Reconceptualizing interruptions in physician-patient interviews: Cooperative and intrusive*

HAN Z. LI, MICHAEL KRYSKO, NAGHMEH G. DESROCHES and GEORGE DEAGLE

Abstract

Results of past research on physician-patient interruption present an inconclusive picture. This study reconceptualizes interruption into cooperative and intrusive categories. Thirty physician-patient interviews, 13 male/male and 17 male/female, were audiotaped and microanalyzed. It was found that physicians did not interrupt patients more or vice versa. Rather, physicians and patients interrupted differently, the former more intrusively and the latter, more cooperatively. Furthermore, physicians did not dominate speaking turns nor speak more words than patients, as previously believed. We argue that their difference may not be measured by the number of words or speaking turns because it is embedded in their respective communication style. It was also found that female patients exhibited eleven times as much cooperative interruptions as did male patients. When physicians interrupted patients, they were unsuccessful only 6% of the time. When patients interrupted physicians, they were unsuccessful 32% of the time. The results of this study point out the necessity to reconceptualize interruptions in physician-patient interviews.

Keywords: doctor-patient communication; face-to-face communication; gender differences; interruption patterns; successful and unsuccessful interruptions.

1. Introduction

When listening to a patient describing his or her symptoms, a physician may interrupt in order to get more details or 'redirect the focus of the interview' (Marvel et al. 1999; Beckman and Frankel 1984). On the other hand, when the physician reveals his or her diagnosis or treatment plan, the patient may need to interrupt in order to provide more details or express a concern (Beckman and Frankel 1984; Stewart et al. 1986; Kaplan et al. 1995). The goal of the research reported here was to understand how physicians and patients interrupt each other, that is, do they interrupt cooperatively or intrusively, or both? If so, how frequently? Does the gender of the patient affect the way they interrupt and are interrupted? We have pursued these questions through microanalysis of audiotaped physician-patient interviews.

2. The nature of interruption

So far, there are two distinct views among interruption researchers. One holds that interruption is a deep intrusion of the rights of the current speaker, as well as a severe disruption of the flow of the ongoing conversation (Sacks et al. 1974). This view equates interruption with power, the more powerful party interrupting the less powerful interlocutor (e.g., Ferguson 1977; Kollock et al. 1985; Hawkins 1991; Mishler and Waxler 1968; Robinson and Reis 1989; Zimmerman and West 1975).

The other view holds that some type of interruption can serve as a way of getting involved, showing support and solidarity (e.g., Hayashi 1988; Mizutani 1988; Moerman 1988; Roger and Nesshoever 1987; Tannen 1981, 1994) or building rapport (Goldberg 1990). Ng et al. (1995) reported that sometimes an interruption was a means to rescue or promote the current speaker, or to elaborate on the content of the current speech.

Following the two views on interruption, two broad types of interruptions have been distinguished: cooperative and intrusive (Murata 1994; Li 2001; Tannen 1994), although they are termed variably. For example, Goldberg (1990) differentiated interruptions as power and nonpower, Kennedy and Camden (1983) termed them 'disconfirming' and 'confirming', while Bennett (1981) preferred the terms 'conflicting' and 'less conflicting'. Ng et al. (1995) detected 'disruptive' and 'supportive' types of interruptions.

2.1. Cooperative interruption

Murata (1994) argues that cooperative interruptions intend to help the current speaker by coordinating the process and/or content of the ongoing conversation. Tannen (1994) proposes that this type of interruption supports the ongoing conversation by way of expressing the interrupter's high involvement and solidarity. Cooperative interruption contains three subcategories: agreement, assistance and clarification (Kennedy and Camden 1983; Li 2001).

1612–1783/04/0001–0145

According to Kennedy and Camden (1983), an agreement interruption enables the interrupter to show concurrence, compliance, understanding or support. The purpose of an agreement interruption often takes the form of overlapping, showing interest or enthusiasm and involvement in the ongoing conversation.

In the case of assistance interruption, the interrupter perceives that the speaker needs help. In order to rescue (Hayashi 1988; Mizutani 1988; Moerman 1988; Ng et al. 1995; Roger and Nesshoever 1987) the current speaker, the interrupter provides a word, a phrase, or a sentence.

Clarification interruption enables the interlocutors to have a common understanding of what has been said, thus establishing common ground for further communication (Clark and Brennan 1991; Li, 1999a, b). When the listener is unclear about a piece of information the current speaker has just elicited, the listener interrupts the speaker to request clarification (Kennedy and Camden 1983).

2.2. Intrusive interruption

Intrusive interruption usually poses a threat to the current speaker's territory by disrupting the process and/or content of the ongoing conversation (Goldberg 1990; Murata 1994; Rogers and Jones 1975). Intrusive interruption has four subcategories: disagreement, floor taking, topic change (Murata 1994) and tangentialization (Kennedy and Camden 1983).

Disagreement interruption occurs when the interlocutor in the role of the listener disagrees with what the current speaker is saying. The listener interrupts to voice his/her opposing opinion. In the case of floor-taking interruption, the interrupter does not intend to change the topic of the current speaker. Instead, the interrupter usually develops the topic of the current speaker, and does so by taking over the floor from the current speaker. However, the interrupter is free to change the topic once he or she successfully takes over the floor. Floor-taking interruption differs from topic-change interruption in that the initial purpose of the latter is to change the topic.

A tangentialization interruption occurs when the listener thinks that the information being presented is already known to the listener (Kennedy and Camden 1983). By interrupting, the listener prevents himself or herself from listening to an unwanted piece of information.

In the present study, interruptions were first distinguished as successful or unsuccessful (see definitions in section 4). If an interruption was successful, it was then categorized into cooperative or intrusive depending upon the function it performs in the conversation. If the purpose of the interruption was to agree, to assist and to clarify the ongoing conversation, it was categorized as cooperative interruption. On the other hand, if the purpose of the interruption was to disagree, to take over the floor, to change the topic or to dismiss the current speaker to avoid redundant information, then it was classified as intrusive interruption.

3. Physician-patient interruption patterns

Beckman and Frankel (1984) found that physicians interrupted their patients in 51 (69%) of the 74 audiotaped physician-patient interviews. They reported that patients' descriptions of their concerns were interrupted after the first expressed concern and after a mean time of 18 seconds. More importantly, interrupted concerns were rarely readdressed later on in the medical interview. Only in 1 of 52 interviews did the patient manage to get back to the interrupted agenda. Using the same method, Marvel et al. (1999) coded 264 medical interviews and found that patients' initial statements of concerns were interrupted in 72% of the interviews and after a mean time of 23.1 seconds.

West (1984) observed that physicians interrupted patients more than patients interrupted physicians. Street and Buller (1988) found that there was no difference between physicians and patients in the amount of interruptions. In a simulated physician-patient study, Li (2001) found no difference in the amount of interruptions performed by physicians and patients. Arntson et al. (1978) reported that patients interrupted more than physicians. Irish and Hall (1995) found that overall, patients engaged in significantly more interruptions than physicians. However, when Irish and Hall (1995) categorized interruptions as questions and statements, they found that patients used more statement type of interruptions, whereas physicians used more question type of interruptions.

3.1. Gender differences in interruption patterns in the general population

Research on gender differences in interruption patterns in the general population seems to be controversial (for a review, see Anderson and Leaper 1998). Some researchers found that males interrupt females more (e.g., Bohn and Stutman 1983; Brooks 1982; Zimmerman and West 1975), some found the opposite (e.g., Kennedy and Camden 1983; Nohara 1992), while others found no difference (e.g., Aries 1996; Carli 1990; James and Clarke 1993; Johnson 1994; Robinson and Reis 1989). These inconclusive results may stem from a lack of uniform definition of interruption. A meta-analysis of extensive literature (Anderson and Leaper 1998) indicated three definitions of interruptions. In the first category, interruptions were either undefined or broadly defined. In the second category, authors explicitly excluded back channelling and minimum listening responses. In the third category, only successful interruptions were

included, although they were termed intrusive interruptions.

3.2. Gender and interruption patterns in physician-patient interviews

Research on male-female interruption patterns in physician-patient interviews seems to be divisive as well. West (1984) found that male physicians interrupted their female patients more frequently than male patients, and that female physicians did not interrupt male and female patients differently. In comparison with male physicians, female physicians have been found to treat patients, male or female, in a more egalitarian (e.g., Day et al. 1989; Hall et al. 1993; Hall et al. 1994), and empathic manner (Hooper et al. 1982; Meeuwesen et al. 1991; Roter et al. 1991). Irish and Hall (1995) reported that few gender differences were found regarding interruption frequencies between males and females, for either physicians or patients. Street and Buller (1988), however, found that male physicians did not communicate in a more domineering fashion with female patients than with male patients, as did Waitzkin (1985).

Previous research has examined the gender of patients concerning a number of issues, but not interruption patterns *per se*. Researchers have reported that female patients receive more information than male patients (Hooper et al. 1982; Pendleton and Bochner 1980; Waitzkin 1985) because female patients requested more information than male patients (Pendleton and Bochner 1980; Wallen et al. 1979). Stewart (1984) found that physicians were more likely to ask the opinions or feelings of female patients than male patients.

Several researchers have reported that physicians and patients communicate differently. Beisecker and Beisecker (1990) observed that patients make few attempts to make their concerns explicit. In other words, they are hesitant to be assertive and/or intrusive when expressing their viewpoints. Stimson and Webb (1975) discovered that patients seldom expressed disagreement and dissatisfaction in a direct fashion. Instead, they do so in an inaudible and equivocal manner. Buller and Buller (1987) proposed two types of communication styles in physician-patient interaction: controlling and affiliative. Irish and Hall (1995) proposed that physicians tend to interrupt with questions and patients, with statements.

The above literature on physician-patient interruption patterns enlightens us in two ways. First, results are inconclusive regarding whether physicians interrupt patients more or vice versa. One possible reason may be the different definitions researchers use in their scoring of interruptions. The definition of interruption used by a number of researchers (e.g., Beaumont and Cheyne 1998; Jacob 1974; Mishler and Waxler 1968; Li 2001; West 1984) is based on the mechanics of turn taking (see definition in section 4). On the other hand, the definition by Beckman and Frankel (1984) is based on a functional approach. For example, an interruption is identified if a question or statement occurs in a transition-relevant place but redirected the agenda of the first speaker. Mechanically this may not qualify for an interruption but functionally it does.

Unless there is a unified definition of interruption, findings will probably remain divisive. This is a realistic challenge for future researchers.

A possible breakthrough in this matter may be a reconceptualization of interruption. The difference may be more in the manner physicians and patients interrupt rather than in the frequency of their interruption. By extending previous research, we first mechanically identified interruptions into successful and unsuccessful. Then based on the functions of the interruption in the conversation, we classified them into cooperative and intrusive. We explored whether physicians and patients differed in the types of interruptions.

The second message from the above literature review is that interruption pattern and physician gender has been the focus of several studies, but interruption pattern and patient gender has been infrequently studied. If physician gender is controlled for (e.g., use an all male sample), do male and female patients interrupt and get interrupted differently?

The two research themes for the current study were: (1) whether there was a significant difference between the frequencies of physicians and patients in intrusive, cooperative, and unsuccessful interruptions, and (2) whether there was a significant difference between the two gender combinations (male physicians/male patients vs. male physicians/female patients) in their frequencies of intrusive, cooperative, and unsuccessful interruptions.

4. Method

4.1. Context

The Canadian healthcare system allows for provincial variations in the way a general practitioner charges his or her patient. In British Columbia where this study took place, a general practitioner is permitted to see approximately twenty patients per day and charges $26.00 per patient for a regular visit. The $26.00 charge is covered under the provincial medical care plan.

4.2. Physician participants

Five Caucasian male general practitioners participated in this study. No intern was recruited as they are paid on a salary basis and would be less concerned with the length of the interview than a physician. As a result, their conversation style would be different from a physician's.

Of the five physician participants, two were between the ages of 30–39 and three were between the ages of 40–49. At the time of the study, the physicians had been in practice from 1 to 19 years, with an average of 15.50 years. When asked whether they enjoy their profession, one physician answered 'very much', two said 'most of the time', and two responded 'sometimes'.

4.3. Patient participants

It was decided that only patients who came for regular visits, not emergency visits, and who had previously seen the physician at least twice were eligible. Thirty patients, 13 males and 17 females, participated in this study. The patients' age ranged from 16 to 78, with a mean of 47.92 ($SD = 18.16$). Twenty-six of the 30 patients provided answers for the following demographic questions: education level, employment status, and health status. One-third (34.6%) had college, university or graduate education, 61.5% high school and 3.8% primary school. Half (50.0%) were employed, 23.1% were unemployed, 26.9% were retired or in school. Professionals or managers made up 15.4%, 23.1% were clerical or skilled workers, and 15.4% worked as unskilled workers (labour). About two-thirds (65.4%), were in 'good or excellent' health, and one-third (34.6%) rated their health as 'fair'. No patient rated his or her health as 'poor'. When asked the number of times they had seen their doctor in the past six months, participants provided a mean of 4.68 ($SD = 4.52$). Note that this mean was severely skewed by two outliers: one had seen the physician 15 times and the other 20 times during the past 6 months. An examination of the interruption patterns of these two patients found no significant difference from other patients. Of the 30 participants, 5 did not answer this question. For the remaining 25 participants, the median is 3.00 ($SD = 4.5$, skewness $= 2.15$). T-test indicated no statistically significant difference between male and female patients in the number of visits during the past six months ($p > .05$). All the patient participants spoke English as their first language except one, who spoke English as a second language but with high fluency.

4.4. Procedure

All five physician participants worked in a clinic in a Northern community of British Columbia. One of the researchers in this study, also a physician in the same community, obtained consent from the physician participants. Patients' consent was sought at the entrance of the clinic where one of the researchers was seated at a desk. Once a patient agreed to participate, he or she filled out a consent form which also provided an introduction to this study. Both physician and patient participants were informed that the conversation was to be audiotaped. Audio recordings of the interviews were obtained by using a video recorder without the lens.

4.5. Categories of interruption

Interruptions were divided into successful and unsuccessful. Both could occur with or without overlapping. Successful interruptions were differentiated into intrusive, cooperative, and other categories. Unsuccessful interruptions were not classified. Examples for each category are presented in Appendix 1.

4.5.1. Successful interruptions. An interruption is judged successful if the second speaker cuts off the first speaker before he/she finishes a complete utterance (more than the last word of the utterance), and the second speaker continues to talk until he/she finishes an utterance, while the first speaker stops talking abruptly (Beaumont and Cheyne 1998; Jacob 1974; Mishler and Waxler 1968; Ng et al. 1995) or continues to talk until he or she finishes the utterance.

4.5.2. Unsuccessful interruptions. These were instances when the second speaker begins talking before the first speaker finishes an utterance (Beaumont and Cheyne 1998; Jacob 1974; Ng et al. 1995), and the second speaker stops before finishing the intruding speech, while the first speaker continues talking and holding the floor.

4.5.3. Interruptions without overlapping. This type of interruption is also termed silent interruption (Ferguson 1977). These are instances when the second speaker starts talking while the first speaker's utterance was not completed. The utterances of the two speakers do not overlap. As pointed out by Bull and Mayer (1988), this situation poses special difficulties for scorers on deciding whether the first speaker intends to continue talking or use the silence as a turn yielding signal (Duncan 1972; Duncan and Fiske 1977), for 'conversations don't always follow rules of standard grammar' (Bull and Mayer 1988: 37). Following Duncan (1972), the possibility of an interruption was excluded if one or more of the following turn yielding signals occurred: a rise or fall in pitch at the end of a clause, or a drawl on the final syllable. An interruption was determined when there was no change in the tone of speech in the final syllable.

4.5.4. Complex interruptions. Sometimes, speakers interrupt each other or one speaker interrupts the other consecutively. Roger et al. (1988, see also Bull and Mayer 1988) coded these sequences as one special category, while others coded them as a series of independent events (Ferguson 1977; Kennedy and Camden 1983). The present study followed the latter since complex interruptions only occurred twice and an independent category would not allow for meaningful statistical analysis.

4.5.5. Cooperative and intrusive interruptions. As stated previously, successful interruptions were categorized as cooperative, intrusive or other. Cooperative interruption is made up of three subcategories, agreement, assistance, and clarification. Intrusive interruption consists of disagreement, topic change, floor taking, and tangentialization. Each subcategory was coded according to the definition by Murata (1994), Kennedy and Camden (1983), and Li (2001).

4.6. Interscorer reliability

One of the researchers made verbatim transcripts of the audiotaped conversations. Two scorers independently coded the data for frequencies of successful and unsuccessful interruptions using the coding scheme presented above. In scoring the data, scorers were required to write down all identifiable details of interruptions including the provider and the words or sentences prior to the interruption, the interruption proper, and the words or sentences immediately after the interruption. Although transcripts were available, scorers were required to score interruptions from the audiotape, using transcripts as references. The interscorer reliability (Pearson Correlation) was .87 for intrusive interruptions, .89 for cooperative interruptions and .91 for unsuccessful interruptions. Differences between the two scorers were settled by reviewing the definitions. Take the following exchange (1) as an example.

(1) Patient Oh! This ear. It's the /same ear/ that always gets plugged.
Physician /this ear?/

Initially one scorer coded example (1) as successful interruption, the other unsuccessful interruption. The argument for an unsuccessful interruption was that the patient didn't give up the floor and continued until she finished her utterance. After reviewing the definitions for both successful and unsuccessful definitions, the two scorers agreed that it was a successful interruption. The physician cut off the patient before she finished a complete utterance and the physician finished the utterance.

5. Results

5.1. Treatment of the data

The frequencies of cooperative, intrusive, and unsuccessful interruptions were summed for physicians and patients. The frequencies from three subcategories, agreement, assistance, and clarification, were summed to make the score for cooperative interruption. The frequencies of disagreement, topic change, floor taking, and tangentialization were added to make the score for intrusive interruption.

The total frequency was 84 for cooperative interruption, 87 for intrusive interruption, and 38 for unsuccessful interruption. The total number of words for the 30 interviews was 41,845, with a mean of 1,394.83 and a range from 548 to 3,094. The total interview time for all 30 conversations was 15,103.56 seconds, with a mean of 503.45 and a range from 250.80 to 933 seconds. The total speaking time (total interview time minus physician examination time) was 14,533 seconds, with a mean of 484.42 and a range from 178 to 921 seconds.

Due to the differences in speaking time by each individual, frequencies of interruptions do not make meaningful comparisons. Following standard practice in the field (Bull and Mayer 1988; Roger and Schumacher 1983), all frequencies were converted into rates, which are derivations of frequencies divided by partner speaking time. Due to the small numerators and large denominators, the rates were very small. Following Beaumont and Cheyne (1998), the rates were multiplied by the grand mean of speaking time. For example, if a physician's frequency of cooperative interruption was 1, the rate for cooperative interruption would be 3.41 (1/142*484.43). In this formula, 1 was the physician's frequency for cooperative interruption, 142 was the partner's or patient's speaking time, and 484.43 (a constant) was the grand mean of speaking time for both physicians and patients.

5.2. Turn exchanges, speaking time and number of words in the male physician/male patient group and male physician/female patient group

In terms of turn exchange, the correlations between physicians and patients were perfect: $r\ (13) = 1.0$, $p < .0001$ and $r\ (17) = .99$, $p < .0001$, for the male physician/male patient (M/M) group and male physician/female patient (M/F) group combinations respectively. In the M/M group, physicians took 73.54 turns ($SD = 38.54$) and patients took 72.85 turns ($SD = 37.92$). Paired samples t-test showed that the difference was statistically significant: $t\ (1, 12) = 2.92$, $p < .05$. In the M/F group, physicians took 90.88 turns ($SD = 37.04$) and patients took 90.58 turns ($SD = 37.26$). These means were not significantly different.

In the M/M group, the mean time for an interview was 7.04 minutes, while in the M/F group, the mean time for an interview was 9.42 minutes. The difference was statistically significant: $t\ (1, 28) = 2.16$, $p < .05$. In terms of speaking time (interview time minus physical examination time), there was a statistically significant difference between the M/M and M/F groups: $t\ (1, 28) = 2.22$, $p < .05$. The M/F group ($M = 549.17$, $SD = 176.45$) talked more than the M/M group ($M = 399.76$, $SD = 190.97$).

The means for speaking time were not statistically significant between physicians and patients. The

Table 1. *Means for rates of cooperative and intrusive interruptions as a function of role*

Role	Gender	n	Cooperative		Intrusive		Unsuccessful	
			M	*SD*	*M*	*SD*	*M*	*SD*
Doctor	male	13	2.21	2.30	3.36	2.56	.34	1.24
Patient	male	13	.43	1.16	1.28	2.68	2.45	3.80
Doctor	male	17	3.08	3.22	4.95	4.34	.35	.68
Patient	female	17	4.94	4.72	2.32	2.43	2.19	2.28
Doctor	male	30	2.70	2.85	4.26	3.71	.35	.94
Patient	M and F	30	2.99	4.24	1.87	2.55	2.30	2.97

means were 250.43 ($SD = 128.28$) and 234.66 ($SD = 95.94$) for physicians and patients respectively. However, the correlation between physicians' and patients' speaking time was statistically significant, $r\ (30) = .49$, $p < .01$. There was no statistically significant difference between physicians and patients in their speaking time in either the M/M or the M/F groups.

Interestingly, there was no correlation between the mean number of words spoken by physicians and patients in either the M/M or the M/F group. In the M/M group, the mean number of words spoken by physicians and patients was 646.76 ($SD = 510.94$) and 605.84 ($SD = 329.66$) respectively. In the M/F group, the mean number of words spoken by physicians and patients was 774.29 ($SD = 339.47$) and 725.58 ($SD = 345.17$) respectively. There was no statistically significant difference between the mean number of words spoken by physicians and patients in either the M/M or the M/F group. When the number of words of physicians and patients were combined, the M/F group spoke more words ($M = 749.94$, $SD = 338.01$) than the M/M group ($M = 626.30$, $SD = 421.79$), but this difference was not statistically significant.

5.3. Role and gender differences in interruption patterns

The means of rates for intrusive, cooperative, and unsuccessful interruptions were calculated for the 30 interviews, and are presented in Table 1.

MANOVA was used to examine the two research questions stated previously:

1. Whether there was a significant difference between the scores of physicians and patients in intrusive, cooperative, and unsuccessful interruptions.
2. Whether there was a significant difference between the two gender combinations (male physician/male patient vs. male physician/female patient) in their scores of intrusive, cooperative, and unsuccessful interruptions.

To test for role (physician vs. patient) main effects, gender combination main effects (M/M vs. M/F), and role by gender combination interactions, a 2 by 2 MANOVA was conducted. The analysis showed a significant role main effect for intrusive interruption: $F\ (1,56) = 8.11$, $p < .01$, $\eta^2 = .13$; and for unsuccessful interruption: $F\ (1,56) = 11.31$, $p = .001$, $\eta^2 = .17$. As shown in Table 1, physicians engaged in significantly more intrusive interruptions but fewer unsuccessful interruptions than patients. There was no role main effect for cooperative interruption.

MANOVA indicated a significant gender main effect for cooperative interruption: $F\ (1, 56) = 9.89$, $p < .01$, $\eta^2 = .15$. The mean for cooperative interruption in the M/M group was 1.32 ($SD = 2.00$), whereas the mean for cooperative interruption in the M/F group was 4.01 ($SD = 4.01$). As can be seen in Table 1, there was no change in physicians' scores of cooperative interruption whether they were paired with male patients or female patients. There was a significant change in the scores of cooperative interruption for patients. There were also more intrusive interruptions in the M/F group ($M = 3.63$, $SD = 3.71$) than in the M/M group ($M = 2.32$, $SD = 2.78$), but the difference was not statistically significant. There was no statistically significant difference between the scores in unsuccessful interruption of the M/M and M/F groups.

MANOVA showed a significant role by gender combination interaction in cooperative interruption: $F\ (1,56) = 4.50$, $p < .05$, $\eta^2 = .07$. The mean scores of cooperative interruption remained similar for the physicians in the M/M and M/F groups but changed dramatically for the patients (see Figure 1).

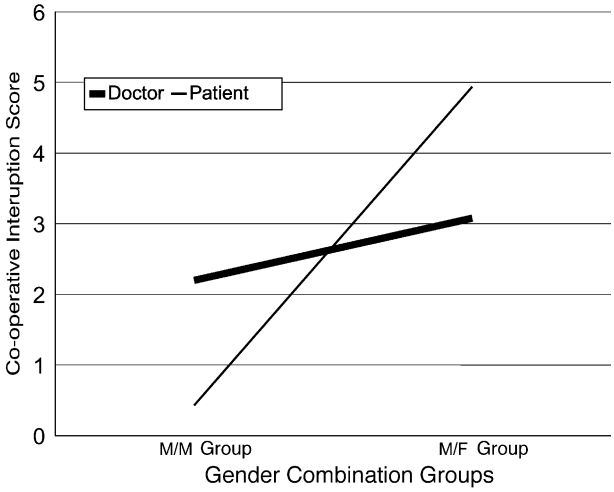

Figure 1. *Mean rates of co-operative interruption as a function of gender combination*

Table 2. *Intercorrelations among physician demographic variables and interruption patterns (n=30)*

	1	2	3	4	5	6	7
1. Physician age	–	.86[b]	.86[b]	.38[a]	.02	−.01	.16
2. Years of being a physician	–	.79[b]		.29	−.09	.13	−.02
3. Professional satisfaction			–	.31*	.07	−.04	−.11
4. Length of visit				–	−.19	−.09	−.07
5. Physician cooperative interruption				–		.19	.23
6. Physician intrusive interruption						–	−.05
7. Physician unsuccessful interruption							–

[a] Correlation is significant at the 0.05 level (1-tailed).
[b] Correlation is significant at the 0.01 level (1-tailed).

As shown in Figure 1, female patients exhibited more cooperative interruptions than male patients. No significant role by gender combination interaction was found in intrusive and unsuccessful scores.

5.4. Intercorrelations among physician demographic variables and interruption patterns

As shown in Table 2, there is a positive correlation between the number of years of being a physician and professional satisfaction, $r\ (30)=.86$, $p<.01$. Table 2 also shows positive correlations between a physicians' age and his enjoyment in the profession, and the length of the interview. No significant correlations were found between a physician's age, number of years in the profession, professional satisfaction, length of interview and their interruption patterns (see Table 2).

5.5. Intercorrelations among patient demographic variables and interruption patterns

As shown in Table 3, there was a significant correlation ($r\ (30)=.42$, $p<.05$) between the education level of a patient and his or her health status. Better-educated patients tended to be healthier. There were positive correlations between a patient's education level and the length of the interview ($r\ (30)=.38$, $p<.05$), and between a patient's education level and the physician's intrusive interruptions ($r\ (30)=.35$, $p<.05$). The more sick the patient the less likely a physician was to interrupt intrusively. But very sick patients tended to interrupt more intrusively and with no success (see Table 3).

There were no significant correlations among the three types of interruptions (cooperative, intrusive and unsuccessful) for physicians. It was found that patients who interrupted more intrusively tended to be unsuccessful interrupters, $r\ (30)=.54$, $p<.01$.

6. Discussion

The data generated four major findings. Each is intriguing and important, be it a support or a negation of previous research, and each will be discussed below.

6.1. Physicians and patients: Who interrupt whom more and in what manner?

This study showed physicians and patients both interrupting intrusively and cooperatively. Physicians engaged in significantly more intrusive interruptions than patients, who exhibited more cooperative interruptions than physicians. By performing intrusive interruptions, physicians exercised control over the process and/or the content of the ongoing conversation. Intrusive interruptions take the form of taking over the floor from, or disagreeing with, the current speaker. The intrusive interrupter can also cut the current speaker short and abruptly change the topic. On the other hand, in performing cooperative

Table 3. *Intercorrelations among patient demographic variables and interruption patterns (n=30)*

	1	2	3	4	5	6	7	8	9	10	11
1. Patient age	–	.00	.05	.03	.21	.08	−.25	.02	.06	−.04	.20
2. Patient education		–	.42[a]	.14	.38[a]	.08	.35[a]	.12	.04	.20	.07
3. Patient health status			–	.51[b]	−.04	.00	−.39[a]	−.07	.13	.37[a]	.36[a]
4. Number of visits				–	−.15	−.18	−.29	−.14	.25	.23	.13
5. Length of visit					–	−.19	−.09	−.08	.00	.21	−.08
6. Physician cooperative interruption						–	.19	.23	.25	.01	.31[a]
7. Physician intrusive interruption							–	−.05	.09	−.24	−.18
8. Physician unsuccessful interruption								–	−.14	.01	−.15
9. Patient cooperative interruption									–	.21	.25
10. Patient intrusive interruption										–	.54[b]
11. Patient unsuccessful interruption											–

[a] Correlation is significant at the 0.05 level (1-tailed).
[b] Correlation is significant at the 0.01 level (1-tailed).

interruptions, patients intend to assist, and/or agree with the current speaker, and/or have the current speaker clarify or explain a previously elicited piece of information. Cooperative interruptions functioned to coordinate the process and/or content of the ongoing conversation.

The interruption patterns found in our study support results from previous research. O'Hair (1989) evidenced that physicians are in control of the conversation most of the time, and patients also attempt, sometimes successfully, to gain a hold in the interaction. Von Friederichs-Fitzwater et al. (1991) reported that physicians change topics frequently when patients are talking and physicians ask most of the questions. Arntson et al. (1978) found that physicians ask twice as many questions and give twice as many commands as patients. Physicians also discourage patients from asking questions (e.g., Beckman et al. 1989; Waitzkin 1985, 1990; Weiss 1986) and from talking (Arntson et al. 1978). Furthermore, physicians don't respond to patients' initiated topics (Coulthard and Ashby 1975; Li and Browne 2000) and they interrupt patients when they think that the information being offered is not wanted (Weijts 1994). Patients, on the other hand, seldom challenge the physician's opinion because they want to be polite and agreeable (Aronsson and Satterlund-Larsson, 1987).

6.2. Patient gender and interruption patterns

We found that physicians and patients spoke similar number of words, which is different from Roter et al. (1988), who reported that physicians contribute 60% of the interview, and patients 40% of the interview. From our sample, an average Canadian medical interview lasts about 7 minutes for a male physician and a male patient, and approximately 9 minutes for a male physician and a female patient. According to Roter et al. (1988), this duration is shorter than American medical interviews of 16 minutes and longer than British medical interviews of 5–6 minutes. In our sample, the male physician/female patient group talked more than the male physician/male patient group, both in duration and number of words.

We found that female patients engaged eleven times as much as male patients in cooperative interruption and almost twice as much as male patients in intrusive interruption. This finding disperses previous argument that female patients are not more interactive than male patients. It documents that female patients are more dynamic than male patients when interacting with male physicians.

In this study, there is a tendency for male physicians to intrusively interrupt female patients more than male patients. A possible explanation may be that the physicians in the M/F condition became impatient when their female patients talked more than male patients.

This finding presents a very austere picture for female patients. It may be true that male physicians spend more time with female patients than male patients (Meeuwesen et al. 1991) but unwillingly. Despite the efforts female patients make (e.g., being eleven times as agreeable and cooperative as male patients), they are still more likely than male patients to be intrusively interrupted. Our finding echoes Weijts' (1994) assertion that female patients face particular difficulties in participating in a medical consultation, especially when the physician is male.

6.3. Unsuccessful interruption

We found that patients, male or female, unsuccessfully interrupted physicians six times more than physicians unsuccessfully interrupted patients. In other words, when physicians interrupted patients, they were unsuccessful only 5% of the time. When patients interrupted physicians, they were unsuccessful 32% of the time. This high discrepancy shows that physicians are firmly in charge of the process and/or content of the conversation. It also indicates that patients would like to participate fully in the medical interview but are held up by physicians. If patients wish to say what they have to say and ask what they want to ask, they not only need to learn to ask questions (Beisecker 1990; Feeser and Thompson 1993; Greenfield et al. 1985; Robinson and Whitfield 1985; Roter 1984), but also do so successfully. Question asking sometimes requires patients to interrupt physicians, and this can be a daunting task since physicians have authority over patients (e.g., Li et al. 1999; Meeuwesen et al. 1991; West 1984). Can patients be trained to interrupt their physicians skilfully and successfully? This is a new challenge to patient training.

6.4. Physician and patient demographic variables and interruption patterns

It was found that physicians tended to treat more educated patients differently than less educated patients. Physicians held longer interviews with more educated patients than less educated patients, and physicians tended to interrupt the former more intrusively than latter. Nevertheless, there was no evidence that better educated patients interrupted their physicians differently from less educated patients. A possible explanation for this finding is that physicians paid more attention to more educated patients but nevertheless exercised control over the conversation by intrusively interrupting them.

The very sick patients behaved differently from healthier patients and they were also treated differently from healthier patients by their physicians. The very sick patients interrupted more intrusively and with less success than healthier patients. However physicians treated them better: Physicians were less likely to interrupt the very sick patients intrusively

than healthier patients. In general, patients who interrupted more intrusively tended to be less successful interrupters. The message is that physicians did not like to be intrusively interrupted. When physicians were interrupted intrusively, they made sure that patients did not succeed.

The data also showed that the longer physicians were in their practice, the more they enjoyed their profession. Older physicians tended to hold longer interviews with their patients than younger physicians.

Finally, the authors would like to remind the reader to use caution in generalizing the results of the present study. The patient participants may have seen their physicians more frequently than patients in the general population.

7. Conclusion

This study contributes to the field both conceptually and empirically. First, it illustrates and specifies a new way of studying interruption in physician-patient encounters. The reconceptualization of interruption into cooperative and intrusive is intended to be a step toward a more unified way of studying interruption patterns. The argument in the field seems a matter of whether physicians interrupt patients more or vice versa. We found that the difference did not lie in the frequency, but rather in the style of interruptions. Physicians interrupted more intrusively and with more success. Patients interrupted more cooperatively and with less success. Second, the high discrepancy between physicians and patients in their rates of unsuccessful interruptions (5% vs. 32%) points out a new task for training—teaching patients the skill of interrupting physicians successfully when they have to.

Notes

* The authors would like to thank the physicians and patients for participating in this study. We are indebted to all the receptionists in the clinic whose support made this study possible. We also thank the two scorers for scoring the data and Pat Konkin for statistical consulting and helpful comments on the manuscript.

Appendix 1: Examples of interruptions

Cooperative interruptions

1. Agreement
   Example 1
   Patient but I don't have /a bath very often/and …
   Physician /oh really that's in/teresting, interesting.

   Example 2
   Physician and relapses of /this sort of thing/…
   Patient /yeah, it's like it's/ going on.

2. Assistance
   Example 1
   Patient it /felt like/…
   Physician /felt like/ a stone sitting there, /yeah/?
   Patient ye/ah ju/st pushing me.

   Example 2:
   Physician then un /then we'll/
   Patient then/we'll know/ that technically it /is um …/
   Physician /exactly/.

3. Clarification
   Example 1

Patient Well no there just ringing worse than/I had I/ …
Physician /worse/ than usual.
Example 2
Patient He gave me these /new type of pills/ to try…
Physician /the one you ment/ioned last time …
Patient /yes. the one/ …

Intrusive interruptions

1. Disagreement
Example 1
Patient I'll grow hair on my /face as my/ …
Physician /well no you/'ll be like you'll be like everybody else who's menopausal.

Example 2
Physician do you take Ibuprofen /periodically or just when you need it/ um …
Patient /no I did for a while years ago. Not now/.

2. Floor taking
Example 1
Physician this is more/of ligaments and things like that/
Patient /well I always wondered about th/at too because it hurts so.

Example 2
Patient It's not as bad /as it was/…
Physician /Can I just/ get you to sit up there? That's right. Now let me see…

3. Topic change
Example 1
Patient then I start working out and /then its like/…
Physician /how are you/r bowels doing lately?

Example 2
Patient not right /now, no pain/…
Physician /why can't you/swim more frequently?

4. Tangentialization
Example 1
Patient well doc I'll stay with this medication three ti/mes a day two at a/ …
Physician /that'll do, that'll do. Now you go and take this prescription to the Phoenix Center.

Example 2
Patient I just wondered /I didn't wanna/…
Physician /Yeah no probl/em. I know what you mean. You may go now.

Unsuccessful interruptions

Example 1
Physician you'll feel good while doing it/but as so/on as it goes away it tenses up.
Patient /but then I/…

Example 2
Physician and that your energy and your mood /will both go up/. That's a sure thing.
Patient /but I wonder, um/…

References

Anderson, K. J. and Leaper, C. (1998). Meta-analysis of gender effects on conversational interruption: Who, what, when, where, and how. *Sex Roles* 39 (3/4): 225–252.

Aries, E. (1996). *Men and Women in Interaction: Reconsidering the Difference*. New York: Oxford University Press.

Arntson, P., Droge, D. and Fassl, H. E. (1978). Pediatrician-patient communication: A final report. In *Communication Yearbook* 2, B. Ruben (ed.), 505–522. New Brunswick, NJ: Transaction.

Aronsson, K. and Satterlund-Larsson, U. (1987). Politeness strategies and doctor-patient communication: On the social choreography of collaborative thinking. *Journal of Language and Social Psychology* 6: 1–27.

Beaumont, S. L. and Cheyne, J. A. (1998). Interruption in adolescent girls' conversations: Comparing mothers and friends. *Journal of Adolescent Research* 13: 272–292.

Beckman, H. B. and Frankel, R. M. (1984). The effect of physician behavior on the collection of data. *Annals of Internal Medicine* 101: 692–696.

Beckman, H., Kaplan, S. H. and Frankel, R. M. (1989). Outcome based research on doctor-patient communication: A review. In *Communicating with Medical Patients,* M. Stewart and D. Rotor (eds.), 223–227). Newbury Park, CA: Sage.

Beisecker, A. E. (1990). Patient power in doctor-patient communication: What do we know? *Health Communication* 2: 105–122.

Beisecker, A. E. and Beisecker, T. D. (1990). Patient information-seeking behaviors when communicating with doctors. *Medical Care* 28: 19–28.

Bennett, A. (1981). Interruptions and the interpretation of conversation. *Discourse Processes* 4: 171–188.

Bohn, E. and Stutman, R. (1983). Sex role differences in the relational control dimension of dyadic interaction. *Women's Studies in Communication* 6: 965–104.

Brooks, V. R. (1982). Sex differences in student dominance behavior in female and male professors' classrooms. *Sex Roles* 8: 683–690.

Bull, P. and Mayer, K. (1988). Interruptions in political interviews: A study of Margaret Thatcher and Neil Kinnock. *Journal of Language and Social Psychology* 7: 35–46.

Buller, M. K. and Buller, D. B. (1987). Physicians' communication style and patient satisfaction. *Journal of Health and Social Behavior* 28: 375–388.

Carli, L. L. (1990). Gender, language and influence. *Journal of Personality and Social Psychology* 59: 941–951.

Clark, H. H. and Brennan, S. A. (1991). Grounding in communication. In *Perceptives on Socially Shared Cognition,* L. B. Resnick, J. M. Levine and S. D. Teasley (eds.), 127–149. Washington: APA Books.

Coulthard, M. and Ashby, M. (1975). Talking with the doctor. *Journal of Communication* 25: 140–147.

Day, S. C., Norcini, J. J., Shea, J. A. and Benson, J. A. (1989). Gender differences in the clinical competence of residents in internal medicine. *Journal of General Internal Medicine* 4: 309–312.

Duncan, S. (1972). Some signals and rules in taking speaking turns in conversations. *Journal of Personality and Social Psychology* 23: 283–292.

Duncan, S. and Fiske, D. W. (1977). *Face to Face Interaction: Research, Methods and Theory.* Hillsdale, NJ: Lawrence Erlbaum.

Feeser, T. and Thompson, T. L. (1993). A test of a method of increasing patient question asking in physician-patient interactions. *Cosmetic Dermatology* 6: 51–55.

Ferguson, N. (1977). Simultaneous speech, interruptions and dominance. *British Journal of Social and Clinical Psychology* 16: 295–302.

Goldberg, J. (1990). Interrupting the discourse on interruptions: An analysis in terms of relationally neutral, power- and rapport-oriented acts. *Journal of Pragmatics* 14: 883–903.

Greenfield, S., Kaplan, S. and Ware, J. E. (1985). Expanding patient involvement in care. *Annals of Internal Medicine* 102: 520–528.

Hall J. A., Epstein A. M., DeCiantis M. L. and McNeil B. J. (1993). Physicians' liking for their patients: More evidence for the role of affect in medical care. *Health Psychology* 12: 140–146.

Hall, J. A., Irish, J. T., Roter, D. L., Ehrlich. C. M. and Miller, L. H. (1994). Gender in medical encounters: An analysis of physician and patient communication in a primary care setting. *Health Psychology* 13: 384–392.

Hawkins, K. (1991). Some consequences of deep interruption in task-oriented communication. *Journal of Language and Social Psychology* 10: 185–203.

Hayashi, R. (1988). Simultaneous talk—from the perspective of floor management of English and Japanese speakers. *World Englishes* 7: 269–288.

Hooper E. M., Comstock L. M., Goodwin J. M. and Goodwin J. S. (1982) Patient characteristics that influence physician behavior. *Medical Care* 20: 630–638.

Irish, J. and Hall, J. (1995). Interruptive patterns in medical visits: The effects of role, status and gender. *Social Science & Medicine* 41: 873–881.

Jacob, T. (1974). Patterns of family conflict and dominance as a function of child age and social class. *Developmental Psychology* 10: 1–12.

James, D. and Clarke, S. (1993). Women, men, and interruptions: A critical review. In *Gender and Conversational Interaction*, D. Tannen (ed.), 231–280. New York: Oxford University Press.

Johnson, C. (1994). Gender, legitimate authority, and leader-subordinate conversations. *American Psychological Review* 59: 122–135.

Kaplan, S. H., Gandek, B., Greenfield, S., Rogers, W. and Ware, J. E. (1995). Patient and visit characteristics related to physicians' participatory decision-making style: Results from the Medical Outcome Study. *Medical Care* 33: 1176–1187.

Kennedy, C. W. and Camden, C. T. (1983). A new look at interruption. *Western Journal of Speech Communication* 47: 45–58.

Kollock, P., Blumstein, P. and Schwartz, P. (1985). Sex and power in interaction: Conversational privileges and duties. *American Sociological Review* 50: 34–46.

Li, H. Z. (1999a). Communicating information in conversations: A cross-cultural comparison. *International Journal of Intercultural Relations* 23 (3): 387–409.

— (1999b). Grounding and communication in intra- and intercultural dyadic discourse. *Discourse Processes* 28: 195–205.

— (2001). Cooperative and intrusive interruptions in inter- and intra-cultural dyadic discourse. *Journal of Language and Social Psychology* 20: 1–24.

Li, H. Z. and Browne, A. (2000). Defining mental health illness and accessing mental health services: Perspectives of Asian immigrants. *Canadian Journal of Community Mental Health* 19: 143–159.

Li, H. Z., Fish, D. and Zhou. X. C. (1999). Increase in cigarette smoking and decline of anti- smoking counselling practices among Chinese physicians: 1987–1996. *Health Promotion International* 14: 123–131.

Marvel, M. K., Epstein, R. M., Flowers, K. and Beckman, H. B. (1999). Soliciting the patient's agenda: Have we improved? *Journal of the American Medical Association* 281: 283–287.

Meeuwesen L., Schaap C. and van der Staak C. (1991). Verbal analysis of doctor-patient communication. *Social Science & Medicine* 32*:* 1143–1150.

Mishler, E. G. and Waxler, N. E. (1968). Interaction in Families: An Experimental Study of Family Process and Schizophrenia. New York: Wiley.

Mizutani, O. (1988). Hanaskikotoba no tokushoku [Characteristics of Spoken Japanese]. In *Nihongo* [Japanese], Y. Miyaji and O. Mizutani (eds.), 55–65. Tokyo: NHK Publications.

Moerman, M. (1988). Finding life in dry dust. In *Talking culture: Ethnography and Conversation Analysis*, M. Moerman, 19–30. Philadelphia: University of Pennsylvania Press.

Murata, K. (1994). Intrusive or co-operative? A cross-cultural study of interruption. *Journal of Pragmatics* 21: 385–400.

Ng, S. H., Brook, M. and Dunne, M. (1995). Interruption and influence in discussion group. *Journal of Language and Social Psychology* 14: 369–381.

Nohara, M. (1992). Sex differences in interruption: An experimental reevaluation. *Journal of Psycholinguistic Research* 21: 127–146.

O'Hair, D. (1989). Dimensions of relational communication and control during physician-patient interactions. *Health Communication* 2: 97–115.

Pendleton, D. A. and Bochner, S. (1980). The communication of medical information in general practice consultations as a function of patients' social class. *Social Science & Medicine* 14A: 669–673.

Robinson, E. J. and Whitfield, M. J. (1985). Improving the efficiency of patients' comprehension monitoring: A way of increasing patients' participation in general practice consultations. *Social Science & Medicine* 21: 915–919.

Robinson, L. F. and Reis, H. T. (1989). The effects of interruption, gender, and status on interpersonal perceptions. *Journal of Nonverbal Behavior* 13: 141–153.

Roger, D. B. and Nesshoever, W. (1987). Individual differences in dyadic conversational strategies: A further study. *British Journal of Social Psychology* 26: 247–255.

Roger, D. B. and Schumacher, A. (1983). Effects of individual differences on dyadic conversational strategies. *Journal of Personality and Social Psychology* 45: 700–705.

Roger, D. B., Bull, P. and Smith, S. (1988). The development of a comprehensive system for classifying interruptions. *Journal of Language and Social Psychology* 7: 27–35.

Rogers, W. T. and Jones, S. W. (1975). Effects of dominance tendencies on floor holding and interruption behaviour in dyadic interaction. *Communication Research* 1: 113–122.

Roter, D. L. (1984). Patient question asking in physician-patient interaction. *Health Psychology* 3: 395–409.

Roter, D. L., Hall, J. A. and Katz, N. R. (1988). Patient-physician communication: A descriptive summary of the literature. *Patient Education and Counseling* 12: 99–119.

Roter, D. L., Lipkin. M. Jr. and Korsgaard, A. (1991). Gender differences in patients' and physicians' communication during primary care medical visits. *Medical Care* 29: 1083–1093.

Sacks, H., Schegloff, E. A. and Jefferson, G. (1974). A simplest systematics for the organization of turn-taking in conversation. *Language* 50: 697–735.

Stewart, M. A. (1984). What is a successful doctor-patient interview? A study of interactions and outcomes. *Social Science & Medicine* 19: 167–175.

Stewart, M. A., Brown, J., Levenstein, J., McCracken, E. and McWhinney I, R. (1986). The patient centered clinical method: Changes in residents' performance over two months of training. *Family Practice* 3: 164–167.

Stimson, G.V. and Webb, B. (1975). *Going to See the Doctor: The Consultation Process in General Practice*. London: Routledge and Kegan Paul.

Street, R. L. Jr. and Buller, D. B. (1988). Patients' characteristics affecting physician-patient nonverbal communication. *Human Communication Research* 15: 60–90.

Tannen, D. (1981). Indirectness in discourse: Ethnicity as conversational style. *Discourse Processes* 4: 221–238.

— (1994). *Gender and discourse*. New York: Oxford University Press.

Von Friederichs-Fitzwater, M. M., Callahan, E. J., Flynn, N. and Williams, J. (1991). Relational control in physician-patient encounters. *Health Communication* 1: 17–36.

Waitzkin, H. (1985). Information giving in medical care. *Journal of Health and Social Behavior* 26: 81–101.

— (1990). On studying the discourse of medical encounters. *Medical Care* 28: 473–488.

Wallen, J., Waitzkin, H. and Stoeckle, J. D. (1979). Physician stereotypes about female health and illness: A study of patient's sex and the informative process during medical interviews. *Women and Health* 4: 135–146.

Weijts, W. (1994). Responsible health communication: Taking control of our lives. *American Behavioral Scientist* 38: 257–270.

Weiss, S. J. (1986). Consensual norms regarding patient involvement. *Social Science & Medicine* 22: 489–496.

West, C. (1984). When the doctor is a 'lady': Power, status and gender in physician-patient encounters. *Symbolic Interaction* 7: 87–106.

Zimmerman, D. H. and West, C. (1975). Sex, roles, interruptions and silences in conversations. In *Language and Sex: Difference and Dominance,* B. Thorne and N. Henley (eds.), 105–129. Rowley, MA: Newbury House.

Han Z. Li is an Associate Professor of Psychology at the University of Northern British Columbia, Canada. She has published articles in *European Journal of Social Psychology*, *Language and Social Psychology* and *Discourse Processes*. Her novel, *The Water Lily Pond*, a story based on her growing-up experiences in a Chinese village was published in 2003. Address for correspondence: Dept. of Psychology, College of Arts, Social and Health Sciences, University of Northern British Columbia, 3333 University Way, Prince George, BC, Canada V2N 4Z9, Canada. E-mail: lih@unbc.ca

Michael Krysko attended the University of Northern British Columbia, Canada, where he earned a BSc in Psychology and completed prerequisites for medical school. During this time he studied and completed research on physican-patient communication. He is currently attending SABA University School of Medicine where he is working towards a doctorate of medicine. Address for correspondence: SABA University School of Medicine, PO Box 1000, The Botom, SABA, Netherlands-Antilles.

Naghmeh Desroches graduated from the University of Guelph, Canada, with an Honours Bachelor of Arts degree, majoring in Psychology and minoring in Family and Child Studies. She then received a Masters of Science degree in Psychology from the University of Northern British Columbia, Canada, in 2002. She is currently an advisor for students with disabilities at the University of Waterloo, Canada. Address for correspondence: Office for Persons with Disabilities, Needles Hall, 200 University Avenue West, University of Waterloo, Waterloo, ON, N2L 3G1.

George Deagle is a physician. He is also an Associate Vice-President of Medicine at the University of Northern British Columbia and Assistant Dean of Medicine at the University of British Columbia, Canada. He is a supervisor for residents from the School of Medicine. Address for correspondence: University of Northern British Columbia, 3333 University Way, V8N 4Z9, Prince George, BC, Canada.