Grounding as a facilitator in Anglo-Canadian and Mainland Chinese conversations

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This study examined whether a short training in grounding strategies could improve intercultural communication. Forty intercultural dyads (Anglo-Canadians and Mainland Chinese) were randomly assigned to experimental and control groups. Prior to their conversations the experimental groups received 10–15 min training on grounding while the control groups received no training. The trained dyads performed significantly better than the untrained dyads in grounding, speaker presentation and listener recall, thus documenting that the 10–15 min training on grounding was fruitful in improving intercultural communication. Grounding training may open a new avenue for reducing intercultural miscommunication, thus improving information transmission.

Introduction

According to Clark and Schaefer (1987) conversation is made up of contributions. When a speaker presents a piece of information to a listener the listener usually accepts it and the speaker assumes this acceptance. Thus, a piece of information can become a contribution to the common ground of the ongoing conversation. The process of making a contribution is termed grounding (Clark & Wilkes-Gibbs, 1986; Clark & Schaefer, 1987; Clark & Brennan, 1991). There are at least three modes of making a contribution through grounding. The first and simplest grounding involves three turns: (i) speaker's presentation; (ii) listener's acceptance; and (iii) speaker's confirmation of the acceptance. In this situation the exchange is smooth; no extra effort is required.

In the second situation the speaker detects non-understanding or misunderstanding either through self monitoring (Schegloff, Jefferson & Sacks, 1977; Levelt, 1983; Brennan & Schober, 2001; Brennan, 2002) or a non-verbal signal from the listener (Clark & Krych, 2004) and the speaker therefore repeats or paraphrases the presentation (Li, Zhu & Li, 2001). In this case the grounding process takes four turns to accomplish: (i) speaker's presentation; (ii) speaker's clarification; (iii) listener's acceptance; and (iv) speaker's confirmation of the acceptance.

In the third situation the listener makes a verbal request for clarification and the grounding process takes at least five turns: (i) speaker's presentation; (ii) listener requests clarification; (iii) speaker remakes the presentation; (iv)

listener's acceptance; and (v) speaker's confirmation of the acceptance. If the listeners are not satisfied with the speaker's re-presentation they request further clarification and the grounding process then takes more than five turns.

If the conversation partners did all the above the communication of information would be flawless (Sacks, Schegloff & Jefferson, 1978). However, in reality, the speaker does not always sense an error in the presentation or perceive non-understanding or misunderstanding in the listener (Schegloff *et al.*, 1977; Kellermann & Roloff, 1983; Levelt, 1983). Even if speakers sense an error they may or may not repair it (Norrick, 1991). Also, the listener does not always make an explicit request for clarification when encountering a confusing presentation (Li, 1999b). Thus, the inaction of the speaker and/or the listener may lead to non-communication or miscommunication. Although this type of inaction occurs in intracultural conversations it is more frequently seen in intercultural conversations where one partner speaks a second language and functions in a foreign culture (Thomas, 1983; Milroy, 1984; Sarangi, 1994; Li, 1999a).

The present study aimed to find out whether training the listener to ask for clarification facilitates the of communication information in Canadian–Chinese conversations. In the following sections the representative literature on intercultural communication is reviewed, followed by one hypothesis and two research questions.

Language and cultural barriers

There is little doubt that a lack of linguistic fluency in the second-language speaker poses a major difficulty in intercultural communication (Gumperz, 1982; Gass & Varonis, 1991; Sarangi, 1994; Cook-Gumperz & Gumperz, 2002). But it is not the only barrier. On the basis of 20 years of

research on intercultural communication in North America and Asia, Scollon and Scollon (1995) point out that 'most communication doesn't arise through mispronunciation or through poor uses of grammar . . . rather it lies in differences in patterns of discourse' (p. xii). Li (1999a) reported that in situations where a second language speaker has sufficient language capacity to participate in a conversation, intercultural dyads communicated only half of the information. The results of this study support an assertion by Gudykunst (1991) 'if we understand others' languages, but not their cultures, we can make fluent fools of ourselves'. Differences in cultural norms and values may be a stumbling block to effective intercultural communication (Gumperz & Tannen, 1979; Giles & Franklyn-Stokes, 1989).

Since the present study focuses on Canadian–Chinese conversations we outline how their perspective cultural contexts would pose difficulties in their communication. First of all, Canadians are individualists (Hofstede, 1980; Triandis, 1995) who 'see themselves as unique and distinct from others' (Markus & Kitayama, 1991, p. 227), whereas Chinese are collectivists (Bond & Cheung, 1983; Wang, 2001; Li, 2002) viewing themselves 'as part of an encompassing social relationship' (Markus & Kitayama, 1991, p. 227).

As a reflection of these differences, Canadians use low-context whereas Chinese high-context communication styles (Hall, 1976; Ting-Toomey, 1999). A low-context style is characterized by direct and elaborated messages (Hall, 1976) and communicating content is its main purpose (Li, 1999b). A high-context style features indirect and implicit messages, in which building rapport and maintaining harmony is the main mission (Bond & Cheung, 1983). When conversing, collectivists interrupt cooperatively to show solidarity (Tannen, 1989; Murata, 1994; Li, 2001), choose silence when facing a conflict (Brown & Levinson, 1978; Lebra, 1987) and avoid a direct eye contact to show respect (Li, 2004a). In contrast, to communicate content and to show their individuality, North Americans tend to interrupt intrusively (Murata, 1994; Li, 2001) and use a direct eye contact (Li, 2004a).

Since humans normally converse according to culturally shaped rules of discourse (Labov & Fanshel, 1977; Liu, 2002), differences in communication style have been identified as a source of miscommunication (Tannen, 1981; Li, 1999a). Sharing culturally specific rules of discourse (Labov & Fanshel, 1977) allows participants to feel at ease in conversation. Conversely, differences in communication styles contribute to high levels of anxiety in intercultural interlocutors (Chen, 1995; Ting-Toomey, 1999). To overcome or disguise their anxiety, they might give misleading feedback to each other (e.g., smiling, nodding and using '*Uh*'s when they do not understand), which causes further miscommunication or even a communication breakdown

(Gumperz, 1982; Day, Chenoweth, Chun & Luppescu, 1984; Sarangi, 1994).

Researchers have identified several fundamental difficulties in intercultural interactions. Intercultural interlocutors are less successful than intracultural interactants in managing content transmission (Shea, 1994; Li, 1999b) and are less involved in the conversation than intracultural participants in terms of topic initiation (Gumperz, 1982; Chen, 1995) and process co-ordination (Cegala, 1984; Li, 2001). The former experience high levels of uncertainty and anxiety (Gao & Gudykunst, 1990) and intercultural interlocutors often encounter style clashes with each other (Erickson, 1975; Tannen, 1981; Gumperz, 1982; Pierson & Bond, 1982).

These difficulties have been attributed in part to a lack of shared common ground, i.e., shared knowledge, beliefs and assumptions (Clark & Carlson, 1981). To compensate for this deficiency, intercultural interlocutors need to engage in grounding activities in order to establish their mutual understanding of what is being said moment by moment. Studying communication patterns in Chinese–Chinese, Canadian–Canadian and Canadian–Chinese dyads, Li (1999b) found that dyads who ask each other more questions (grounding activities) are more successful in transmitting information than less interactive dyads. She then proposes that if intercultural interactants make efforts (e.g., receive training on asking questions) to 'establish a mutual understanding of what is being said moment by moment' (Clark & Brennan, 1991, p. 128), effective intercultural communication may be attainable. This is the premise of the present study.

In the present study, all dyads engaged in the same communication task, which simulated a physician–patient interview. One participant was assigned the role of a physician and the other the role of a patient. The session was divided into two parts: the patient presenting the case history to the physician and the physician giving the patient instructions on the use of codeine. A Canadian participant took one of the roles and a Chinese participant took the other. Each conversation was videotaped and coded for the amount of grounding that took place. After the conversation the participants were tested for their recall of the information communicated in the conversation. Half of the dyads were trained for their grounding and the other half were not.

We tested the main hypothesis that the trained dyads (experimental) would perform better than the untrained dyads (control) in grounding, speaker presentation and listener recall. In addition, two research questions were addressed. Firstly, we examined whether there were role differences in grounding, speaker presentation and listener recall between Chinese and Canadians. We wanted to see whether Chinese participants speaking a second language and functioning in a foreign culture would exhibit differ-

ences in grounding, speaker presentation and listener recall from their Canadian counterparts when playing the roles of doctors and patients, although specific differences could not be hypothesized. Secondly, we examined whether grounding and speaker presentation would predict listener recall in the experimental and control conditions.

Methods

Sample

Ninety-four university students participated in the present study. The participants formed 47 dyads, seven of which were eliminated from data analyses due to incomplete data or lack of fit with the sample criteria. According to the sampling criteria, all the Canadian participants had to be of European cultural backgrounds, born in Canada and speak English as their first language. All the Chinese participants had to be born in China and speak Mandarin Chinese as their first language. Chinese participants who had been in Canada for more than 8 years were not eligible. Both Canadian and Chinese participants had to be under 35 years of age and they could not be a psychology major.

Among the remaining 80 participants, half were mainland Chinese (20 men and 20 women) and half were Anglo-Canadians (20 men and 20 women). The mean age of the Chinese group was 24.95 and that of the Canadian group was 23.73 years. These means were not significantly different from each other. The students were recruited in classrooms and university cafeterias and through postings on the university bulletin boards. To ensure that the Chinese participants had sufficient English language ability to participate in the conversations they were required to have achieved a university English proficiency level for reading and listening comprehension, as demonstrated by their scores in the Test of English as a Foreign Language (TOEFL). All the Chinese participants had TOEFL scores of 570 or above. At the time of the experiment, the Chinese participants had resided in Canada for an average of 4.01 years. The Chinese students in the experimental and control groups did not differ in the number of years they had been in Canada.

In their first encounter with the experimenter the participants were informed of the nature of the study (i.e., a simulated medical interview) and that their conversations would be videotaped. Upon their arrival at the laboratory the participants were again informed that their conversations would be videotaped and that they could view their own tape afterwards if they wished to do so. Prior to giving instructions about the study, written consent was obtained from each participant regarding the way(s) in which the videotapes might be used.

Experimental design and procedures

A between-subjects design was used. The experimental condition had two intercultural combinations: Canadian physician–Chinese patient and Chinese physician–Canadian patient. The control condition had the same intercultural combinations: Canadian physician–Chinese patient and Chinese physician–Canadian patient. The decision for not including intracultural conditions was based on findings from previous studies (Li, 1999a,b) that intracultural dyads did not have as many problems communicating as intercultural dyads, since both parties used their native languages and interacted with someone from their own cultural background. The focus of the present study was therefore on intercultural dyadic discourse.

Participants were paired with a partner of the same gender; that is, men were paired with men and women were paired with women. Allocating dyads to the experimental or control group was randomly determined at the time of the pairing. The role of the participants was also randomly assigned upon their arrival to the laboratory.

All dyads engaged in the same communication task, which involved simulating a physician–patient interview. The session was divided into two parts: (i) the patient presenting the case history to the physician; and (ii) the physician giving the patient instructions on the use of codeine. The case history was borrowed from Li (1999a,b). The Instructions for Codeine were taken from the Compendium of Pharmaceuticals and Specialties (1982).

The experimental condition. Upon arrival at the laboratory the participants were placed in separate rooms so that they did not communicate among themselves regarding the content or the procedure of the study. After the roles of either patient or physician were assigned participants playing the role of the patient were given a case history to study. They were instructed to take as long as needed and remember as many details as possible. A multiple-choice test (as a manipulation check) was then given to participants in the patient role to ensure that they had mastered the content.

Meanwhile, participants playing the role of the physician received a short training session on grounding strategies. They were given a written list showing five ways to ask their patients to slow down, repeat, explain, rephrase or summarize what had just been said. After they had read the information the researcher rehearsed the questions with them until they had mastered the material. Once the learning was achieved the researcher asked whether or not they would feel confident and comfortable to ask these questions during the dialogue. If a participant was hesitant, the researcher again reviewed the materials and gave assurance that it was all right to ask their patients questions whenever necessary. The training process lasted 10–15 min.

On the same page was a list of information that the participants in the physician role should obtain from their patients during their interactions. The list of information was relevant to a general physician–patient interview (e.g., an exact description of the problem and whether or not the patient had previously encountered the problem) and was not specific to the content of the case history.

The dyads were then instructed to engage in the conversation in a 'talking manner'. To minimize memory error the patient was allowed to refer to the case history sheet while engaging in the conversation, but was not permitted to read from it word for word. Afterwards, the participant with the role of physician took an open-ended test to measure how much information related to the case history had been successfully communicated.

Thus, the first task was completed. Before the participants started the second task (when the physician gives instructions for the use of codeine), the participant playing the role of the physician was given time to study the Instructions for Codeine while the patient received training on grounding. The procedures were identical to task 1, except that the patient now received training (Appendix I) and the physician studied the instruction sheet. After their conversation, the patient took an open-ended test that measured how much information about Instructions for Codeine was successfully communicated.

The control condition. Participants in the control condition followed the same procedures and performed the same tasks as the participants in the experimental condition except that they received no training on grounding.

All the conversations were videotaped with the informed consent of the participants. The average time for participants to finish the conversation was 620 seconds across conditions. The mean times were 662 seconds for the experimental groups and 579 seconds for the control groups. An ANOVA did not indicate a statistically significant difference between the means.

Scoring for speaker presentation and listener recall

Prior to the scoring all the video-taped conversations were transcribed verbatim. The answer keys for the two open-ended tests were borrowed from Li (1999a,b). The first test (for dialogue 1) consisted of 10 open-ended questions. Questions 1–5, 7 and 8 were each assigned four points; question 6 was assigned 12 points and questions 9 and 10 were each assigned eight points. The total number of points for test 1 (for dialogue 1) was 56. The second test (for dialogue 2) was made up of seven open-ended questions. Questions 1, 5, 6 and 7 were each assigned four points; question 2 was assigned 28 points, question 3 was assigned

eight points and question 4 was assigned 16 points. The total number of points for test 2 (for dialogue 2) was 68.

The points for each question were allocated on the basis of the number of information units. The smallest string of words with meaning was the unit of analysis (Bales, 1950; Roter & Hall, 1992). Each unit of information was worth four points. Some questions required answers containing one unit of information while others contained several units of information. Thus, some questions were valued at four points while others were valued as high as 28 points. For example, the answer to question 1 in test 1; 'Why did the patient come to see you' contained only one unit of information: 'Chest pains'. The answers to question 2 in test 2; 'What are the possible side-effects after you take codeine' contained seven units of information: drowsiness, nausea, vomiting, constipation, an increase in heart rate, agitation and respiratory problems; a total of 28 points.

For each question one or several correct answers were provided in the answer key. If the answer was essentially identical to the key, it was scored as four. If the answer was very close to the correct answer, it was scored as three. If the answer was related to the correct answer (e.g., describing but not naming), it was scored as two. If the answer was remotely related to the correct answer, in that the meaning could be inferred, it was scored as one. Blank or wrong answers were scored as 0. A scale of 0–4 allowed the scorer to assign appropriate scores to the range of answers given.

For example, question 7 in test 1 was; 'What was the main reason the patient went swimming?' If the answer was 'The reason the patient went swimming was to exercise his/her legs', it was scored as four. If the answer was essentially; 'Swimming is good for his/her legs', it was scored as three. If the answer was essentially; 'To do exercise because the patient has difficulties walking', it was scored as two. If the answer was essentially; 'For exercise or to stay fit', it was scored as 1.

To score listener recall, the answer keys were applied to the written tests of the physicians (Dialogue 1) and the patients (Dialogue 2). The same scoring standards were applied to score the speaker presentations based on transcripts of the video-taped conversations.

Scoring for grounding

Based on Clark and Schaefer's (1987) grounding criterion, Grice's (1978) conversational maxim of content specificity, the broad definition of repair by Schegloff *et al.* (1977), Tannen's notes on repeats (1989), as well as Goodwin's (1981) elaboration of the types of responses listeners make in conversations, an operational definition of grounding was developed. This is any verbal activity by the listener or the speaker that would cause a previously elicited unit of information to be repeated, partially repeated, paraphrased, explained, confirmed or clarified by reformulating or

Table 1 Guidelines for scoring grounding

Assign one point for grounding for each turn sequence that includes the three phases of utterance, reaction, and confirmation, and which also meet the following guidelines:

Must be content-related (the information in question must correspond to content in the open-ended tests).

Must involve participation by both speaker and listener.

Must be confirmed by repeating or partially repeating, or clarified by reformulating, paraphrasing, explaining, or repairing a *previously elicited* unit of information.

Can take place within one speech turn or several turns.

The dyad gains one point for each successful grounding (called a contribution), which may involve one or several turns.

An unsuccessful grounding (i.e., initiated, but not completed or abandoned (Schegloff, 1997)) is excluded.

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repairing (Li, 1999b). One point in the grounding score equals a complete contribution which contains at least the following three phases (Roberts & Bavelas, 1996): (i) utterance; (ii) reaction; and (iii) confirmation (p. 11). The first two phases must be verbal but the last phase can be verbal or nonverbal (e.g., a head nod). In some cases, it took only two turns to finish phases two and three, but in others, multiple turns were observed (see scoring guidelines in Table 1).

Smiles, gazes and hand gestures. Due to their high frequency and doubtful role in the conversation, smiles were not scored. Gazes were not scored because camera angles did not permit a clear picture to indicate the direction of gazes. For example, it was difficult to distinguish between a gaze at the partner and a gaze at nothing, but in the direction of the partner. Hand gestures were noted in all dyads but not scored.

Nodding and back channel responses. Head nodding and back channel responses such as '*uh*'s were included only when they synchronized with a specific verbal utterance. They were not scored if they were judged to appear randomly in the exchanges.

Inter-scorer reliability

The researcher and a trained research assistant scored the data. For the purpose of inter-scorer reliability the two scorers first scored 15% of identical data from each of the three categories: listener recall, speaker presentation and grounding. The inter-scorer reliability (Pearson correlation) for listener recall was between 0.95 and 0.99; for speaker presentation between 0.93 and 0.98 and for grounding between 0.94 and 0.99.

The main reason for the high reliability was that almost all participants either recalled the information or did not. Scorers rarely needed to make a decision on the number of points given to a particular answer. Another reason was that the scoring system was appropriate to the tests (Li, 1999b).

Data analyses

To avoid the effect of task variation (one is the presentation of a case history and the other is giving Instructions for Codeine), the unit of analysis consisted of the two dialogues combined. That is, scores for grounding, speaker presentation and listener recall are sums of the two dialogues. The sequence of mean comparisons was first to test for differences in the means of the experimental (two groups, $n = 20$ dyads) and control conditions (two groups, $n = 20$ dyads) and then compare the four individual groups ($n = 10$ dyads in each group). The two groups in which the Chinese participants were playing the role of physicians and Canadian participants were in the role of patients (one in the experimental condition and one in the control condition) were compared. Then the two groups in which the Canadians were playing the role of physicians and the Chinese were playing the role of patients (one in the experimental condition and one in the control condition) were compared. The study was designed such that role (physician *vs* patient) was controlled for as a potential confounder.

Results

Mean scores of speaker presentation, listener recall and grounding were calculated across the four groups and are presented in Table 2.

As can be seen in Table 2, the two experimental groups displayed higher scores in speaker presentation, listener recall and grounding. A series of two-way factorial analyses of variance (ANOVA) were conducted with condition (experimental *vs* control conditions) and role assignment (Chinese physician *vs* Canadian physician) as between-participant factors.

Consistent with the hypothesis, there was a greater amount of grounding in the experimental condition ($M = 10.90$, $SD = 4.15$) than in the control condition ($M = 5.15$, $SD = 3.08$), F $(1, 37) = 28.64$, $p < 0.0001$, $\eta^2 = 0.44$.

Likewise, there was more speaker presentation in the experimental condition ($M = 102.50$, $SD = 12.93$) than in the control condition ($M = 81.70$, $SD = 20.68$), F $(1, 37) = 14.23$, $p = 0.001$, $\eta^2 = 0.28$. The total units of information in dialogue 1 and dialogue 2 were 124, of which the speakers in the experimental groups presented 82.66% (102.50/124) and the speakers in the control groups presented 65.88% (81.70/124).

Table 2 Mean scores of speaker presentation, listener recall and grounding by condition

Condition role Physician/patient	Dyads n	Speaker presentation		Listener recall		Grounding	
		M	SD	M	SD	M	SD
Exp. Chinese–Canadian	10	103.10	12.62	67.80	13.88	9.00	2.11
Exp. Canadian–Chinese	10	101.90	13.90	70.60	9.69	12.80	4.89
Control Chinese–Canadian	10	83.50	23.37	53.50	12.30	4.20	2.44
Control Canadian–Chinese	10	79.90	18.69	47.50	5.25	6.10	3.48

n represents the number of dyads. All dyads are same gender; men and women are evenly distributed in all conditions.
Exp, experimental group.

Finally, listener recall was better in the experimental condition ($M = 69.20$, $SD = 11.73$) than in the control condition ($M = 50.50$, $SD = 9.70$), F (1, 37) = 29.54, $p < 0.0001$, $\eta^2 = 0.44$. The mean units of information presented by the speakers in the experimental groups were 102.50, of which the listeners in the experimental groups recalled 67.51% (69.20/102.50). The mean units of information presented by the speakers in the control groups were 81.70, of which the listeners in the control groups recalled 61.81% (50.50/81.70).

Research question 1: role differences

The same ANOVA allowed us to explore research question 1, that is, whether there were role differences in grounding, speaker presentation and listener recall depending on whether the physician's role was played by a Chinese or a Canadian participant. When a Chinese participant was a physician and a Canadian was a patient, there was less grounding ($M = 6.6$, $SD = 3.31$) than when a Canadian participant was a physician and a Chinese was a patient ($M = 9.45$, $SD = 5.37$), F (1, 37) = 7.03, $p < 0.05$, $\eta^2 = 0.16$. There was no significant difference in speaker presentation or in listener recall as a function of role assignment, F(1, 37) = 0.19 and F(1, 37) = 0.22, respectively, $p > 0.05$ for both. There was no interaction effect of condition and role assignment.

Research question 2: listener recall score and its predictors

In order to address research question 2 we examined whether grounding and speaker presentation would predict listener recall in the experimental and control conditions. First, correlations among the three variables were calculated for both conditions and are presented in Table 3. The correlations between speaker presentation and listener recall scores were significant in both conditions. Furthermore, in the experimental condition there was a significant correlation between grounding and speaker presentation,

Table 3 Correlation matrix among grounding, speaker presentation and listener recall

	Grounding	Speaker presentation	Listener recall
Grounding	–	0.57**	0.12
Speaker presentation	0.29	–	0.49*
Listener recall	0.34	0.52**	–

*Correlation is significant at the 0.05 level (1-tailed). **Correlation is significant at the 0.01 level (1-tailed). The upper diagonal contains correlations from the experimental condition; the lower diagonal contains correlations from the control condition.

r (20) = 0.57, $p < 0.01$; whereas in the control condition a comparable correlation was not significant, r (20) = 0.29, $p > 0.05$. However, these two correlations were not significantly different from each other ($p > 0.05$).

Second, multiple regression analyses were conducted to predict listener recall for the experimental and control conditions with the predictors being speaker presentation, grounding and the interaction of speaker presentation and grounding. The results indicated that in the experimental condition, speaker presentation was the only significant predictor ($\beta = 0.49$), F (1, 18) = 5.77, $p < 0.05$. In the control condition, also, speaker presentation was the only significant predictor ($\beta = 0.53$), F (1, 18) = 6.71, $p < 0.05$.

Discussion

This research attempted to test one hypothesis and answer two research questions: (i) to test whether the trained groups (experimental) would do better than the untrained groups (control) in grounding, speaker presentation and listener recall; (ii) to examine whether there would be cultural (role) differences in grounding, speaker presentation and listener recall; and (iii) to examine whether grounding and speaker presentation scores would predict listener recall. The first goal was fully achieved. The trained groups

displayed significantly higher scores in all three categories: grounding, speaker presentation and listener recall, thus documenting that the 10–15 min training on grounding was fruitful, providing strong support for the notion that discourse is an interactional achievement (Schegloff, 1997; Hinnenkamp, 1999; Xu & Wilson, 2001).

Previous researchers have identified grounding as a central process in various forms of discourse such as in exchanges between a caller and a telephone operator (Clark & Schaefer, 1987; Clark & Brennan, 1991; Brennan, 2002), between two people who have a common task at hand (Clark & Wilkes-Gibbs, 1986; Wilkes-Gibbs & Clark, 1992), in everyday conversations (Clark & Brennan, 1991) and in news texts (Khalil, 2001). However, it has been unclear whether grounding can be experimentally manipulated to facilitate listener recall. The results of the present study indicate that it is possible. We argue that this short training may have played dual roles. First, the training session on grounding conveyed the message that it was acceptable if the participants did not understand and/or hear all the information the first time it was presented. This realization may have lowered their anxiety level, which allowed them to better receive and retain the information. Second, the increased requests of the speakers to repeat or clarify a piece of information just presented may have influenced the speaker to think of the information more carefully and present it more clearly. While grounding enabled the speakers to send the same information twice in different forms, it also allowed the listeners more time to process the information at hand, thus promoting understanding and information retention. Third, the training may have increased the listeners' awareness of question asking and raised their ability to ask questions. It is argued that to reduce miscommunication and improve information transmission in intercultural interactions, grounding training may be a feasible and effective approach.

To achieve the second goal of the study we examined whether there would be role differences in grounding, speaker presentation and listener recall between Chinese and Canadians. The only role difference we found concerned grounding. When Canadians played the role of physicians there was more grounding than when Chinese played the role of physicians. This seems to show that when Chinese played the role of patients they initiated more grounding questions, indicating that they are more receptive to grounding training than the Canadian patients. This role difference between Chinese and Canadians has an implication for physician–patient communication in a multicultural society such as Canada where patients who speak English as a second language often see physicians who speak English as a first language. Language and cultural barriers may prevent ethnic Canadians from communicating effectively with health professionals. If ethnic Canadians can be made receptive to training on how to ask physicians questions during medical interviews, they would be more likely to communicate effectively with their physicians and receive better health care.

To realize the third goal of this study, multiple regression analyses were performed. In both the experimental and control conditions, speaker presentation was the only significant predictor of listener recall. An examination of the correlations indicated that in the experimental condition, speaker presentation scores were highly correlated with both listener recall and grounding scores, whereas in the control condition the correlation between speaker presentation and listener recall scores were significant but the correlation between grounding and speaker presentation was not.

These correlations seem to show that the training kept speakers on course with the content of the materials, as speaker presentation and listener recall scores are based on the content of the script. The picture in the control condition appears to show that in natural conversations speakers are likely to stray from the content of the script. In the untrained groups there were spontaneous grounding activities and past research indicates that spontaneous grounding activities facilitate listener recall (Doherty-Sneddon *et al.*, 1997; Li, 1999b). The results in the present study do not appear to support this assertion. Instead, our finding seems to indicate that spontaneous grounding activities increase speaker presentation.

An alternative explanation is that grounding activities may be used to build rapport. To be consistent with their collectivistic tendency, the Chinese may have given relationship maintenance a higher priority than transmitting information (Li, 1999b; Wang, 2001). After all, it is harder to amend a spoiled relationship than to make up for a missed piece of information (Li, 2004b). It is possible that they did not switch to the low-context communication style of the Canadians, otherwise there would be a correlation between grounding and listener recall scores.

This finding is not in line with the code-switching tendency reported in past research. Murata (1994) reported that in Japanese–American dialogues the Japanese participants switched their communication style to that of North Americans when conversing in English. Bond and Yang (1982) observed that in native–non-native interactions the second-language speaker frequently switched to the speech style of the first-language speaker. Genesee and Bourhis (1982) found similar tendencies in English–French Canadian conversations. Gallois and Markel (1975) observed a code-switching tendency among Cuban bilinguals. It is apparent that this puzzling finding awaits further research.

This study has several limitations. First, it was conducted in a laboratory setting, therefore generalization of the findings to natural conversations should be cautious. Second, the experiment did not contain a placebo condition, in which participants receive some attention from the

experimenter but no instruction for grounding. Therefore, the differences we found between the experimental and control groups might be attributable to the Hawthorn effect, that is, the mere attention the experimental groups received from the researcher may have played a role in their increased scores. Future research using this method should add a placebo group.

In all, this research contributes to the field in at least three ways. First, it provides strong evidence that a short training session on grounding facilitates intercultural communication via increased speaker presentation. Second, it suggests that grounding does not directly facilitate listener recall but does so via speaker presentation. Third, it suggests a new possibility that spontaneous grounding may be used to build rapport. Taken together, this research has illustrated and specified the use of the theory of conversational grounding in human communication and may have opened a new avenue for intercultural interlocutors to reduce miscommunication, thus improving information transmission.

Acknowledgements

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Appendix I

Task 2, for participant in patient role

The following instruction sheet is for participants in the training group only.

In today's visit, we would like you to ask questions of your doctor whenever you feel that your doctor speaks too fast, or uses words that you don't understand. If you don't let your doctor know that you do not understand something that he or she is trying to tell you, your doctor may assume that you do understand. Your questions will help your doctor to clarify or explain him or herself better. Your questions will also help you understand your doctor better. These are common questions which we use a great deal in our daily conversations. However, when we talk to our doctor who is usually on a tight schedule, we often forget to ask these questions. Now I would like you to take a few minutes to go through these questions.

1 Could you slow down please? I can't follow you.
2 I beg your pardon, could you repeat that please?
3 Could you explain this in other words please?
4 I am afraid I still don't get it. Could you say it again please?
5 Could you summarize what you have said please? I forgot some details.

Those are some examples; you may ask other questions or phrase your questions in a way that is different from the above. Thank you.