthermore, no judgment is passed on the physician's part regarding the patient's choices. In other words, 'the conception of patient autonomy is self understanding; the patient comes to know more clearly who he or she is and how the various medical options bear on his or her identity' (Emanuel & Emanuel, 1992).

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Table 1

	Informative	Interpretive	Deliberative	Paternalistic
Patient Values	Defined, fixed, and known to the patient	Inchoate and conflicting, requiring elucidation	Open to development and revision through moral discussion	Objective and shared by physician and patient
Physician's Obligation	Providing relevant factually information and implementing patient's selected intervention	Elucidating and interpreting relevant patient values as well as informing the patient and implementing the patient's selected intervention	Articulating and persuading the patient of the most admirable values as well as informing the patient and implementing the patient's selected intervention	Promoting the patient's well-being independent of the patient's current preferences
Conception of Patient's Autonomy	Choice of, and control over, medical care	Self-understanding relevant to medical care	Moral self-development relevant to medical care	Assenting to objective values
Conception of Physician's Role	Competent technical expert	Counselor or advisor	Friend or teacher	Guardian

Comparison of the four models proposed by Emanuel and Emanuel (1992)

The Deliberative model. The aim of the medical visit in this type of relationship is to facilitate patient determination and choice of the best treatment options that can be accomplished given the circumstances. The physician is in a position to provide information regarding treatments and to help the patient deduce which health-related values are important and worth working towards. In this theory, the use of moral persuasion by the physician is used in order to bring about change in the patient. The physician plays the role of a teacher or friend; knowing and understanding the patient

helps the physician to help the patient decide which course of action to take. In this model, 'the conception of patient autonomy is moral self-development; the patient is empowered not simply to follow unexamined preferences or examined values, but to consider, through dialogue, alternative health-related values, their worthiness, and their implications for treatment' (Emanuel & Emanuel, 1992).

Although Emanuel and Emanuel originally proposed that the models were as yet only theoretical, Roter and colleagues carried out a study that may provide empirical evidence for the existence of these models. After the analysis of 537 audiotapes of physician-patient visits using the Roter Interaction Analysis System (discussed later), Roter's team concluded that the patterns they found in the data were suggestive of the same types of models proposed by Emanuel and Emanuel (Roter, Stewart, Putnam, Lipkin, Stiles & Inui, 1997).

In an attempt to micro-analyze the speech in medical visits (as mentioned above in Roter et al.'s study), a number of 'interaction analysis systems' have been developed (Ong et. al., 1995). Also referred to as observation instruments, these tools allow researchers to methodically identify, categorize, and quantify the salient features of the communication between physicians and patients (Ong et. al., 1995). According to Ong and colleagues, two types of such systems can be identified: 'cure' systems, which focus on quantifying the instrumental behaviors, and 'care' systems, which aim to identify affective or socio-emotional behaviors (1995).

The Roter Interaction Analysis System (RIAS) focuses on both types of behaviors, is applicable to verbal and non-verbal behavior, and is said to be 'the most realistic' (Ong et. al., 1995). It would appear from the review of other papers and the

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discussion by Ong et al. that the RIAS scale is an effective and practical instrument to analyze the verbal communication between physicians and patients. In this system, each utterance which expresses a complete thought is categorized into a category of verbal speech. The categories are mutually exclusive, and cluster analysis of the variables reveals four instrumental and four socio-emotional clusters (Ong, Visser, Lammes & de Haes, 2000). The instrumental categories are: giving directions, asking questions, giving information, and counseling; the four socio-emotional clusters are: social behavior, verbal attentiveness, showing concern, and negative talk (Ong et. al., 2000). It is important to note that each cluster is comprised of variables which represent units of speech. The units of speech are discussed in the Methods section. Table 2 gives a breakdown of the two instrumental and socio-emotional clusters:

Table 2

Roter Interaction Analysis System: Instrumental and Socio-Emotional Clusters and their categories

Orientations and/or instructions
Medical condition
Therapeutic regimen
Lifestyle
Psychosocial feelings
Other
Medical condition
Therapeutic regimen

	Lifestyle, psychosocial feelings
	Other
Counseling/persuasion	Medical condition
(physician cluster only)	Therapeutic regimen
	Lifestyle
	Psychosocial feelings
Socio-Emotional Clusters and Categories	
Social behaviors:	Personal remarks
	Friendly jokes (laughter)
	Approval
	Compliments
Verbal attentiveness:	Agreement
	Showing understanding
	Paraphrasing
	Checking
	Empathy
	Legitimizing
Showing concern:	Concern
	Worry
	Reassurance
	Optimism
Negative talk:	Disapproval
	Criticism

Furthermore, these eight communication behaviors can be broken down into three larger clusters – content, affective and process categories (see Table 3 below). Each communication behavior sub-category consists of variables which are used in the coding

scheme, thus each utterance made by either physician or patient falls into one of these variable categories. The various types of communication behavior can then be coded and quantitatively analyzed according to this system. Using this framework, the core communication elements that are present within the dialogue between physician and patient can be examined empirically (Roter et al., 1997).

Table 3

Functional groupings of the affective and socio-emotional communication behaviors (Roter et al., 1999).

Functional	Communication
grouping	Behaviour
Content categories	Questions – close ended
	Questions – open ended
	Biomedical information
	Psychosocial exchange
Affective categories	Positive talk
	Negative talk
	Social talk
Process categories	Facilitation
	Orientation

According to Roter and colleagues, three categories which are often used to elucidate the patient or physician-centeredness are *questions, biomedical information*, and *psychosocial talk* (Roter et al., 1997). These three categories reflect the three goals or

functions of the medical visit: gathering of data, education of the patient, and relationship building (Roter et al., 1997). The proportions of physician and patient speech in each of these categories will give us a clear picture of the patterns of communication. For example, do physicians and patients exhibit significantly different patterns of speech? Would it be possible to ascertain whether these patterns fall into the various styles of relationships laid out by Emanuel and Emanuel and others?

Patient Satisfaction

Patient satisfaction with the medical interview and health care has widely been documented to be related to health outcome (Bredart, Razavi, Robertson, Brignone, Fonzo, Petit & de Haes, 2001). A review of the literature shows patient satisfaction has been the topic of a large amount of research in the last three decades. It has been used as a measure of the quality of the medical encounter, and it has been hypothesized that "improved communication between doctors and patients will lead to more satisfying health care outcomes: increased regiment compliance, low job burnout ratios, less litigation, relationship satisfaction, increased demands for service, and reduced levels of stress" (Schneider and Tucker, 1992, p. 20).

As an outcome of the medical visit, satisfaction has been shown to vary with the amount of information received, length of interview, and physicians' expression of affective behavior (Ong, de Haes, Hoos & Lammes, 1995). For the communication to proceed smoothly and for the patient to be able to leave satisfied, the physician must be adept at certain basic interaction skills:

Putting the patient at ease; eliciting historical information; interviewing logically; listening to the patient; interrupting when necessary; observing and responding to verbal and nonverbal cues; and using facilitative communication techniques such as appropriate question types, expressing interest and concern, and offering encouragement. (Evans, Stanley & Burrows, 1992, p. 155)

According to Athena du Pre, 'patients typically like doctors and other caregivers for the same reasons they like most people. They prefer caregivers who listen attentively, are genuinely concerned about them, and acknowledge their feelings' (du Pre, 2001). When a physician allows a patient to speak his or her mind about his or her beliefs and ideas, satisfaction is increased (Evans et. al., 1992). Further, the use of medical jargon should be avoided, according to Evans and colleagues, and if used, should be explained (1992).

Quantitative analyses of physician-patient interviews have provided a large body of research which examines physician speech and its effect on patient satisfaction. Patient satisfaction can be measured by assessing patients' feelings about the medical interaction (Evans et. al., 1992). An example of this would be a multi-dimensional questionnaire developed by DiMatteo and colleagues which taps four dimensions: physician's communicative style, affective tone, technical competence, and expressed interest (Evans et. al., 1992). However, there is a plethora of scales and constructs, and just as much debate on how to measure satisfaction (Speedling & Rose, 1985; Evans et. al., 1992; Korsch & Negrete, 1972; Burgoon, Pfau, Parrott, Birk, Coker & Burgoon, 1987).

In order to empirically examine whether there is a relationship between the nine speech categories listed in Table 3 and the satisfaction variables in a questionnaire, we can calculate if there is a correlation between them. This method has proven fruitful in a number of studies (Ong et al., 2000; Bertakis, Roter & Putnam, 1991). In particular, the frequencies of each category of speech or each group of variables (for example, verbal attentiveness) can be correlated with patient satisfaction variables. In this way we can determine if there is a link between the verbal communication which takes place during the encounter with an outcome such as overall patient satisfaction.

Gender

Another area of study that has sparked much research and debate is the gender of both physicians and the patients. A large body of research shows that there are many differences between the way female and male physicians communicate with patients (Brink-Muinen et al., 2002; Hall, Irish, Roter, Ehrlich & Miller, 1994; Barnsley, Williams, Cockerill & Tanner, 1999). Female physicians generally conduct longer consultations, engage in a significantly larger number of active partnership behaviors, talk more positively, give more psychosocial information, and are more reassuring and encouraging than their male counterparts (Hall & Roter, 2002; Street, 2002). Also interesting to note is that same-sex dyad interviews (male-male, female-female) lasted longer than opposite-sex dyads (male-female, female-male); the longest visits were between female physicians and female patients, the shortest between female physicians and male patients (Weijts, 1994). In contrast to female physicians, male physicians are 'likely to give more instructions, advisements and suggestions for patient behavior, and they appear to be more verbally dominant and imposing during the visit' (Brink-Muinen et al., 2002). On the contrary, other studies have found that such differences do not exist: Hall and colleagues found that there was no difference between male and female physicians in the amount of social conversation and social support provided (Brink-Muinen et al., 2002). Also, Roter et al. 'observed that female physicians actually spent less time with patients, engaged in less facilitative communication, and made fewer expressions of concern than did male doctors' during prenatal visits (Roter, Geller,

Berhnardt, Larson & Doksum, 1999, p. 639). Street (2002) also concludes that 'gender differences, while apparent, are small in magnitude, and that male and female clinicians are generally more similar than different in their communication' (p. 203). Hence the data present in the field paints a complicated picture: in some situations male and female physicians differ in certain aspects, are the same in others, and sometimes opposites in others.

Findings in other studies show the differences between male and female patients. Numerous differences in the way female patients are treated have been observed by researchers: their contributions in medical visits were more often ignored than those of their male counterparts (by physicians in general), they were twice as likely than males to be in a medical encounter in which their ideas were evaded, and they were also more likely to be interrupted (Weijts, 1994). Also, it has been posited that physicians were more likely to be less supportive of women's concerns brought up in the interview than males', medical responses to females were of poor quality, and that females who ask many questions were more likely to be labeled 'neurotic' (Weijts, 1994). Female patients are more likely than men to provide emotionally supportive talk, give more partnership statements, and ask more questions than males (Brink-Meuinen et al., 2002). Male patients are more likely to present facts and appear to be better liked than their female counterparts (Brink-Muinen et al., 2002). Again, just as the case with male and female physicians, both sexes show certain similarities as well: 'male and female patients are found to like giving psychosocial information to female doctors but less to males, and in general male patients talk to female doctors as much as female patients' (Brink-Muinen et al., 2002). On the same note, Roter et al. (1997) found that patient gender seems to

have no effect on communication patterns. Such findings attest to the complexity of the physician-patient relationship and the shear number of different circumstances and contexts in which studies have taken place.

Physician-Patient and Resident-Patient Interviews

The majority of the research carried out in the physician-patient communication field has predominantly had experienced physicians, specifically general practitioners, as the main participants (Hall et al., 2002; Brink-Muinen et al., 2002; Meeuwesen et. al, 1991); Bain, 1979; Burgoon et al., 1990; Roter, 1984; Frederikson, 1995). Some studies have sampled physicians and residents, and others have sampled residents only. In the following sections, I'll review literature on each of the three.

Physician-Patient Studies. Many of the studies undertaken to date have most often involved experienced physicians. Most research has had physician participant groups ranging from one physician (Du Pre, 2001; Walker, Arnold, Miller-Day & Webb, 2001) to as many as 405 experienced physicians (Barnsley et al., 1999). Although many of the studies involved family practitioners, a number of studies have involved medical specialists. Barnsley and colleagues sampled 405 doctors of which almost half were family physicians, 30% surgical specialists, and 22% were other medical specialists (1999). In this study, these three groups were compared on various outcomes, such as total number of minutes spent on their first visit with a patient and average percentage of time spent on discussing general health (Barnsley et al., 1999). In a study by Bain (1979), physicians were divided into two groups – those who performed duties as preceptors in their clinics, and those who did not. Eleven experienced physicians were assigned to each group and these two groups were compared (Bain, 1979). Brink-Muinen and colleagues conducted a study in which 190 general practitioners from six different countries were compared based on gender dyads. Four groups of physicians (pertaining to the four physician-patient gender dyad combinations: M/M, M/F, F/M, and F/F) were then compared on a number of communication categories. Such a design allowed numerous different comparisons to be made: differences between physician gender, patient gender, and the dyads themselves.

In a study by Hall and colleagues (2002), a sample of 24 male and 20 female internists was used. The mean age for male and female patients was 46 and 41, respectively (Hall et al., 2002). Patient-liking of their physicians was measured and the results probed for gender differences, both between physicians and patients (Hall et al., 2002). In yet another study by Burgoon and associates, a study group of 69 physicians (a mixture of family physicians and internists) was examined (1990). No analyses were performed to find differences between the different types of physicians or gender. In another unique study design, Frederikson enlisted the participation of 35 general practitioners (1995). Each physician was then paired with one patient, and owing to the questions being asked by Frederikson, no gender analysis was carried out or comparison made between the participating physician groups (1995). In an intensive study by Roter and colleagues (1998), 18 experienced physicians trained in family practice or internal medicine from three different counties of Trinidad and Tobago participated. Their communication patterns using the Roter Interaction Analysis System were then observed after a training program, and the physicians from the three regions compared.

A wide variety of designs have been used with no single design being more common than the others. Of those reviewed, the gender dyad design used by BrinkMuinen and colleagues was especially helpful in determining gender differences. This type of study strategy could prove to be valuable in the current study.

Studies Involving Physicians and Residents. There are a significant number of studies with varying mixtures of physicians and residents as the participants. Although these studies are not as common as those involving experienced physicians alone, they make up a sizeable proportion of the literature on physician-patient communication. In a study by Woolley, Kane, Hughes and Wright (1978) both residents and experienced family physicians participated; however, the exact number and proportion of the two groups was not mentioned by the authors. There was no discrimination between the two groups (residents and general practitioners) in terms of effect on outcomes (in this case, patient satisfaction). In another study by Hall and colleagues (1994), for example, the physician participant group 'represented all levels of MD experience (1st - through 3rdyear residents, fellows, and junior and senior staff).' The communication patterns of a wide variety of physicians with varying levels of experience were thus holistically observed, without comparisons between the various groups. Various outcomes were measured for this diverse group: visit length and number of utterances for female and male physicians, and differences in RIAS speech categories between male and female physicians and patients (Roter et al., 1994).

In recent years, studies with mixtures of residents and experienced physicians have allowed for comparison between the two groups. An intuitive study by Roter and Larson (2001) examined residents' and attending physicians' (experienced physicians which come in at the end of a visit primarily carried out by the resident) communication with patients during medical visits. The communication patterns of three groups were then compared: the residents, physicians, and patients (Roter and Larson, 2001). However, in this type of study design, the resident does most of the talking with the patient, and the attending physician has a few words with the patient at the end of the visit. Speech patterns observed in these visits may not allow for a reliable comparison between residents and physicians. The physician has a very limited role at the end of the visit, which is to conclude the visit and to mention anything the resident may have missed. The speech patterns observed for these physicians could be quite unique to this type of situation.

Studies Involving Residents Only. A review of the literature reveals very few studies with strictly residents as the participants. A study which falls into this category was carried out by Shaikh, Knobloch and Stiles (2001). The final data set used was small – 10 interactions were transcribed, but only 8 interviews were analyzed due to inaudible dialogues. Attending physicians consulted with the resident during the consultation, however, these parts of the visits were excluded from the analysis. For the analysis of the speech types, the transcriptions were analyzed using the Verbal Response Mode taxonomy, an interaction analysis system which differs from the Roter Interaction Analysis Scale. As in the study by Roter mentioned above, differences in speech categories were measured between physicians and patients, with the obvious exception of the attending physician.

Medical school students have also been the subjects in various studies which examine the effectiveness of novel training techniques. One such study was conducted by Evans and Burrows (1992): fifty-three medical students in their first year of clinical training took part in a randomized study in which half were trained in communication techniques and the other half serving as the control group. The only comparisons made were differences in the communication behaviors of the two groups of medical students.

In summary, there has been little research done with residents, even though they make up a sizeable proportion of practicing physicians. Studies involving only physicians are beneficial because they are in contact with patients most often and it is useful to study their communication patterns. However, these studies do not show how residents communicate with patients, who are also in contact with patients a significant amount. The studies involving both physicians and residents are advantageous in that they don't differentiate between the two groups, and provide us with a picture of how they communicate with patients as a whole. This however, is also a disadvantage, since we cannot determine if the two groups are communicating differently. In terms of residents-only studies, there has been little research done. This group of doctors is in contact with patients a significant amount, and it would be beneficial to study their communication patterns as well.

Purpose of the Study

The ultimate goal of this research was to understand the micro-processes of the physician-patient interaction in order to find ways to improve the communication between physicians and patients. Specifically, the following questions were addressed:

- 1. What are the patterns of communication between *residents* and patients? Do the patterns observed resemble models described by other researchers?
- 2. What is the role of gender in physician-patient communication? Do male and female residents communicate with male and female patients differently?

3. Are the various categories of physician speech during the medical visit correlated with patient satisfaction?

Rationale

Residents-only sampling. An interesting difference between residents and physicians is the method of payment: family physicians in British Columbia are paid on a fee-for-service basis in which they receive roughly \$26.00 per visit with patients (Li, Krysko, Desroches & Deagle, 2004). Residents, on the other hand, are paid on a salary basis. Such a difference in payment methods may cause a divergence in communication patterns, and such a study would help to uncover such discrepancies.

Use of the Roter Interaction Analysis System. Studies using the Roter Interaction Analysis Scale to assess the categories of speech for solely residents are lacking in the field. This interaction analysis system is viewed as a good tool for measuring the instrumental and affective categories of speech, and has proven to be of value in other studies (Roter, 1994; Brink-Muinen et al., 2002).

Gender of residents and patients. Although the research on gender in the field of health communication is abundant, it is not comprehensive. As has been illustrated above, different studies have made conclusions that directly contradict one another. The use of the four gender-dyads in combination with the Roter Interaction Analysis System has rarely been used – "most studies focused on gender differences between one group of the actors, i.e. doctors or patients, whereas the focus was seldom on all four combinations of doctor and patient gender (Brink-Muinen et al., 2002, p. 253). A design utilizing the four gender dyads may prove to be useful in determining differences in patterns of communication and health outcomes between genders of both patients and physicians.

We have seen that there is great variability in the study designs used in the literature – virtually every study has a unique design. Logically, no one design is superior to another; yet some of the designs observed may provide certain advantages depending on the aim of the study. The research paper by Brink-Muinen which used the four gender dyad combinations offers the advantage that comparisons can be made between physicians and patients, and between male and female physicians and male and female patients (Brink-Muinen et al., 2002).

Demographic information. Demographic information was collected from patients, and any significant patterns due to factors such as age, income, employment status and others can be examined by considering their association with such variables as physician gender and length of medical visit. These are important statistics when looking at our population of patients; they will allow us to conclude whether or not our sample was random and normal. Furthermore, collection of demographics allows us to determine if we can generalize our results to the population at large.

Method

Context

The collection of data took place at the J.G. McKenzie Family Practice Clinic (Faculty of Medicine, University of British Columbia) in Prince George, British Columbia. The facility is comprised of roughly six family practice offices with as many full-time experienced physicians. 1st and 2nd year residents rotate in and out, with one to two residents working full time in the facility at any given time. Data collection began in early 2003 and concluded in mid-2004.

Participants and Recruiting Procedure

Physicians. For the purposes of this study, 1^{st} or 2^{nd} year residents were identified and approached to participate. Residents were given background information on the purpose of the study, its objectives, and asked to take part. All residents approached agreed to participate: a total of five female residents (n = 5) and four male residents (n = 5) completed the interviews. They signed a short consent form (Appendix A) and were assigned a physician code number to maintain their anonymity. As an incentive to take part, physicians were offered an honorarium of ten dollars for each encounter successfully recorded.

Patients. Adult patients (defined as being 18 years of age and older) entering the clinic were approached to take part in the study prior to their medical visit. Information regarding the purpose of the study and participation specifics were explained, and any questions answered. Prospective participants were informed that interviews were to be audio-taped and that they would be requested to fill out a questionnaire at the end of the encounter. Patients were reassured that their participation was voluntary, their responses to the questionnaire (discussed later) were not to be seen by their physician (and thus would not affect their medical care), that the study was completely anonymous, and that they could withdraw at any time should they so wish. If the patient agreed to participate, they were asked to sign a consent form (Appendix B) and assigned a patient-code number. Patients were provided with a copy of their consent form for their records if requested. Roughly 9 out 10 patients agreed to participate in the study; the average for male participants was slightly lower. In total, 71 potential participants were approached, 62 patients agreed to take part in the study and had their interactions with patients

recorded, and a total of 40 were used in the final analysis. Due to various reasons (no sound, poor sound quality and presence of a 3^{rd} party), 22 audio-tapings were not used. A patient was only allowed to complete *one* audio-taped session and questionnaire with their physician. As a token of appreciation, patients were offered a UNBC pen for their time.

Number of Dyads

10 interviews for each gender combination were used: male resident/male patient, male resident/female patient, female resident/male patient, and female resident/female patient (M/M, M/F, F/M and F/F). Given the resources available and the scope of this study, 40 interviews were deemed an adequate and plausible amount of data (Roter et al., 1997). The average time for processing (recording, transcribing, coding, tallying, and punching into SPSS) an interview from start to finish took on the order of at least 5-6 hours.

It was difficult to justify the sample size using classical statistical techniques for power. However, previous studies did provide us with a way to provide statistical validation for the sample size used. For example, in a study done by Li et al. (2004), physicians had an average rate of 24.74 (SD = 9.18) facilitative statements during the interview, whereas patients had an average rate of 5.25 (SD = 4.18). The effect size can be calculated in order to measure the magnitude of the difference between these two groups, using the means and their variances (Hurlburt, 2003). A simple yet effective measure of effect size is Cohen's d, which is calculated using the means and the pooled variance of the two groups. The calculated effect size was 2.7; for Cohen's d, a small effect size is 0-0.2, a medium effect size is up to 0.5, and a large effect size is 0.8 and

greater (Hurlburt, 2003). Thus, the magnitude of the difference between these two groups is very large. Being so large, it shows that a test of means using MANOVA is quite powerful when there is that much difference between groups. Since we were looking for major differences between residents and patients, a sample size of 40 interviews (40 random patients) would provide us with enough variance to make any statistical techniques quite robust.

Recording Apparatus

A number of offices in the John G. McKenzie clinic facility are equipped with inconspicuous video-recording devices. The video-camera is contained in a small box (a thermostat) on the wall and can be switched on and off in the examination room (patients were aware of the camera). For the purpose of this study, the lens of the camera was covered in order to maintain anonymity and to provide audio only. The innocuous nature of the camera helped to maintain a relaxed atmosphere for both the physician and the patient. The recording apparatus (VCR and television) is located in the room adjacent to where the video-camera is located, and could be adjusted without having to come into contact with either physician or patient.

The secretary switched on the camera when ushering the patient into the examination room after permission was gained. The recording was controlled from the rooms adjacent. Once the patient had completed his or her questionnaire and the visit had come to an end, the recording apparatus was switched off and the recording stopped.

Video tapes were marked with the physician code number instead of the names of physicians, and the corresponding numbers for the patients labeled accordingly.

Patient Questionnaires

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Patients were asked to fill out a short questionnaire immediately after their medical visit which contained satisfaction, health status, and socio-demographic questions (Appendix C). The questionnaire was adapted from one used by Roter and colleagues (1997). The questionnaire had a number of questions which measure different types of satisfaction: overall, communication, expertise, and affect satisfaction. *Transcription of Interviews*

Audio from the video tapes was converted into digital format by hooking up the VCR to a computer. MP3 was the preferred audio codec as it allows for a superior quality-to-size ratio. In this way, all 40 interviews could fit onto one CD-Recordable. A digital format was chosen instead of an analog tape system for a variety of reasons: ease of storage, mobility, protection from data loss due to tape malfunctioning, and the ability to adjust the audio frequencies of individual medical encounters (for example, amplification of midrange frequencies improves the volume of voices; this protected us from having to exclude some interviews due to patients or physicians talking too softly in the presence of background noise). All of the above contributed to more accurate handling of the data and was thus the preferred format.

The encounters were then transcribed in preparation for coding. Transcribed interviews did not contain any information which could identify the residents or patients. Each transcribed interview had a standardized cover sheet which included: physician code, patient code, physician and patient gender, length of interview in minutes, and a legend pertaining to the transcription details. The time to transcribe took on average four to six times the actual length of the interview, depending on the clarity and type of speech. For example, a twenty minute interview usually took about two hours to transcribe.

Coding of Data

In order to quantify the content of the interaction between physicians and patients, the Roter Interaction Analysis System was used to score the data (Roter et. al., 1997; Roter and Larson, 2001). The unit of analysis in this system is an utterance – a phrase or complete thought expressed by either the resident or the patient (Roter et. al., 1997). There are 40 mutually exclusive and exhaustive categories, and each utterance was coded into one of these groupings (Roter et. al., 1997; Roter and Larson, 2001). In order to maximize accuracy and efficiency, coding was done on the transcripts while listening to the audio soundtrack of the encounter at the same time. This ensured that tone of voice and context were taken into consideration. Table 4 outlines the abbreviations for the categories in the Roter Interaction Analysis System (Roter et. al., 1997; Roter and Larson, 2001).

Table 4

Abbreviations for categories in the Roter Interaction Analysis System (Roter et. al., 1997; Roter and Larson, 2001)

Abbreviation	Category	
Personal	Personal remarks, social conversation, greetings	
Laughs	Laughs, tells jokes	
Approve	Shows approval - direct to person present	

Comp	Gives compliment - not direct to person present
Agree	Shows agreement or understanding
BC	Back-channel response (physician only)
Empathy	Shows empathy towards the other
Concern	Shows concern or worry
R/O	Reassures, encourages or shows optimism
Legit	Legitimizes
Partner	Makes a partnership statement (physician only)
Sdis	Makes a statement of self-disclosure (physician only)
Disapprove	Shows disapproval or disagreement - direct to person present
Crit	Shows criticism - general, not direct to person present
?Reassure	Asks for reassurance
Trans	Transition words
Orient	Gives orientation, instructions
Check	Paraphrase, checks for understanding
?Bid	Bid for repetition
?Understand	Asks for understanding
?Opinion	Asks for opinion (physician only)
[?]Med	Asks questions (closed-ended) - Medical condition
[?]Thera	Asks questions (closed-ended) - Therapeutic Regimen
[?] L/S	Asks questions (closed-ended) - Lifestyle
[?] P /S-F	Asks questions (closed-ended) - Psyhosocial-Feelings
[?]Other	Asks questions (closed-ended) - Other

?Med	Asks questions (open-ended) - Medical condition
?Thera	Asks questions (open-ended) - Therapeutic regimen
?L/S	Asks questions (open-ended) - Lifestyle
?P/S-F	Asks questions (open-ended) - Psychosocial-Feelings
?Other	Asks questions (open-ended) - Other
Gives-Med	Gives information - Medical
Gives-Thera	Gives information - Therapeutic regimen
Gives-L/S	Gives information - Lifestyle
Gives-P/S	Gives information - Psychosocial (patient only)
Gives-Other	Gives information - Other
C-Med/Thera	Counsels or directs behavior – Medical condition/therapeutic regimen
C-L/S-P/S	Counsels or directs behavior - Lifestyle/Psychosocial (Dr.only)
?Service	Requests for services or medications (patient only)
Unintell	Unintelligible utterances

According to Roter, the 'RIAS code definitions are straightforward, intuitive, and easily learned. Training is accomplished over a 3-day period with acceptable levels of reliability and speed generally achieved with several weeks of practice' (Roter and Larson, 2001). Roter and Larson (2001) also state that a 30-minute interview can be coded in less than 45 minutes by an experienced coder. We found that a 30 minute interview usually took approximately one hour, thus very close to Roter's standard.

A Pearson correlation was used as a measure of inter-coder reliability. Roughly 15% of the interviews were coded by an independent coder, and the frequencies

tabulated. This resulted in an inter-scorer reliability of 0.79. According to Tabachnick and Fidell (2001), an acceptable level of agreement between coders is 0.80. Our value was very close to the accepted standard.

Statistical Analysis of Data

The program SPSS for Windows (Statistical Package for the Social Sciences, Version 12, 2003) was used to analyze the data.

Each interview was coded after being transcribed. The variable names were written in the margins of the transcriptions, and the frequencies of each variable were tallied at the end for both resident and patient. As stated previously, an utterance is the smallest string of words which can convey meaning; an utterance can range in length from one word (i.e. 'Yes', which would fall into the 'Agree' category), to many words in succession (Roter, 1997; Roter & Hall, 1992). These utterances were in turn tallied on another sheet (Appendix D) into the nine functional groupings outlined in Table 3: closed-ended questions, open-ended questions, biomedical information, psychosocial exchange, positive talk, negative talk, social talk, facilitation, and orientation statements.

These categories are comprised of the separate speech variables summarized in Table 4. The closed-ended questions category contains all questions of that type, regardless of the content they deal with. Open-ended questions contain all questions of this type. Biomedical information contains four variables: giving medical information, giving therapeutic information, counseling or directing the patient's medical or therapeutic behavior, and requesting service. Positive talk is defined as any speech that is conducive to developing rapport, whereas negative speech is the opposite. Facilitation statements help the conversation to run smoothly, and the composite is made up of variables such as back-channel responses, transition words, bids for repetition, asking for understanding and opinions. Orientation statements are directive in nature and are used to give directions during the interview, such as informing the patient that his/her blood pressure will be taken.

Data was entered into SPSS. Thus for each resident/patient encounter, there were a total of 18 categories of speech: nine for resident utterances, and nine for patient utterances.

Rates of communication. Due to the differences among rate of speech and length of interview, comparison of raw frequencies would not provide as useful a comparison as a standardized set of variables. Thus, the frequencies observed for the nine speech categories for both resident and patient were standardized, a technique which has been used before (Kollock, Blumstein, & Schwartz, 1985; Li, 2001, 1991a, 1999b). Nine new categories were renamed and re-calculated as rates were formed; these new rates were calculated by dividing the frequency of each individual's speech behavior by the total number of utterances that that individual made during the interview. Resulting numbers were quite small, and using a technique from Beaumont and Cheyne (1998) these rates were multiplied by a constant, which was the grand mean of all utterances divided by two. For example, resident '65' asked a total of 4 open-ended questions, and made a total of 181 utterances during the interview. Dividing these two numbers gives us 0.0221, and multiplied by ½ of the grand mean (calculated to be 237.0125) yields the rate of open-ended questions for resident '65': 5.24.

Patterns of physician communication and patient satisfaction. The nine physician speech composite rates were correlated with four satisfaction factors. 12 questions
(adapted from Roter et. al, 1997) from the questionnaire were grouped into one of four types of satisfaction: overall, affect, expertise, and communication. For example, three questions from the questionnaire were believed to measure the patient's satisfaction with the affective qualities of the physician: 'My doctor acted bossy and domineering at times during my visit today', 'my doctor made me feel important', and 'my doctor seemed to be in a hurry'. However, the reliability coefficient for this factor was quite low: 0.02, with an item mean of 4.39 (SD = .07).

Item analysis for the other three satisfaction variables is as follows. Standardized alpha for 'overall satisfaction' = 0.60, with an item mean of 4.41 (SD = 0.01). Standardized alpha for 'expertise satisfaction' = 0.79, with an item mean of 4.07 (SD = 0.15). Standardized alpha for 'communication satisfaction' = 0.51, with an item mean of 4.44 (SD = 0.12).

Gender. Separate variables were made for gender of the resident, patient, and the gender dyad (1.00 = Male/Male, 2.00 = M/F, etc.). This allowed us to compare and contrast literally all variables for gender effects, and also to see if any particular dyad type was different from the others in any of the speech categories. ANOVAs were used to compare means; for example, a simple one-way ANOVA was run to compare the means of length of encounter, with the fixed factor being the dyad type.

To compare the means of the nine speech categories for both the residents and the patients, a MANOVA was run in which a role variable was created and the 18 speech categories reduced to nine. In the role variable, 1 designated a physician, and a 2 designated the patient. In this way, the 18 speech categories could be combined into nine categories, and a MANOVA run to compare the means across all variables.

Results

Patterns of Communication between Residents and Patients

Number of words. The average number of words spoken during the interview was 1319.53 (SD = 781.26) and 888.95 (SD = 695.57) for residents and patients, respectively. The difference was statistically significant, $\underline{t}(39) = 6.13$, $\underline{p} < .01$. (Note: for all statistical tests, α was set at 0.05)

Number of utterances. The mean number of utterances made during the interview for residents (266.78, SD = 154.92) and patients (207.40, SD = 128.56) was also significantly different: \underline{t} (39) = 6.86, $\underline{p} < .01$.

Mean rates of speech categories. Means of the rates for each of the nine speech categories (see Method section) were calculated and summarized in Table 4. (Please note that 'unintelligible' and the 'gives-other' speech categories are not included in this table; utterances in these two categories are included in the total utterances, but since we cannot determine their relevance to the interview, they have not been included in Table 5. These two categories of utterances accounted for roughly 6.3% of resident speech and 6.4% of patient speech).

Percentages of speech categories. The percentage of each speech category calculated for both physician and patient, and the data is presented in Table 5.

On average, resident speech was characterized by positive talk (31.5%), biomedical information (23.0%), and facilitation (17.2%). For patients, on the other hand, speech was comprised of positive talk (36%), biomedical information (31%), and psychosocial exchange (19%).

Table 5

	R	Resident (N=	40)	Pa	Patient (N=40)				
Category	Mean	SD	% Total	Mean	SD	% Total			
Questions – closed ended	19.56	10.53	9.0%	4.97	4.40	2.2%			
Questions – open ended	7.58	5.23	3.5%	1.88	2.02	0.9%			
Biomedical information	49.96	19.35	23%	68.66	36.35	31%			
Psychosocial exchange	9.60	8.58	4.5%	41.76	24.38	19%			
Positive talk	69.01	16.41	31.5%	80.36	4.75	36%			
Negative talk	1.52	1.57	.7%	2.12	2.52	1%			
Social talk	11.37	10.56	5.2%	11.41	14.27	5.2%			
Facilitation	37.44	13.60	17.2%	10.28	5.72	4.6%			
Orientation	11.74	11.67	5.4%	.08	0.28	<.1%			
			100%			100%			

Mean Rates and Percent of Total Conversation of Speech Categories by Resident and Patient

Residents asked four times as many closed-ended questions (9% vs. 2.2%), and almost four times as many open-ended questions (3.5% vs. 0.9%). Patients engaged in psychosocial exchange for an average of 19% of their speech, whereas for residents it accounted for 4.5%, a difference of over four times.

A 2 by 2 MANOVA was conducted in order to test for significant differences between residents and patients in each of the nine speech categories. The analysis showed that there was a significant main effect due to role (resident vs. patient): <u>F</u> (9, 67) = 33.85, p < .001, Wilks' Lambda = .180, partial η^2 = .82.

Closed-ended questions. Residents made significantly more closed-ended question statements than did patients, <u>F</u> (1, 75) 64.51, <u>p</u> < .001, partial η^2 = .46.

Open-ended questions. Residents also made significantly more open-ended question statements than patients, <u>F</u> (1, 75) 40.90, p < .001, partial $\eta^2 = .35$.

Biomedical information. In this speech category, patients made significantly more statements providing biomedical information than did residents, <u>F</u> (1, 75) 8.30, <u>p</u> < .01, $\eta^2 = .10$.

Psychosocial exchange. Patients engaged in significantly more psychosocial exchange than did residents, with means of 41.76 vs. 9.60 utterances respectively. <u>F</u> (1, 75) 59.86, p < .001, $\eta^2 = .44$.

Facilitation statements. As shown in Table 5, residents made almost four times as many facilitative statements than did patients (<u>F</u> (1, 75) 137.65, <u>p</u> < .001, $\eta^2 = .65$).

Orientation statements. Again, residents made statistically more orientation statements during the conversation than did patients, <u>F</u> (1, 75) 38.625, <u>p</u> < .001, η^2 = .34. *Gender Differences* Length of interview. The average length of interviews was 1180.35 seconds (SD = 689.59), or 19.67 minutes. There was no statistical difference in the length of interviews conducted by male and female residents, although on average males conducted interviews for an average time of 22.18 minutes, and female residents 17.17 minutes.

Male and female patients did not differ in their lengths of visits with residents.

Number of words. Male residents spoke more words on average during their encounters with patients than their female counterparts, <u>F</u> (1, 38) = 4.13, <u>p</u> < .05. Please refer to Table 6.

Number of utterances. Although male residents spoke more words during interviews with patients, there was no *statistical* difference between male and female residents in the number of meaningful utterances expressed (310.05 vs. 223.50 respectively).

However, patients expressed more utterances with male residents than they did with female residents (252.85 vs. 162.00), <u>F</u> (1, 38) = 5.57, <u>p</u> < .05.

Furthermore, the total number of utterances made by both resident and patient was greater for the male dyads (M/M & M/F) than for the female dyads (F/F, F/M), <u>F</u> (1, 38) = 4.38, <u>p</u> < .05. See Table 6.

Psychosocial Statements. Male residents made an average of 12.5 psychosocial statements, compared to 6.7 for female residents, and the difference was statistically significant, <u>F</u> (1, 38) = 5.09, p < .05.

Table 6

Means of Various Measures of Resident/Patient Interviews by Resident Gender

le Resident ($N = 20$)	Female Resident $(N = 20)$	
1560.95	1078.10	
310.05	223.50	
1053.85	724.05	
252.80	162.00	
562.85	385.50	
1330.80	1029.90	
	le Resident (N = 20) 1560.95 310.05 1053.85 252.80 562.85 1330.80	le Resident (N = 20)Female Resident (N = 20)1560.951078.10310.05223.501053.85724.05252.80162.00562.85385.501330.801029.90

* Significantly different (p < 0.05)

Male and female residents did not differ on any of the other eight remaining speech variables. However, patients did ask male and female residents differing numbers of open-ended questions: patients asked male residents an average of 2.5 open-ended questions, whereas female residents were asked an average of $1.2 (\underline{F}(1, 38) = 4.34, \underline{p} < .05)$.

Not as many significant differences in speech patterns were found with respect to gender among patients:

Patient biomedical information. Male patients made an average of 82.27 biomedical statements during interviews, whereas female patients made 55.05 statements. This difference was statistically different, <u>F</u> (1, 38) = 6.38, p < .05.

This was the only patient speech category in which patients differed in over the 40 interviews. In addition, no significant differences were seen in number of words spoken, utterances made, or lengths of interviews between male and female patients.

Gender differences: Dyads. For the nine speech categories, the 2 by 2 MANOVA conducted showed no significant main effect of the gender combination, i.e. dyad types did not show differences in their levels of the nine categories.

The average length of a male/male interview was 18.64 minutes and 25.71 minutes for a male/female interview. Female/female interviews lasted 14.94 minutes on average, and female/male interviews lasted 19.31 minutes. Same sex dyads did not last as long as opposite sex dyads. However, an ANOVA was run and the time differences between the four dyads were not significantly different.

Further, no other significant differences in length of interview or words and utterances made by both residents and patients were found between dyads. Male/male interviews averaged 2433 words, and male/female interviews averaged 2796 words. Female/female interviews averaged 1850 words, and female/male interviews averaged 1754 words. The differences were not statistically significant.

Resident Speech Categories and Patient Satisfaction

A simple bivariate Pearson correlation was used to investigate any relationships between the nine categories of resident speech and the four satisfaction factors (see Method section). The results are summarized in Table 6.

As can be seen, no large correlations were observed. Two moderate negative correlations were observed between physician positive statements and patient overall satisfaction and patient communication satisfaction (-.34 and -.40 respectively, p < 0.05). *Patient Questionnaire Results*

Exhaustive results for the patient questionnaire can be found in Appendix E. The results are shown as percentages of patient answers to the questions.

The mean age of patients was 43.43 years (SD = 14.98), and the majority had some degree of post-secondary education (37.5% community/technical college, 22.5% university). The majority (60%) was currently employed, and English was the first language of 39 out 40 of the patients. The patient whose first language was not English rated his/her grasp of spoken English as 'fair'.

The majority of patients rated their health as either 'excellent' or 'good' (20% and 52.5%, respectively). 15% of patients rated their health as 'fair', and 7.5% rated it as 'poor'.

Table 7

Correlations among Physician Communication	a Categories and Patient Satisfaction Variables
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	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Dr. Closed-Ended Questions		.57**	25	05	41**	.11	25	.11	.18	.03	.11	01	.16
2. Dr. Open-Ended Questions			25	05	44**	03	26	.41**	.14	.06	.22	27	07
3. Dr. Biomedical Statements				.17	.07	.10	43**	35**	21	0.05	.07	.09	.15
4. Dr. Psychosocial Statements					09	.44**	28	.23	38*	.04	05	03	22
5. Dr. Positive Statements						.10	.37*	13	33*	34*	40*	01	.01
6. Dr. Negative Statements							19	05	10	.02	.01	07	03
7. Dr. Social Statements								07	02	.12	18	.10	.16
8. Dr. Facilitative Statements									32*	07	03	25	31
9. Dr. Orientation Statements										.25	.19	.21	07
10. Pt. Overall Satisfaction											.63**	.45**	.30
11. Pt. Communication Satisfaction												.22	.25
12. Pt. Expertise Satisfaction													.48**
13. Pt. Affect Satisfaction													

* Correlation is significant at the 0.05 level (2-tailed) ** Correlation is significant at the 0.01 level (2-tailed)

95% of visits were regarded as 'non-emergencies', and for 37.5% of patients this was the first time seeing this particular physician. The majority of patients had seen the resident at least once before.

The majority of patients (82.5%) reported that their interview with the resident entailed exchanging a few pleasantries and then talking about symptoms and concerns. 17.5 % of patients reported that they started with their concerns and symptoms right away, and none of the patients reported exchanging *too* many pleasantries. Conversely, almost half of the patients (47.5%) would prefer to exchange pleasantries throughout the interview. 42.5% would prefer to be a bit social and then address symptoms and concerns. 10.5% of patients would prefer to skip pleasantries and focus on medical concerns.

The level of education did not appear to have a significant effect on the number of words spoken by patients, or the number of utterances. Patient level of education was not correlated with the length of the interview, words or utterances spoken by the physician, or total words and utterances spoken by both groups during the interview *Effect Size Calculation and Justification for Sample Size*

A measure of effect size was calculated for the difference in the means for closedended questions in an attempt to provide justification for the sample size. Cohen's d was calculated and the effect size was seen to be 1.8. An effect size of this magnitude is indicative of a very large difference in the question asking behavior of these two groups. Furthermore, it shows us that our sample size was sufficiently large enough to detect the difference between residents and patients. Thus we are reasonably assured that this sample size was adequate and that our statistical tests are most likely accurate.

Discussion

This study has generated many interesting findings that are worth further investigation. In sum, residents and patients have very different styles of communication. In addition to this, male and female residents differ further in the way they communicate with their patients. The significant results will be discussed below.

Patterns of Speech

Speech differences among residents and patients. The results shown in Table 5 illustrate the different areas of speech which were focused on by residents and patients. Six of the nine speech categories were statistically different between residents and patients. Residents asked more closed- and open-ended questions than did patients, and also made more facilitative and orientation statements. Patients, on the other hand, made more statements regarding biomedical information-giving and talked more than residents about psychosocial issues.

Question-asking. With regard to question-asking behavior, physicians asked roughly four times the amount of both closed- and open-ended questions than patients did. In a study by Roter (1984), patient question asking was examined and similar results were obtained. Roter provides several explanations for the lack of patient question-asking:

It is likely that some questions would be answered by information spontaneously offered by the physician during the course of the visit. For others, question asking may be discouraged by physician communication limiting cues, or patient reluctance to "bother" the physician with too many questions. (1984)

In this study, we do not have sufficient evidence to conclude which of these mechanisms contributed to the low rates of question-asking behavior among patients. However, it

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would also be presumptuous to conclude that this discrepancy is detrimental to the outcome of the visit or the medical care that the patient receives. The high rates of resident biomedical information-giving observed may well provide the patient with adequate information regarding the details of their physical ailment. Coupled with their relatively high rates of question-asking, residents may be able to attain the biomedical information they need in order to provide an accurate diagnosis. Contrary to this, however, other researchers have found that although patients may disagree with their physician, they might not explicitly voice this opinion (Speedling & Rose, 1985; Beisecker & Beisecker, 1990). Instead of asking questions in order to clarify something or show a dissenting opinion, patients often refrain from doing so (Beisecker & Beisecker, 1990). However, if patients were unhappy about this, it was not reflected in their responses in the patient questionnaire. The majority of patients were quite pleased with the communication that took place in the interaction: the means for communication and overall satisfaction were both very high (4.44 and 4.43, respectively). This will be discussed in detail later.

Positive talk. Both parties engage in more positive talk with each other than any other category of speech. Roughly 31.5% of resident speech and 36% of patient speech is devoted to these types of statements. Although patients had a rate of 80.36 positive statements per interview and residents 69.01, the difference was *not* significantly different. It has been stated previously that patients typically like physicians for the same reasons they like other people (du Pre, 2001). It is possible that residents try (either consciously or subconsciously) to match their patients in positive statements in order to help build the relationship. Du Pre (2001) mentions that patients 'prefer caregivers who

listen attentively, are genuinely concerned about them, and acknowledge their feelings'. Positive talk, as defined in this study, is comprised of laughing, approving, complimenting, agreeing, empathic statements, reassuring/optimizing, legitimizing, and partnership building statements. It is highly possible that these types of statements may contribute to the resident being viewed as compassionate and caring by patients. Evidence to examine this claim will be discussed later in the section on physician speech categories and patient satisfaction.

Psychosocial speech. In the category of psychosocial utterances we see a major difference – patients engaged in roughly four times more of this kind of speech than did residents. The psychosocial exchange composite category is comprised of four variables: 'gives lifestyle information', 'gives psychosocial information' (patients only), 'counsels lifestyle/psychosocial' (physicians only), 'self-disclosure (physicians only)', and 'asks for reassurance'. It is uncommon and would seem quite illogical for a physician to go on excessively about his or her lifestyle, especially since the patient has come to the physician in order to help alleviate their own problem. The same might be true for selfdisclosure and asking for reassurance: the patient has come to the physician in order to receive health care, and excessive comments regarding the physician's own life and/or the physician asking for reassurance from the patient may be counter-intuitive. In a study by Beach, Roter, Rubin, Frankel, Levinson & Ford, it was found that physician selfdisclosure only occurred in 17% of primary care interactions (2004). Furthermore, according to the Roter Interaction Analysis System, no utterances by the physician can be coded as 'gives-psychosocial' information (Roter, 1994). This is perhaps a partial explanation for the patterns of resident speech. However, what might explain the large

proportion of patient speech devoted to psychosocial utterances? The variable 'gives psychosocial' is coded when patients make statements such as "I feel anxious at those times", or "I don't think I like that". Thus when the patient makes an utterance that reflects his or her opinion it is coded into this category. The large amount of patient speech in the psychosocial category may thus be a reflection of patients expressing their thoughts and opinions freely. We cannot conclude if patients are initiating psychosocial talk or just expressing themselves freely upon being prompted to do so by residents; to determine this, one would have to adopt a design in which initiation of certain topics can be measured accurately.

Past studies have posited that patients are hesitant to express emotional concerns and that opportunities to do so during encounters are initiated by the physician (Eide et al., 2004). Eide and colleagues state that 'patients seldom verbalize their emotions directly and spontaneously during medical interviews, but rather tend to present indirect cues when an emotionally laden issue is at stake' (2004). The results obtained in this study are quite contradictory to these claims. We observed high levels of patient psychosocial speech, even more so than biomedical speech. It would seem that patients felt free to express emotional and lifestyle concerns with their attending resident. Being able to express matters in this domain is indicative of a patient-centred interview.

Facilitation and orientation. These categories of speech may corroborate the claim that the resident or physician controls the content and direction of the interview. For residents, these two speech categories account for over a fifth of total speech; for patients they account for less than one-twentieth (< 5.0%). By using facilitative speech (back-channeling, bids for repetition, asking the patient for his/her opinion, and changing

the subject), the resident exerts control over the direction and depth of patient responses in order to obtain an adequate amount of information to make an accurate diagnosis. Orientation statements tell the patient outright what the resident expects them to do in terms of examination during the interview. For example, orientation statements such as "I'm going to take your blood pressure" and "can you open your mouth and say 'ahh"" exert a certain amount of control over the process as patients have little choice of refusing. A less controlling way of handling the situation would be to explain why it is necessary to do so, which rarely happens.

These results of the resident/patient interview confirm speech asymmetries found in past studies. Also consistent with past studies is the general lack of patient participation (in this study question asking behavior and speaking less) (Meeuwesen et al., 1991; Speedling & Rose, 1985; Evans & Burrows, 1992). According to Roter and colleagues, we can illuminate the overall patient or physician-centeredness of these 40 interviews by examining three speech categories: *questions, biomedical information,* and *psychosocial talk* (1997). As mentioned above, these three categories reflect the three goals or functions of the medical encounter (Roter, 1977). The interviews observed are, by nature, physician-centered due to the question-asking and biomedical informationgiving behavior of the residents and patient-centered in that psychosocial talk is dominated by patients. Thus, residents exert control in the areas in which they need to: gathering information to make a diagnosis and inform the patient of important facts, yet allow the patient to express themselves freely in order to foster rapport and openness.

Perhaps an intuitive question to ask would be: how does our sample of residents compare to general practitioners in other studies among the same speech categories? The RIAS scale has been used quite widely and it is possible to compare the speech patterns observed in this study to those found by other researchers (Deveugele et al., 2004; Beach et al., 2004; Roter & Hall, 2004). An extensive study involving the analysis of 2801 videotaped consultations of 183 general practitioners from six European countries by Deveugele and colleagues provides us with a very suitable comparison. The researchers in this study used different RIAS subgroups: they grouped the variables into 4 clusters of affective behavior and 4 clusters of instrumental behavior (Deveugele et al., 2004). Nonetheless, roughly 14% of physician speech was devoted to asking questions; in this study, residents devoted 12.5% of speech to this function. The researchers combined all information-giving statements into one category, and these types of statements accounted for roughly 28% of physician speech, compared to 27.5% for residents.

Length of Interviews, Words Spoken and Utterances Made

The average length of the 40 interviews recorded in this study was a little over 19.5 minutes. Previous studies done with physicians have yielded different results: the average length of an American medical interview is 16 minutes, whereas in Britain it is 5 to 6 minutes (Roter et al., 1988). Li et al.'s study with male physicians in the same clinic can be compared to the male residents in this study: the average length of male physician/male patient interviews was 7 minutes, and male physician/female patients was approximately 9 minutes (Li et al., 2004). In this study, male residents with male patients in the same clinic had an average interview length of over 18.5 minutes, and male residents and female patients an average length of approximately 28 minutes. These lengths are quite different and lend support to our claim that the method of payment (in the case of residents – salary) may have a direct influence on the length of time spent with patients. Other reasons for residents spending more time with patients are a lack of experience and need to 'learn the ropes'. Residents are, after all, physicians in training, and it may take them longer to gather information and make a diagnosis than a seasoned physician. Patients may either welcome the increased length, or they may be dissatisfied with the inexperience of their attending resident. Evidence for the latter was inconclusive as patients reported being satisfied with their visit. It is likely that patients are understanding and open to seeing residents, and are aware that they are learning and hence might be more patient with them than they would be with a veteran physician.

Research shows that there are benefits and downsides to longer interview lengths. Physicians tend to 'prescribe less, listen better to their patients, identify more problems, explore more psychosocial problems and provide more health promotion' (Deveugele et al., 2004). In addition Deveugele and colleagues posit that two major characteristics of primary care are promoted by longer physician-patient interactions: holism and patientcentredness (2004). Physicians and patients also 'had more social exchange, patients made more statement to present their problem, asked and answered more questions and expressed more ideas about their condition' (Deveugele, 2004). Furthermore, patients tended to be *more* satisfied with longer visits than shorter visits (Deveugele, 2004). On the contrary, other research has shown either the opposite, or no relation at all between interview length and satisfaction, and many researchers are of the opinion that 'longer may not always be better'. Some studies have shown no significant correlations between emotional support by the physician and length of consultation, and even that patientcentredness was not a function of time, but other factors (Deveugele, 2004). An average length of almost 20 minutes is considered quite lengthy; it is not known however how much this contributed to patient satisfaction in this visit. On the other hand, by considering past studies we may have grounds to suspect that interview length did in fact contribute to patient satisfaction to a degree, considering the high values seen in the questionnaire.

Residents spoke significantly more words than their patients: residents accounted for 59.7% of the total words spoken in any given interview, and patients 40.3%. This finding corroborates the findings in previous studies; the asymmetry observed in the proportion of words spoken is identical to that obtained in a meta-analysis done by Hall, Roter and Katz (1988). Furthermore, male residents in this study accounted for approximately 70% of the words spoken during their encounters. These findings are quite different from those of a study done by Li et al. involving male physicians in the same clinic. They reported a 50/50 contribution between male physicians and patients (2004).

In line with this, residents also made significantly more utterances than their patients. If residents spoke more words, but did not differ in the amount of meaningful utterances, we might have been able to conclude that they were being excessively wordy while conveying simple information. They did not do this, however, and it lends support to the assertion that residents (in general) were not using overly descriptive and inflated language when conversing with their patients.

Gender Differences

Patterns of speech between male and female residents. Perhaps the most interesting finding in this study is the difference in the rate of psychosocial utterances between male and female residents. This was the only category out of nine in which a statistically significant difference was observed. Male residents made almost twice as many psychosocial utterances with patients than did their female counterparts. This result is in direct contradiction of previous studies which have generally stated that female physicians give more psychosocial information, and are more reassuring and encouraging than male physicians (Hall & Roter, 2002; Street, 2002). Further, it has been posited that male physicians give more general instructions and directives for patient conduct (Brink-Muinen et al., 2002); this was not the case in this study. A possible explanation is that upon graduating from medical school, male and female residents 'start off' being similar in the way they interact with patients and subsequently diverge over the course of their careers. Further, it is also possible that male residents may over-compensate in their attention to psychosocial speech in reaction to society's perceived misconceptions and stereotypes of male physicians.

Length of interviews, words spoken and utterances made. Male and female residents did not differ significantly in the length of interviews conducted with patients, although males averaged approximately 22 minutes, and females approximately 17 minutes. Nevertheless, these results are in direct contradiction to many studies done in the past which state that, on average, female physicians conduct longer interviews than male physicians (Hall & Roter, 2002; Street, 2002). In a synthesis of two meta-analysis reviews of studies from 1967 to 2001, Roter and Hall found that medical visits with female physicians were 2 minutes longer than males (2004). On average, female physician conducted interviews were 10% longer than those conducted by their male counterparts; in our study, male interviews were 29% longer on average than female interviews. This is quite different than the results reported by Roter and Hall, and it is difficult to provide concrete evidence that the longer interviews by males were a result of them being residents. The four male residents may have shared characteristics, just by chance, that lead them to conduct longer interviews than their female colleagues.

Male residents spoke approximately 45% more words than their female counterparts, which is congruent with findings in the literature. Males have been found to be 'more verbally dominant and imposing during the visit' (Brink-Muinen et al., 2002). As an average percentage of total words spoken during the visit, male residents accounted for 71%, and female residents spoke only 49%. The difference observed can be an indirect mechanism of control over the encounter: male residents spend most of the time talking when they are with patients, whereas female residents 'share' the time to speak more equally.

Although males made more meaningful utterances during the course of the interview than did females (Males = 310.05, Females = 223.50), the result was not statistically significant. This may be a sign that males use more 'colorful' language, or a style of speaking in which more words are used to convey the same amount of information.

Patients spoke more with male than female residents, as well as making approximately 55% more meaningful utterances (significant; however this may just be an artifact of the longer interview lengths). The lack of a statistical difference in the lengths of interviews between male and female residents, yet elevated levels of both male resident and patient speech in male resident interview is an interesting finding. It would seem that in comparison to the interviews females conduct with their patients, male interviews with their patients show a greater density in words spoken and utterances made. This may be further evidence of male residents focusing on verbal dialogue in order to influence what goes on during the medical interview. Female residents spoke fewer words than males, but their number of meaningful utterances was not statistically different. Once again this might hint at females being less 'wordy' than their male companions, and in turn this ultimately allows patient speech to account for half of the total.

Patterns of speech between male and female patients. Of the nine speech categories, patients only differed in one: males made more biomedical statements than did female patients. On average, they made approximately 27 more statements regarding issues relating to their biomedical state. Previous research also shows that males are more likely to make responses of a factual nature when compared to females (Brink-Muinen et al., 2002). This difference between males and females may show us a great deal about how disease is viewed by the sexes: it has long been held that males view disease as primarily having biological roots, whereas females have been credited with viewing it as a psycho-biological phenomenon. Hence by making more statements regarding their biomedical state, male patients may be hoping to help the physician to better identify the biological causes of the reason of their visit.

Dyad Differences

The lack of differences in speech and other characteristics among dyads is reassuring, as we can be confident that certain dyad types do not assume more importance than others. Same-sex dyads did not entail a greater number of words or take up a larger amount of time than opposite-sex dyads. In fact, same-sex dyads in this study took up *less* time than did opposite sex dyads: male/male and female/female interviews took on average 16.8 minutes, whereas opposite sex dyads took 22.6 minutes. Female/female interviews were the shortest, lasting only 15 minutes. However, the difference between them was not statistically significant. The research is divided in that some studies have shown that same-sex dyads last longer than opposite-sex dyads, and others have shown the reverse.

Differences in Patient Satisfaction with Male and Female Residents

The patient questionnaires allow us to gauge the differences in patient perception of male and female residents. Although males made more psychosocial comments and dominated the majority of speaking time in their interviews, there were no differences in the levels of patient satisfaction for the questions and satisfaction factors between male and female residents. Patients were equally satisfied with both groups of residents. A possible explanation for this is that patients are influenced by societal stereotypes – they may feel that male residents are inherently more dominating than female residents. With these misconceptions in mind, they may be vulnerable to allowing these ideas to affect their judgment of the interview, even in light of the obvious differences we have seen. Further research would have to be done in order to test for this hypothesis.

Resident Speech Categories and Patient Satisfaction

Significant correlations were not observed between eight of the nine resident speech variables and the four satisfaction variables. The variable 'positive talk' was moderately negatively correlated with patient overall and communication satisfaction. Thus higher levels of positive talk by the resident translated into lower levels of patient satisfaction. It may seem counterintuitive that compliments, approval statements, empathic and other positive statements might make patients less satisfied. It may be that *too many* of these comments do just that. It is possible that patients feel uncomfortable in the face of too many compliments and empathic statements. They may feel as though they are being put on the spot, or that the resident is viewing them as being in need of extra positive comments, or even patronizing them. Excessive statements may make the resident come across as 'trying too hard' or being *overly* friendly.

The patient questionnaires did not point to any major dissatisfaction with the residents. Overall, patients were highly satisfied with their visits. Previous studies may provide us with some insight: Wofford and colleagues conducted an analysis of patient complaint forms in order to establish significant categories of patient concerns (2004). They found that patients were dissatisfied and filed complaints when they felt disrespected by their physician, had disagreements about expectations of care, received inadequate information, feeling distrust in the physician, and had perceptions of physician unavailability (Wofford, Wofford, Bothra, Kendrick, Smith & Lichstein, 2004). Although none of these were measured in the current study, it was apparent from the audiotapes of the transcriptions that there were no major disagreements, or instances of major resident disrespect towards patients. It would seem that patients are generally pleased with their visits, as long as they go on without major conflicts involving disrespectful comments and other problems. It may be that it takes something quite major for patients to become upset and dissatisfied with their visit.

The generalizability of this study must be taken into account. Patrons of medical clinics are not randomly sampled from the population, and thus the findings in this study are difficult to generalize to the population at large. The majority of patients in this study were either college or university-educated and Caucasian, and roughly 40% were

unemployed at the time of their visit. The population at large does not share these characteristics, and we must be wary of concluding that residents communicate in such ways with patients from minority backgrounds, for example.

Furthermore, how similar the clinic in which the study was carried out in is to others in Prince George and surrounding communities is not known. This particular facility may have features or characteristics that set it apart from others, and we must be careful not to generalize the findings to all residents. In future studies, it would be desirable to include as many residents across as many facilities as possible. In this way, effects such as unique work environments can be controlled for and this in turn would increase the generalizability of the findings.

Since only nine 1st and 2nd year residents participated in this study in total, it is difficult to generalize the communication patterns of this group of nine to all family practice residents. With respect to the literature reviewed, sample sizes for physicians in these types of studies are usually small; however, including a larger number of residents would definitely allow us to draw conclusions on the *overall* communication patterns of residents. It is quite possible that this group of residents may have shared unique characteristics that may not warrant a generalization across all residents.

Conclusion

We can draw several interesting and important conclusions from this study. Being a study that focuses on residents-only, it gives us a clear picture of the communication patterns of this under-studied group of physicians. It is safe to say that there is definitely an asymmetry of speech between 1st and 2nd year residents and their patients. These interviews seem to be physician-centered in the aspects of question-asking and giving biomedical information, but patient centered in the aspect of psychosocial speech. This may allow residents to focus on their area of expertise and at the same time allow for patients to express their psychosocial wants and needs. However, since there are major differences in speech patterns, this may be the cause of miscommunication between residents and their patients. Since both parties are focusing on certain areas of speech more than others, it is more than likely miscommunication takes place, and this could negatively affect patient care and health outcomes.

Since residents are not as limited in terms of how many patients they see and how much time they spend with each, it is possible that they spend more time talking and explaining to their patients than do physicians. This is evident in the large proportion of speech devoted to biomedical statements, total words and utterances for the interviews in general, and the long interview times. An average interview length of almost twenty minutes has many benefits: patients do not feel rushed and it gives these 'doctors-intraining' enough time to hone their skills and form meaningful relationships with their patients.

It is difficult to conclude if the interviews observed fall into one or more of the four models of the physician-patient relationship proposed by Emanuel and Emanuel (1992). The characteristics of these interviews, on average, fall into the domain of the *deliberative model*. Observation of the interviews shows us that patients' values are open to development via discussion with their physician, and that residents usually steer patients in the direction of making the best choices for themselves. Residents and patients both exchanged a large amount of biomedical information, showing us that discussion of interventions was common. On average, residents acted like friends or teachers, engaging

in social talk the same amount as patients, yet imparting important knowledge. Lastly, patients were encouraged to consider alternative health interventions and their implications, and this also falls into the category of the deliberative model (Emanuel & Emanuel, 1992). Although the interviews did have characteristics of other models, the deliberative model seemed to summarize these interviews best. An interesting avenue for research might be to associate certain speech categories with the models of the relationships; this might make it easier to identify which type of interaction is taking place in individual interviews, instead of on average as has been done here.

From this study we have seen that engaging in too much positive talk actually moderately decreases patient satisfaction. Residents may find it helpful that they do not need to engage in too much positive talk in order to come across as friendly and caring.

The differences observed between male and female residents are interesting as well. Although males exhibited a more verbally dominant style, patients did not seem to mind. It is not clear whether this verbal dominance is detrimental to the interview. Male residents may benefit, however, by being succinct and to the point in order for patients to express themselves more freely. Periodic skills assessment and training might help both male and female residents and physicians to communicate with patients in a more homogenous manner.

In terms of the speech categories, male and female residents communicated in a relatively homogenous manner with their patients (with the exception of psychosocial speech). This leads to two exciting ideas for further research: one avenue would be to examine these same family practice residents at a set time in the future and observe whether their communication patterns show any divergence. Another possibility would

be to study the communication patterns of a cohort of physicians, starting with their residency and observing them at 5 year intervals. These studies might provide evidence for the need for periodic skills training or workshops to help bridge any gaps and differences that arise between male and female doctors. The result might be more uniform care; patients need not worry about the gender of their physician being a barrier to receiving optimal health-care.

The lack of significant correlations between resident speech and patient satisfaction may mean one of two things: a problem with the questionnaire or that residents are relatively free to speak how they want with patients. Patients could be very patient or open, or they might not be totally honest when answering the questionnaires. It is difficult to conclude which one of these might be true; it is plausible that patients recognize that these young physicians are just learning, and are thus less affected by the way they communicate. It is also possible that patients make favorable responses about their attending resident because they do not want to 'punish' them for being inexperienced. Elucidating the true feelings of patients with residents may be a topic of further research. Until then, it would seem that residents are free to communicate how they want with patients without it negatively affecting satisfaction.

Skills assessment and training might help both male and female residents and physicians to communicate with patients in a homogenous manner. The findings in this study point to male and female residents being very similar in their speech patterns, which, according to the literature, may not be true of experienced physicians later in their careers. If this is the case, it would seem that male and female physicians' communication styles diverge over the course of their careers. Training programs or seminars may help physicians to overcome communication habits that negatively affect outcomes, and at the same time reinforce the retention of skills they already possess that facilitate efficient communication. In addition, more extensive training during the four years in medical school may help future physicians understand more fully the dynamics of communication. A greater focus on communication skills that takes into account patient preferences, as well as cutting-edge research would definitely be an advantage for both parties.

This study has contributed to the field of health communication in several important ways: it examines the communication patterns of a residents-only group of physicians and is one of a few studies on health-communication in Canada. Furthermore, conducted in a northern and rural setting, it is of special interest to those communities which have different medical needs than urban centres. These communities already have difficulties in attracting and retaining physicians, and this is a topic of concern and anger among many residents. Studies like this one may help us to at least make the best use of the limited amount of physician resources in these communities. In order to reduce tensions until the situation improves, it may be in our best interests to make the care that patients do receive more efficient and productive. Research in this field is one step closer to ensuring that members of northern and rural communities receive the same level of medical care enjoyed by all Canadians.

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Appendix A

CONSENT FORM FOR PHYSICIANS

Dear Participant:

Hello, I am a research assistant for Dr. Li of the Psychology Program at UNBC. We are conducting a study about doctor-patient communication. The purpose of this research is to study how physicians and patients communicate with each other. By studying these conversations we hope to improve the way physicians and patients relate to each other.

I would like you to help us by participating in this study. If you agree to participate in this study, you will audio tape your conversation with your patient today.

Your participation in this study is *completely voluntary*. Your participation will remain *completely anonymous*.

I would like to assure you that the audio taped conversations will only be heard by the research team and will be stored in Dr. Han Li's lab at UNBC.

I will leave an information sheet with you (offer a copy of the information sheet). Please feel free to ask any questions about this study. I shall do my best to answer your questions. If you have further questions, please phone my supervising professor Dr. Han Li at ' at UNBC.

I have read and understood the above, and I agree to take part in this study

Signature

Date

I confirm that the above information sheet has been read and understood

Witness's Signature (the researcher)

Date

Physician Code Number_____

Appendix B

CONSENT FORM FOR PATIENTS

Dear Participant:

Hello, I am a research assistant for Dr. Li of the Psychology Program at UNBC. We are conducting a study about doctor-patient communication. The purpose of this research is to study how physicians communicate with patients. By studying these conversations we hope to improve the way physicians and patients relate to each other.

I would like you to help us by participating in this study. If you agree to participate in this study, your doctor will audio tape your conversation with him or her today. After the interview, you will fill out a questionnaire regarding your experience of today's visit with your physician. *Your doctor will not have access to your questionnaire*.

Before your visit starts today, some of you will receive a short training session encouraging you to ask questions of your doctor. The purpose of these questions is to help you and your doctor communicate better. As you can see (show the list of questions to the patient), these questions are not personal and will not harm you in any way.

Your participation in this study is *completely voluntary* and you may decline to answer any questions that you feel uncomfortable with at any time. Don't put your name on the questionnaire. Your participation will remain *completely anonymous*.

I would like to assure you that the audio taped conversations will only be heard by the research team and will be stored in Dr. Han Li's lab at UNBC.

I will leave an information sheet with you (offer a copy of the information sheet). Please feel free to ask any questions about this study. I shall do my best to answer your questions. If you have further questions, please phone my supervising professor Dr. Han Li at at UNBC.

I have read and understood the above, and I consent to take part in this study

Signature

Date

Date

I confirm that the above information sheet has been read and understood

Witness's Signature

Patient Code Number
Appendix C

Participant Code Number_____

Physician Code Number _____

PATIENT QUESTIONNAIRE

The following are statements about your feelings regarding your visit with your doctor today. There are no right or wrong answers; we just want your opinion. We would like to remind you that your doctor will not see your answers to these statements under any condition. <u>Based on your visit today</u>, please circle the answer which best reflects your feelings.

	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. The goal of my visit today is achieved.	1	2	3	4	5
2. I have great confidence in my doctor.	1	2	3	4	5
3. My doctor has a reasonable understanding of my life circumstances.	1	2	3	4	5
4. My doctor told me all I wanted to know about my condition and treatment.	1	2	3	4	5
5. My doctor asked whether I understood the information he/she gave me about my condition or treatment.	1	2	3	4	5
 My doctor acted bossy and domineering at times during my visit today. 	1	2	3	4	5
7. I have health problems which should have been discussed today but were not.	1	2	3	4	5
8. My doctor has a good understanding of my past	1	2	3	4	5

health history.

9. My doctor made me feel important.	1	2	3	4	5
10. My doctor seemed to be in a hurry.	1	2	3	4	5

11. In what fashion did you and your doctor communicate today? (Please choose one of the three options)

_____ We started with my symptoms and concerns right away

_____ We first exchanged a few pleasantries, then we talked about my symptoms and concerns

_____ We wasted some time talking about unrelated issues (e.g., too many pleasantries)

____ Other, please

specify_____

12. What kind of medical talk do you prefer? (Please choose one of the three options)

_____ businesslike (get down to my symptoms and concerns right away)

a bit social and then get down to my symptoms and concerns

_____ both social and businesslike throughout the conversation

____ Other, please specify_____

13. How satisfied are you with the way your doctor and you communicated today?

14. During your visit today, did you feel there were times when your doctor and you miscommunicated?

	/,	/,	/	/,	/
Not at all	Occasionally	Sometimes	Often	Always	

15. How often do you buy the medication prescribed by your doctor?

~/	//	/,	//	//
Never	Occasionally	Sometimes	Often	Always

16. After you buy the medication, how often do you understand the purpose of your medication?

	//	//	//	//
Never	Occasionally	Sometimes	Often	Always

17. After you buy the medication, how often do you take your medication as instructed by your doctor?

,	/,	/,	/,	//
Never	Occasionally	Sometimes	Often	Always

18. How often do you make life-style changes as instructed by your doctor (e.g., quit smoking; exercise)?

	-/;	//	//	'/
Never	Occasionally	Sometimes	Often	Always

Please answer the following questions about yourself:

1.Today's visit was a

____ nonemergency visit

____ emergency visit

2. How many times have you been seeing this doctor? (Please choose one of the following options)

This is the first time

This is the second time

This is the third time

This is the fourth time

More than four

3. How many times have you seen this doctor in the past 6 months?

4. How would you rate your health? (Please choose one)

 $\Box Excellent \Box Good \Box Fair \Box Poor$

5. Your age: _____

6. Your gender: \Box Male \Box Female

7. Are you currently employed? \Box Yes \Box No

If yes, please indicate your type of employment:

8. What is the highest level of education you have completed? (Please choose one)

- □ None
- □ Public or grade school
- □ High school
- □ Community/Technical College
- □ University
- 9. Is English your first language? □ Yes □ No If no, how fluent would you rate your spoken English?
 - □ Fluent
 - 🗆 Fair
 - \Box Poor

THANK YOU SO MUCH FOR YOUR TIME AND HELP.

Communication Behavior	Category	# Physician Utterances	Proportion of Physician Utterances	# Patient Utterances	Proportion of Patient Utterances
Questions- Close	[?] Med				
Ended	[?] Thera				
	[?] L/S				
	[?] P/S				
	[?] Other				
Totals					
Questions – Open	? Med				
Ended	? Thera				
	? L/S				
	? P/S				
	? Other				
Totals					
Biomedical	Gives-Med				
Information	Gives-Thera				
	C-Med/Thera				
	?Service				
Totals					
Psychosocial	Gives-L/S				
Exchange	Gives-P/S				
	C-L/S-P/S				
	SDis				
	?Reassure				
Totals					

Appendix D - Coding Form for Composites Speech Categories

Communication Behavior	Category	# Physician Utterances	Proportion of Physician Utterances	# Patient Utterances	Proportion of Patient Utterances
Positive Talk	Laughs				
	Approve				
	Comp				
	Agree				
	Empathy				
	R/O			·	
	Legit				
	Partner				
Totals					
Negative Talk	Concern				
	Disapprove				
	Crit				
Totals					
Social Talk	Personal				
Facilitation	BC				
	Trans				
	Check				
	?Bid				
	?Understand				
	?Opinion				
Totals					
Orientation	Orient				

Appendix E - Results for Patient Questionnaire (Percentage Values for Patient Responses)

	Strongly Disagree	Disagtee	Unsure	Agree	Strongly Agree
1. The goal of my visit today is achieved.		2.5	12.5	25.0	60.0
2. I have great confidence in my doctor.			10.0	30.0	60.0
3. My doctor has a reasonable understanding of my life circumstances.	2.5	5.0	15.0	52.5	25.0
4. My doctor told me all I wanted to know about my condition and treatment.			2.5	45.0	52.5
5. My doctor asked whether I understood the information he/she gave me about my condition or treatment.		5.0	15.0	42.5	35.0
6. My doctor acted bossy and domineering at times during my visit today.	80.0	15.0		2.5	2.5
7. I have health problems which should have been discussed today but were not.	55.0	30.0	5.0	5.0	2.5
8. My doctor has a good understanding of my past health history.	2.5	7.5	25.0	40.0	25.0
9. My doctor made me feel important.	2.5		7.5	57.5	32.5
10. My doctor seemed to be in a hurry.	42.5	52.5			2.5

11. In what fashion did you and your doctor communicate today? (Please choose one of the three options)

17.5% We started with my symptoms and concerns right away

82.5% We first exchanged a few pleasantries, then we talked about my symptoms and concerns

____ We wasted some time talking about unrelated issues (e.g., too many pleasantries)

____ Other, please specify

- 12. What kind of medical talk do you prefer? (Please choose one of the three options)
- 10.5% businesslike (get down to my symptoms and concerns right away)

42.5% a bit social and then get down to my symptoms and concerns

47.5% both social and businesslike throughout the conversation

____ Other, please specify

13. How satisfied are you with the way your doctor and you communicated today?

14. During your visit today, did you feel there were times when your doctor and you miscommunicated?

15. How often do you buy the medication prescribed by your doctor?

16. After you buy the medication, how often do you understand the purpose of your medication?

17. After you buy the medication, how often do you take your medication as instructed by your doctor?



18. How often do you make life-style changes as instructed by your doctor (e.g., quit smoking; exercise)?

------<u>0.0</u>-----/-----<u>5.0</u>-----/-----<u>15.0</u>-----/ Never Occasionally Sometimes Often Always

Please answer the following questions about yourself:

1.Today's visit was a

<u>95%</u>	Non-emergency visit
_5%	Emergency visit

2. How many times have you been seeing this doctor? (Please choose one of the following options)

<u>37.5%</u>	This is the first time
<u>27.5%</u>	This is the second time
<u>7.5%</u>	This is the third time
<u>27.5%</u>	This is the fourth time
	More than four

3. How many times have you seen this doctor in the past 6 months? (Mean = 1.74)

Never	<u>35.0%</u>
Once	<u>12.5%</u>
Twice	<u>25.0%</u>
Three or More	<u>22.5%</u>

4. How would you rate your health? (Please choose one)

<u>20%</u>]	Excellent	<u>52.5%</u> Good	<u>15.0%</u> Fair	<u>7.5%</u> Poor
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^{5.} Your age: <u>43.43 Yrs</u> (Mean)

7. Are you currently employed? <u>60%</u> Yes <u>37.5%</u> No <u>2.5%</u> Undisclosed

If yes, please indicate your type of employment:

8. What is the highest level of education you have completed? (Please choose one)

2.5%	None
5.0%	Public or grade school
<u>32.5%</u>	High school
<u>37.5%</u>	Community/Technical College
<u>22.5%</u>	University

9. Is English your first language? <u>97.5%</u> Yes <u>2.5%</u> No If no, how fluent would you rate your spoken English?

	Fluent
<u>100.0%</u>	Fair
	Poor