TASK-BASED INTERACTIONS IN SIMULATED MEDICAL INTERACTIONS: NEGOTIATION SURROUNDING LEXICAL ITEMS

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ABSTRACT

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This study researched what vocabulary negotiation moves occurred during a simulated medical interaction as well as how these negotiation moves contribute to the acquisition and retention of vocabulary and medical instructions. Vocabulary was selected as the focus of analysis per Foster and Ohta's (2005) suggestion that communication breakdowns preceding negotiation are more likely to surround lexical items. The study used an information gap task between speakers of English as an Additional Language (EAL) and pre-clerkship medical students in which EAL speakers played a patient with chest and stomach discomfort and medical students acted as doctors diagnosing their condition. EAL speakers used a list of symptoms provided to explain their condition to the medical student. The student then asked questions according to a guide provided to diagnose the EAL speaker and discuss a treatment plan. Participants completed a second, similar task as a simulated follow-up visit, and then I invited all participants to complete a stimulated recall interview. Analysis included coding for negotiation in the form of confirmation checks, comprehension checks, and clarification requests as well as semantic modifications classified according to Foster and Ohta's (2005) categories. This analysis of the interaction was compared to measures of the EAL speakers' vocabulary and comprehension. Results showed that clarification requests and semantic modification appear to play a role in vocabulary retention, while confirmation checks do not. Comprehension checks were less frequent than other moves and thus I could not quantitatively analyze their effect.

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CHAPTER 1: INTRODUCTION

In the last few years, it has become apparent that health literacy, or "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information in ways which promote and maintain good health" (World Health Organization as cited in Nutbeam, 2000, p. 264), cannot be taken for granted. Navigating the U.S. medical system, from discussing symptoms with a doctor to making lifestyle changes to taking medications correctly, is challenging even for native speakers of English (Williams, 2002).

Speakers of English as an Additional Language (EAL) face considerable obstacles to getting quality healthcare because they may lack crucial vocabulary to describe and comprehend the impact of medical conditions. This barrier to effective healthcare has become a national concern. In fact, the Patient Protection and Affordable Care Act (2009) requires that *"*any federally conducted or supported health care or public health program, activity or survey . . . collects and reports, to the extent practicable--data on race, ethnicity, sex, *primary language* . . . [emphasis added]." Additionally, many EAL speakers come from countries with a more *paternalistic approach* to medical discussions, defined by Pomerantz and Rintel (2004) as interactions in which the doctor provides information only as needed, makes decisions for the patient, and determines what will be discussed and done during the consultation. This means that they are less likely to challenge a doctor's assessment and treatment decisions or ask questions, even if they disagree or don't understand. Native speakers or not, patients without sufficient health literacy skills are more likely to be noncompliant, leading to worse health outcomes (Williams, 2002). Another piece of this puzzle is doctor-patient communication, which has been demonstrated to improve patient adherence to medication regimens (Schneider, Kaplan,

Greenfield, Li, & Wilson, 2004), although one study showed that only 34% of physicians told a patient how long to take a new medication and just 58% of physicians explained the frequency or timing of medication intake (Tarn, Heritage, Paterniti, Hays, Kravitz, & Wenger, 2006). Clearly, patients must know what questions to ask.

How can language teachers address these communication difficulties? Using Skehan's definition (as cited in Bygate, Skehan, & Swain, 2001, p. 10) of a task, "an activity in which meaning is primary, learners are not given other people's meanings to regurgitate, there is some sort of relationship to comparable real world activities, task completion has some priority, and the assessment of the task is in terms of outcome," medical situations are ideal candidates for task-based activities. Clearly, health interactions happen in the real world, and outcomes can be measured in terms of learners' ability to arrive at satisfactory treatment regimens with their doctor and then to comply with these regimens. Therefore, task-based language teaching may be a technique for improving health literacy.

CHAPTER 2: LITERATURE REVIEW

I must first explain what kinds of effects health literacy can be expected to have on health outcomes and the impacts of health literacy for individuals speaking EAL. Once I establish this, I will explain how task-based instruction and negotiation fit into this larger picture.

Health Literacy Defined

Health literacy is a subset of functional literacy and as such can be considered a context-specific literacy. Context-specific literacies have come under greater study in recent years as it has become apparent that basic literacy skills are not sufficient for success in a global environment. Functional literacy is defined as "an individual's ability to read, write, and speak in English, and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one's goals and develop one's knowledge and potential" (National Literacy Act as cited in Williams, 2002, p. 415). Nutbeam (2000) suggests that health outcomes related to improved health literacy include "improved knowledge and understanding of health determinants, and changed attitudes and motivations in relation to health behaviour, as well as improved self-efficacy in relation to defined tasks" (p. 263). Insufficient health literacy also strongly correlates to excessive hospitalization (Baker, Parker, Williams, & Clark, 1998, as cited in Williams, 2002), and education level and health literacy can predict treatment compliance (Kalichman, Ramachandran, & Catz, 1999, as cited in Williams, 2002, p. 416). Within TESOL, health literacy falls into the field of English for Specific Purposes or English for Healthcare, but it is also the responsibility of general educators to ensure that their students can function in healthcare environments.

Health Literacy and EAL Speakers

Moving from health literacy in a general sense to its impacts on EAL speakers, Frank (2000) reported that EAL students and staff at a university clinic agreed that there were multiple obstacles to communication stemming from different procedural and cultural expectations related to medical vocabulary and pragmatics. The study results explained that "the foremost problem was the use of medical vocabulary by the staff (both written and verbal) that was not known by the students" (p. 52). These difficulties included technical medical words, but also words that had both general and specialized meanings and the metaphors employed in medical situations. Foster and Ohta (2005) support this finding from a negotiation for meaning (NfM) perspective, stating:

> The research on NfM has found that communication breakdowns are more likely to be due to problems with lexis than with morphosyntax, because morphosyntax is not so communicatively load-bearing. Missing, incorrect or unrecognized morphemes marking tense, case, or gender do not necessarily lead to communication failure in the way that missing, incorrect, or unknown words do. (p. 408)

Thus, strong vocabulary instruction for EAL speakers may improve their medical outcomes.

Beyond supporting EAL patients, altering medical professionals' speech can improve doctor-patient interactions. In one study, interviews, observations, and questionnaires identified EAL nursing students' area of greatest difficulty to be communication with clients and colleagues in the clinical setting, particularly regarding stress, pitch, intonation, and eye contact; following step-by-step procedures; understanding non-standard dialects of English; and asking direct questions. In response to this, administrators developed a course on assertiveness skills, therapeutic communication, information-gathering techniques, and the role of culture in health-care communication (Bosher & Smalkoski, 2002). Frank (2000) also suggested that native

English speaking staff at a university medical clinic underestimated the importance of speaking slowly to EAL speakers (p. 52). One university-based English language center (ELC) affiliated with a medical residency program reported having so many EAL medical residents - presumably with significant training in both medicine and English - who struggled to learn the U.S. medical system and medical English that the center developed an English for Specific Purposes (ESP) class to assist them (Hoekje, 2007).

Focus on Form, Negotiation, and Task-Based Instruction

Taken together, these studies suggest that further research in this area, particularly focused on vocabulary, would benefit EAL speakers. In light of this, I move to a narrower view of focus on form, negotiation, and task-based instruction. Long (1996) argued that focus on form instruction is most effective if it draws students' attention to linguistic form through negotiation during meaning-based lessons (as cited in Ellis, 2001). Ellis (2001) also stated that focus on form can be applied to lexical items and their meanings. Ellis (1994) has argued that phonetic features of a vocabulary item are learned implicitly but meaning is learned explicitly, creating a case for focus on form in vocabulary instruction (as cited in Laufer & Hulstijn, 2001). Laufer and Hulstijn (2001) discussed vocabulary instruction from a framework of task-induced involvement load in terms of need, search, and evaluation, which implies an emphasis on the form-meaning mapping of the vocabulary. Need, or the motivational component of involvement based on a drive to comply with task requirements, obviously occurs in health care settings, in which failure to communicate one's symptoms may lead to misdiagnosis. Search, in a task-based setting, may include consulting a dictionary or another authority, in this case, a medical pamphlet, chart, or professional, but it is less clear whether patients will have the agency to conduct search in in a healthcare environment. Evaluation, the comparison of one word to another, one meaning to

another, or a word to a context, may also occur frequently in health care settings. For instance, the difference between nausea and indigestion, discomfort and pain, or itching versus burning may affect diagnoses.

Long's (1996) revised Interaction Hypothesis stated that in meaning-focused communication, attention to form happens when learners engage in negotiation of meaning after a breakdown in comprehension (as cited in Ellis, 2001, p. 10) Negotiation moves include the following: clarification requests, the speaker's effort to gain understanding of the interlocutor's preceding utterance; confirmation checks, which are elicitations of confirmation that the speaker understood the interlocutor's previous utterance; and comprehension checks, defined as expressions to determine whether the interlocutor understood the speaker's prior utterance (Long, 1980, as cited in Foster & Ohta, 2005).

de la Fuente (2006) explored Long's (1996) revised Interaction Hypothesis through a quasi-experimental study of vocabulary acquisition under two basic conditions, either task-based using meaning-focused role plays both with and without a following focus on forms component, or presentation-practice-production (PPP) applying a focus on forms approach followed by student-initiated focus on meaning. de la Fuente (2006) structured the task as a one-way information gap with planned focus on both form and meaning; students had to produce food vocabulary items correctly to order off a menu in a restaurant role-play. Results showed no difference between the task-based and PPP groups on an immediate post-test, but at a delayed post-test, both task-based groups outperformed the PPP group, with no effect for the post-task focus on forms component.

Gaps in the Literature

The difficulty of medical discourse then makes a strong case for further study of health discourse acquisition and its negotiation. Frank (2000) studied reported difficulties between medical personnel and EAL but, due to health privacy laws, could not observe actual interactions. Elder et al. (2000) studied the effects of Language for Health, a federal initiative to prevent heart disease in low-literate populations, using a treatment group that received nutrition education in an ESL setting and a control group that learned stress management techniques. The change in nutrition knowledge for the intervention condition was significantly higher, even at a six-month delayed posttest. However, the change in health behavior as measured by cholesterol to HDL ratio and systolic blood pressure did not persist to the delayed posttest. The authors attribute this to contamination of the control group through discussion with peers in the other condition or because of instructor incorporation of topics of the other condition into their class. An explanation not considered was the traditional presentation-practice-production (PPP) format of the lesson, described as:

> Warm-up or review . . . followed by a brief introduction to the new lesson and then presentation of new information . . . an opportunity to practice the information presented . . . Students were then to use the information in a new situation and apply it to their own lives by goal setting for a healthy behavior change. (p. 53)

Given that de la Fuente (2006) found that task-based vocabulary instruction promoted retention, and therefore presumably acquisition, better than PPP, this calls into question the pedagogy used. Hinton (1992) studied retention of medical instructions and found that undergraduate EAL students struggled significantly more than native English speaking peers to recall instructions from a simulated medical interaction, but did not study how vocabulary entered in. However, in a case study of two doctors Hinton (1992) reported that doctors never used medical terminology

without explaining its meaning. It was not reported how many EAL patients were part of this case study; it appeared to focus primarily on native speakers.

Research Questions

Frank's (2000) study of patient-provider reported difficulties and de la Fuente's (2006) findings that task-based interaction promoted retention of lexical items warrant a study of task-based medical interaction particularly focused on retention of lexical items. It is the intention of this study to investigate these interactions. The following research questions shaped the design of the study.

1. What negotiation moves and semantic modifications focused on lexical form occur during a simulated medical interaction?
2. How do negotiation moves in a simulated medical interaction contribute to retention of lexical items and medical instructions?
3. What awareness do medical students and EAL speakers demonstrate of their use of negotiation moves and other strategies during a simulated medical interaction?

CHAPTER 3: METHODS

Here I discuss the methods used to investigate these research questions. This section includes an outline of the participants, instruments, procedure, and framework for analysis.

Participants

One group of participants consisted of EAL adults of varying proficiency recruited from the university community through fliers and an English language center at a large Midwestern university. Their demographics are summarized in Table 1. Due to practical considerations, it wasn't possible to draw all participants from the same class level, but the vocabulary knowledge scale pre-test was intended to give a rough measure of that participants' proficiency. Their pre-test scores are given in Table 1 to illustrate the variance in proficiency and health literacy demonstrated by the EAL speakers.

Table 1.
EAL Speaker Background Information

Participant ID	Home Country	Age	Gender	Level	Initial Vocabulary Score
1EAL	China	27	Female	Academic English	80
2EAL	Saudi Arabia	22	Male	Level 2 ELC	38
3EAL	Colombia	27	Female	Level 3 ELC	62
4EAL	Costa Rica	33	Female	Level 3 ELC	67
5EAL	Vietnam	28	Female	Graduated, MA	60
6EAL	China	20	Male	Level 3 ELC	42
7EAL	Iraq	36	Male	Level 3 ELC	58
8EAL	China	22	Male	Level 3 ELC	48
9EAL	South Korea	25	Male	Level 3 ELC	39.5
10EAL	China	19	Female	Level 3 ELC	36.5
11EAL	China	19	Female	Level 3 ELC	29

Another group of participants, American osteopathic medical students with native or native-like English proficiency, interacted with the EAL speakers in two task-based role-plays. These students were in their first or second year of medical school, came from a variety of undergraduate backgrounds, and had varied amounts of experience with patients. Their background is outlined in Table 2.

Table 2.
Medical Student Background Information

Participant ID	Age	Year in School	Gender	Home Country	Languages Other than English Spoken	Experience with Non-native Speakers of English
1Med	24	2	Female	USA	Spanish, Indonesian	Study and work abroad
2Med	29	1	Male	Vietnam	Spanish, Vietnamese	Family, study abroad, taught ESL
3Med	25	1	Female	China	Chinese	Family
4Med	24	2	Female	USA	Turkish	Study and work abroad
5Med	25	2	Female	USA	Spanish	Family, study abroad
6Med	24	2	Female	Nigeria	French, Yoruba	Family, significant other, friends
7Med	28	2	Female	USA	Tagalog, Illocano, Spanish	Family, study abroad, friends
8Med	28	2	Female	USA	Japanese, Spanish	International travel, taught ESL, family, work experience
9Med	30	DO/Ph.D.	Male	USA	Spanish	Work experience
10Med	27	2	Female	USA	Spanish	Study abroad, classmates
11Med	23	2	Female	USA	Spanish	Classmates

Prior to participation, all medical students had completed at least one simulated patient role-play and received instruction on health literacy as part of a required medical school course focusing on interaction between doctors and patients. This course was based on small group

discussions centered around readings provided in a course pack, which focused on issues of diversity and patient care. Students' patient role-plays were videotaped, and they received written feedback from the person acting as patient as well as verbal feedback from classmates in their small group and their small group discussion leader. I chose this population of medically-oriented individuals partially as a sample of convenience and partly out of interest in the negotiation moves that pre-clerkship medical students use with patients.

Instruments

Medical students completed a brief questionnaire (Appendix A) providing information about their prior experiences (if any) with EAL speakers. Further instruments for the medical students included a manila folder containing two forms for medical chart notes (including space for patient complaint and symptoms, assessment of disease, and treatment plan; see Appendix B), two sets of discharge forms (Appendix C), a guide about possible conditions and treatments (Appendix D), and instructions for their initial role-play (Appendix E). Later, I supplied instructions for their second role-play (Appendix E).

Learners were also studied using multiple instruments. First, EAL speakers completed a background information form (Appendix F). Before their first task, EAL speakers completed a medical vocabulary knowledge scale (VKS) designed specifically for this study with words related to the task (target words) and unrelated to the task (distracters) (this vocabulary list can be found in Appendix G). I selected these words based on pilot testing that measured the discrimination of each word between native and non-native speakers. The vocabulary knowledge scale is available in Appendix H. This was intended to roughly gauge participants' health literacy and English vocabulary. To administer the VKS, I printed target words and distractors on cards, which I shuffled before each test to randomize them. I presented EAL speakers with one card at a

time, saying the word aloud as it was presented. EAL speakers then selected a number on the scale and completed any requirement for that step, such as providing a synonym or sentence. Next, for each role-play, I gave EAL speakers a half sheet with a list of their symptoms (Appendix I). These role-play interactions were videotaped for later transcription. After each role-play, I asked EAL speakers to verbally answer questions on an exit form requiring them to recall and report treatment plan details (Appendix J). Immediately following the role-plays, EAL speakers completed a second VKS.

Procedures

Consent Forms

Participants completed consent forms explaining that the role-plays they experienced were only simulations provided for research purposes, not actual medical visits. EAL participants were compensated either monetarily or with extra credit from their English Language Center instructor. Medical students were not compensated.

Task Design

The role-plays were information gap tasks completed by dyads of medical students and learners, in line with Eckerth's (2009) suggestion that designing a task in pairs instead of groups affects how much language is produced and how many negotiation moves are made (p. 119). In this task, the learners and student doctors must arrive at a diagnosis and treatment plan including medication and lifestyle changes, combining the patients' knowledge of provided symptoms and the doctors' knowledge of disease, tests, and drug options. I also selected this type of role-play information gap task because it closely matches the structure used to train medical students for patient relationships, creating ecological validity for the medical student participants. While some ecological validity was lost in the fact that these interactions were simulated rather than

real, this allowed for more controlled use of topic and vocabulary that made a vocabulary pre-test and post-test possible, which would have been infeasible with real doctor-patient interactions.

Given the medical student participants' incomplete education and the desire for comparable results from participants in their first and second years, I provided them a framework (see Appendix D). This framework contained factual information about the symptoms and treatment of the two conditions targeted for discussion. When combined with the symptoms provided to the learners before their interaction (Appendix I), this created a required information exchange, chosen due to Foster's (1998) finding that required information exchanges produced most consistent negotiation (as cited in Eckerth, 2009, p. 121). Medical students acting as doctors were paired with learners acting as patients, after EAL speakers complete the verbal medical VKS to gather information about the learners' health vocabulary prior to the role-play information gap task.

Half of the dyads were guided to arrive at a working diagnosis of angina in their first role-play task based on the symptoms given the EAL speakers. The other half of medical students were guided to tentatively diagnose their learners with severe heartburn. It should be noted that the symptoms given were intentionally ambiguous to increase the amount of discussion, so it was possible, particularly depending on the details added by the EAL speaker, that the medical students would choose the competing diagnosis. These diseases were chosen for their frequency; heart disease is the leading cause of death in the United States according to the Center for Disease Control, killing more than 600,000 people in 2007 (Xu, Kochanek, Murphy, & Tejada-Vera, 2010). According to a text assigned to first year medical students, "chest pain is the second most common reason for a patient to visit an emergency room . . . . chest pain is one of the most challenging symptoms for the clinician to unravel" (Groopman, 2007, p. 43).

Medical students completed notes (Appendix B) in the patient chart and then informed the patient that they would call in a prescription for the medication discussed to a local pharmacy if they chose to recommend a drug regimen. This is a common practice and maintained an ecologically valid approach to withholding written information from the learners prior to assessment of their retention, given that this task is intended to assess aural reception. Following this, medical students filled out a discharge form (Appendix C) for their interaction partner. EAL speakers responded to an oral exit questionnaire (Appendix J) about the instructions they received to assess their comprehension. I retained EAL questionnaires; medical students retained their notes until the end of the second role-play.

After this first role-play, I notified medical student participants that laboratory tests had been completed and that they were now to engage in another interaction. Angina and heartburn have very similar symptoms, can both be treated with prescription medication, and may improve with diet and lifestyle changes, making a reversal of the previous diagnosis possible; information provided to both partners encouraged this reversal (see Appendix I). This counterbalanced the role-plays to control for possible differences in difficulty of discussing the two conditions and broadened the medical vocabulary used. Because medical students were informed in their second set of instructions (Appendix E) that any tests ordered came back with inconclusive results, the medical students interviewed patients in another required information exchange about the effectiveness of the prescribed medication and lifestyle adjustments to determine whether they should change their diagnosis. In both role-plays, EAL speakers and medical students were allowed as much time as they felt they needed to complete the interactions. Figure 1 summarizes this structure.

Group A	Group B
Consent Form	
VKS for EAL speakers	
Charts given to medical students, half sheets given to EAL speakers	
Angina Task	Heartburn Task
Learners complete exit form, medical students complete discharge form	
New instructions to medical students, new half-sheets distributed to learners	
Heartburn Task	Angina Task
Learners complete exit form, medical students complete discharge form	
Exit form and VKS for EAL speakers, SRI with some participants	

Figure 1 - Study Design with Counterbalancing of Tasks

Post-Task: Stimulated Recall Interviews (SRIs)

I invited all participants to complete stimulated recall interviews of selected portions of their videotapes. Medical students, who are accustomed to debriefing after taped patient interviews and may find doing so improves their bedside manner, found it ecologically valid to participate in a SRI, and ten of the eleven medical students did so. SRIs focused on what medical students were thinking or attempting to accomplish during specific negotiation episodes coded in their tapes, and to increase their comfort level and ability to share, as well as to facilitate timely completion of the data collection, a medical student collaborator collected this information. SRIs with the EAL speakers focused on the perceived effectiveness of the strategies employed by the medical students. Because of the greater wait time associated with the EAL stimulated recall, only seven of eleven EAL speakers chose to participate in a stimulated recall interview.

Analysis

RQ 1

To answer the first research question, "What negotiation moves focused on lexical form occur during a simulated medical interaction?" I transcribed the videotapes and coded for negotiation moves surrounding any lexical items, similarly to the coding procedure in Eckerth (2009), including clarification requests, comprehension checks, and confirmation checks, as well as semantic modification (see Appendix K for definitions and examples of each coding category). I made the decision not to code for morphological, phonological, or syntactic modifications given the focus on lexical items, although when the category was not clear, I included the modification as a lexical one.

RQ 2

Regarding the second research question, "How do negotiation moves in a simulated medical interaction contribute to acquisition and retention of lexical items and medical instructions?" I compared learner exit forms to medical students' discharge forms. First I counted the number of items listed in the medical student's discharge form (Appendix C). An item was defined as an idea unit, so the diagnosis counted as an item, as did each medication prescribed, each direction related to medication or lifestyle changes, and each additional follow-up instruction. Then I counted the number of items on the corresponding EAL speakers exit survey (Appendix J) that correctly matched up with the items on the medical student's discharge form. Because the number of items discussed varied, I calculated scores as the number of items on the exit survey over number of items on the discharge form to give a percentage of items recalled. Then I compared these percentages to the number of negotiation moves and semantic modifications in that role-play's transcript. I also compared the medical VKS to use of words during the role-play and on the learner exit forms.

RQ 3

To answer the third research question, "What awareness do medical students and EAL speakers demonstrate of their use of negotiation moves and other strategies during a simulated medical interaction?" I examined the data from the stimulated recall interviews to see what motivation medical students gave for their use of specific moves and whether they perceived themselves to be successful. I then compared this perspective, when possible, to the comments given by the EAL speakers. Transcriptions were divided into comments on specific instances within the interactions. Each comment was then sorted into categories as the categories naturally appeared from the data. I made the decision to sort each comment into a single category rather than allowing them to appear twice.

CHAPTER 4: RESULTS

RQ 1

In answer to the first research question, "What negotiation moves and semantic modifications focused on lexical form occur during a simulated medical interaction?" all three negotiation moves and semantic modification were used, but not in equal numbers. Table 3 illustrates this asymmetry.

Table 3.
Frequency of Negotiation Moves and Semantic Modification Including Medical Students and EAL Speakers

Clarification Request	Confirmation Check	Comprehension Check	Semantic Modification
135	486	51	206

The most frequently used negotiation move was the confirmation check, exemplified in excerpt 1.

Excerpt 1 – Confirmation Check of Palliation

EAL2: Uh is not someone punch me in my stomach but if I put something off my clothes (wraps hands around abdomen) if I put hands strong I feel that it's uh not strong than

Med2: Okay

EAL2: Before

→ Med2: So if you, if you sort of like squeeze a little bit it feels better?

EAL2: Yeah I feel better.

The number of confirmation checks used by individual dyads varied greatly, as shown in Table 4.

Table 4.
Confirmation Checks Used by Each Dyad

Dyad	1	2	3	4	5	6	7	8	9	10	11	Total
Confirmation Checks	18	89	58	16	13	31	61	70	22	40	68	486

The next most frequent move was a semantic modification, which took the form of a paraphrase, synonym, example, or even a gesture, broken down by frequency in Table 5.

Table 5.
Frequency of Subcategories of Semantic Modification by Dyad

Dyad	Gesture	Paraphrase	Example	Synonym	Total
1	1	4	7	2	14
2	5	6	10	0	21
3	2	16	5	2	25
4	0	2	3	2	7
5	0	2	3	2	7
6	0	0	1	4	5
7	0	9	2	4	15
8	1	11	5	5	22
9	0	10	12	7	29
10	3	7	4	3	17
11	6	17	7	14	44
Total	18	84	59	45	206

Excerpts 2, 3, 4, and 5 illustrate this.

Excerpt 2 – Semantic Modification in the Form of Paraphrase

→ Med3: Okay. Do you have um do you feel any nausea when you have pain? Do you feel like you want to throw up?

EAL3: No.

→ Med3: No? Okay. Um do you feel um short of breath like you can't breathe you have trouble breathing?

EAL3: Yes.

Excerpt 3 – Semantic Modification with a Gesture

Med3: If it lasts longer than twenty minutes or if you feel that it starts to get worse or it starts to spread to other areas of your body like your arm for example your head your → neck (gestures to each place) that kind of thing if it starts to do that then you should give us a call

EAL3: Okay

Excerpt 4 – Semantic Modification with Examples

Med3: No? Okay. Um do you think that there's anything that you do that makes it worse? →Do you is it perhaps after you eat or uh or after running any sort of exercise

Excerpt 5 – Semantic Modification using Synonym

Med1: Ok. You said you're still throwing up, you're still vomiting.

Clarification requests were less frequently used, but occurred with some regularity, including use by all dyads and in all but one interview, as illustrated in Table 6.

Table 6.
Clarification Requests Used by Each Dyad

Dyad	Clarification Requests
1	9
2	33
3	10
4	7
5	6
6	4
7	22
8	14
9	4
10	6
11	18
Total	133

Excerpt 6 demonstrates a pattern in which a medical student's semantic modification follows a clarification request.

Excerpt 6 – Clarification Request Followed by Semantic Modification

Med5: Okay so heartburn is when, or GERD[1], is what it's also called, is when the acid in your stomach comes up from your stomach into your esophagus so into your chest and your throat which might've which can contribute to the vomiting and to the pain in your chest

→EAL5: I'm sorry what is esophagus?

→Med5: Oh it's the it's the tube that goes to your stomach after you swallow food.

EAL5: Oh okay.

[1]GERD is an abbreviation for gastroesophageal reflux disease

After examination of the data, it became clear that there were really two types of comprehension checks used. The first was a brief question, often with a yes/no answer, such as:

Excerpt 7 – Brief Comprehension Check

Med11: That's disgusting I know. I'm sorry but uh that that feeling that li- it's kind of a like a um a burning feeling.

EAL11: Oh

→Med11: Does that make sense?

EAL11: Mm yeah

These brief comprehension checks were often accomplished with the questions, "Does that make sense?" or some variation of "Do you know . . . ?"

The second was comprehension check requiring a more extended response, using a more open-ended question as exemplified in Excerpt 8. This type of comprehension check was rare, comprising only 12.3% of comprehension checks, which themselves were relatively infrequent compared to the other communication moves studied, as evidenced by Table 7.

Table 7.
Frequency of Comprehension Checks by Dyad

Dyad	Brief	Extended	Total
1	2	3	5
2	9	0	9
3	8	0	8
4	0	0	0
5	2	0	2
6	0	0	0
7	0	0	0
8	6	4	10
9	1	0	1
10	1	0	1
11	15	0	15
Total	44	7	51

Excerpt 8 – Extended Comprehension Check

Med8: And prevent any um clotting so that you don't get second another consequence →could be a stroke, so we wanna eliminate that problem. Um but I know this kinda is like a lot to take in so can you kind of repeat back to me kind of what you understand what I just told you?

EAL8: Uh you said that I have a quite good diet now and we are going to have an endurance test to test if my uh I will will have a heart disease cause uh what

Two medical students were responsible for all seven of these extended response comprehension checks. Eight of eleven medical students used some kind of comprehension check.

As demonstrated, participants employed certain negotiation moves more frequently than others. Also, medical students and EAL speakers used these moves at different frequencies. Figure 2 and Table 8 outline this asymmetry.

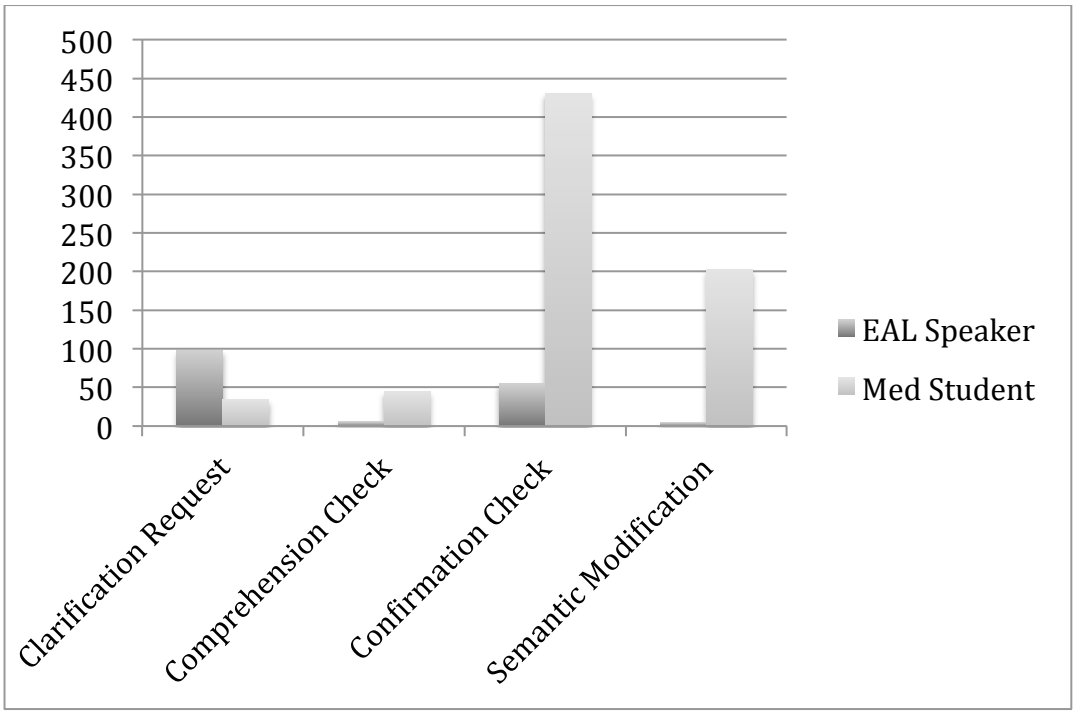

Figure 2 – Frequency of Moves by Participant Type

These patterns hold true across almost all dyads, with the exception of the comprehension checks used by EAL2 and the almost equal numbers of clarification requests used by EAL7 and Med7.

Table 8.
Frequency of Moves by Participant Type

Move Type	Clarification Requests		Semantic Modifications		Confirmation Checks		Comprehension Checks	
Initiated by	EAL	Med	EAL	Med	EAL	Med	EAL	Med
Dyad 1	8	1	0	14	1	17	0	5
Dyad 2	22	11	2	19	10	79	6	3
Dyad 3	7	3	0	25	0	58	0	8
Dyad 4	6	1	1	7	2	14	0	0
Dyad 5	6	0	0	6	5	8	0	2
Dyad 6	3	1	0	5	0	31	0	0
Dyad 7	12	10	0	15	1	60	0	0
Dyad 8	9	5	0	22	13	57	0	10
Dyad 9	4	0	1	28	1	21	0	1
Dyad 10	5	1	0	17	1	39	0	1
Dyad 11	16	2	1	43	21	47	0	15
Total	98	35	5	201	55	431	6	45

EAL speakers employed 74% of the clarification requests while medical students contributed 98% of the semantic modifications and 89% and 88% of confirmation checks and comprehension checks, respectively. Of special interest is the comprehension check category, in which medical students initiated all moves except in Dyad 2, when EAL2 initiated six comprehension checks to Med2's three.

RQ 2

The answer to research question two, "How do negotiation moves in a simulated medical interaction contribute to retention of medical instructions and lexical items?" is complex. To

study retention of medical instructions, first I counted the number of items listed in the medical student's discharge form for each role-play (Appendix C). An item was defined as an idea unit, so the diagnosis counted as an item, as did each medication prescribed, each direction related to medication or lifestyle changes, and each additional follow-up instruction. Then I counted the number of items on the corresponding EAL speakers exit survey (Appendix J) that correctly matched up with the items on that medical student's discharge form. Because the number of items discussed varied, I calculated scores as the number of correct items on the exit survey over number of items on the discharge form to give a percentage of items retained. Both the number of items discussed and the percentage of them retained varied greatly. The results are shown in Table 9.

Table 9.
Retention by Medical Instruction Item and Percentage

	Role-Play I			Role-Play II		
Dyad	Items EAL Retained	Out of	Percentage	Items EAL Retained	Out of	Percentage
1	14	18	78	10	14	71
2	5	8	63	6	12	50
3	7	8	88	9	12	75
4	9	10	90	17	20	85
5	14	18	78	9	14	64
6	5	10	50	12	18	67
7	10	10	100	9	10	90
8	11	12	92	14	14	100
9	10	12	83	12	12	100
10	8	16	50	7	18	39
11	12	16	75	17	24	71

The relationship of percentage scores to negotiation moves is shown in Table 10.

Table 10.
Frequency of Negotiation and Semantic Modification with Percentage Retained

Dyad	Semantic Modification	Clarification Requests	Confirmation Checks	Comprehension Checks	Total Moves	Overall Percentage Retained
1	14	9	18	5	46	75
2	21	33	89	9	152	55
3	25	10	58	8	101	80
4	7	7	16	0	30	87
5	7	6	13	2	28	72
6	5	4	31	0	40	61
7	15	22	61	0	98	95
8	22	14	70	10	116	96
9	29	4	22	1	56	92
10	17	6	40	1	64	44
11	44	18	68	15	145	73

As shown in Table 10, a greater number of overall moves did not lead to greater percentage retained, and this holds true for each individual move as well. I found no statistically significant effect on retention of instructions for any of the negotiation moves or for semantic modification, suggesting that more research is necessary to understand the link between negotiation, comprehension, and retention of idea units.

When the length of each interaction was calculated with rounding to the nearest minute, it correlated to occurrence of overall negotiation moves and semantic modification at 0.86 using Pearson's r. Controlling for length of interaction had no statistically significant effect on retention of instructions or lexical gains. What does become clear is that the average interaction was approximately 15 minutes, the length of time usually allotted for a patient-provider interaction. As shown in Table 11, the times of each role-play varied, as did the density of negotiation moves and semantic modification. Times in Table 11 are rounded to the nearest minute.

Table 11.
Length of Interactions

Dyad	Role-Play I	Role-Play II	Total	Moves Per Minute
1	7	13	20	0.435
2	19	30	49	0.322
3	19	21	40	0.396
4	11	13	24	0.800
5	10	10	20	0.714
6	7	7	14	0.350
7	21	15	36	0.367
8	27	19	46	0.397
9	19	16	35	0.625
10	9	9	18	0.281
11	19	20	39	0.269
Average	15.27	15.73	31	0.427

Moving to the other side of this research question, all EAL speakers showed some lexical gains on the Vocabulary Knowledge Scale target items. There were eleven target vocabulary items, of which seven appeared more than ten times, although these words were not evenly distributed throughout each dyad. The maximum possible score on this VKS was a 55, with a minimum possible score of 11. Table 12 displays the pre- and posttest scores.

Table 12.
Target Vocabulary Knowledge Scale Gains

	Pre-Score	Post-Score	Gain
1	46.5	49	2.5
2	24	28	4
3	34	38	4
4	41	50	9
5	36	54	18
6	25	34	9
7	35	39	4
8	32	39	7
9	27	37	10
10	23.5	33	9.5
11	20	32	12
Average	31	39	8

Of the gains on the Vocabulary Knowledge Scale of target lexical items, in the case that the item actually occurred in the dyad's role-plays, 12 out of 20 increases of 1.5 points or more (out of a 1-5 scale), or a 30% gain, involved a semantic modification. Additionally, 5 out of 20 increases of 1.5 points or more involved a clarification request. Cases in which an increase was reported but the item did not occur in the role-plays have been omitted from Table 13, which included all distractors as well as the target items not used in that dyad's role-plays.

Table 13.
Increases of 1.5 Points or More on the Vocabulary Knowledge Scale

Dyad	Lexical Item	VKS Starting Choice	VKS Ending Choice	VKS Increase	Moves Used	Role-Play Item Frequency
1	Esophagus	3.5	5	1.5	None	2
3	Antacid	2	4	2	Semantic Modification	12
4	Esophagus	3	5	2	Semantic Modification	3
4	Antacid	3	5	2	None	3
4	Angina	1	3	2	Semantic Modification	9
5	Hoarse	2	5	3	Semantic Modification	2
5	Esophagus	1	5	4	Clarification Request, Semantic Modification	5
5	Antacid	2	5	3	Semantic Modification	3
5	Angina	1	5	4	Drew Picture	3
5	Hoarse	2	5	3	Semantic Modification	2
6	Heartburn	2	5	3	None	1
6	Aspirin	2	5	3	None	11
6	Antacid	1	3	2	Semantic Modification	3
7	Angina	1	4	3	Clarification Request	12
9	Saturated fat	1	5	4	Clarification Request, Semantic Modification	4
9	Cholesterol	3	5	2	None	2
9	Angina	1	5	4	Semantic Modification	26
11	Aspirin	1	3	2	Wrote Out	3
11	Antacid	1	5	4	Semantic Modification, Wrote Out	2
11	Angina	1	5	4	Semantic Modification, Confirmation Check	9

In five cases, an unfamiliar word occurred with negotiation or semantic modification but EAL speakers did not report gains on the VKS. An example of this appears in Excerpt 9.

Excerpt 9 – Semantic Modification without VKS Gains

M6: More of a chest? Okay. And um it looks like the ibuprofen is working so um I would suggest maybe trying to take aspirin and for the meantime also, it sounds like cause with

the symptoms with the chest pain and it's dull and you said it comes when you move stuff, sounds like uh probably you have so-some kind of angina going on, and what

→angina means is just a chest pain. It's stable when it comes on with like moving stuff or going up the stairs . . .

Thus, semantic modification and clarification requests usually appear to in some way affect acquisition of lexical items. Confirmation checks, while very frequent during the interviews, did not appear to be linked to vocabulary gains. Medical students also applied other strategies, such as writing out words and drawing pictures.

The relative infrequence of comprehension checks, particularly extended ones, makes it difficult to define their role in retention of instructions or teaching of vocabulary. However, based on Excerpt 8, there is reason to believe that extended comprehension checks may open a space for medical providers to elaborate on or clarify information that they have provided during the interview, creating a justification for further examination of this negotiation move. Negotiation moves and semantic modifications in Excerpt 10 are marked for emphasis.

Excerpt 10 – Three Extended Comprehension Checks with Resulting Negotiation

→Med8: Um but I know this kinda is like a lot to take in so can you kind of repeat back to me kind of what you understand what I just told you?

EAL8: Mm hm

Med8: Okay

EAL8: Uh you said that I have a quite good diet now

Med8: Yeah

EAL8: And we are going to have an endurance test to test if my uh I will will have a heart disease cause uh what

→Med8: High cholesterol? Wait what

EAL8: It's different from the initials is uh

→Med8: EKG? Wait sorry I didn't understand

EAL8: Ey agen

Med8: Oh angina?

→EAL8: Agina?

Med8: Ah okay.

Five turns removed

Med8: You can say cholesterol deposits. Cholesterol.

→EAL8: Cholesterol is a ch- a chemical?

Med8: It's kind of like a when we call it like a lipid. It's kind of like a fat. It's not soluble in water (laughs) so it can it deposits like can deposit on your arteries

EAL8: Ah

Med8: It's in food you know like you've heard of meat is high in cholesterol [and fat

EAL8: So it] build up and uh

Med8: If you have [too much

9 turns removed

Med8: Well maybe I mean we'll see yeah I wouldn't, your exercise it's good to keep exercising we just want to make sure that you don't, because you don't exert yourself so much right now that you have a heart attack cause that could be a problem. But um exercise is good and good diet's good and then we can also give you some medications to →help as well. Okay but go ahead and continue watch what more you understand. Or don't understand from

EAL8: Em yeah you're also going to test my uh blood pressure

Med8: Mm hm

→EAL8: And forgot what that will indicate for

Med8: Well we can test it we can take your blood pressure but we're gonna test your blood, like take a blood sample

EAL8: (nods)

Med8: And that will help us to see how much cholesterol

→EAL8: Cholesterol

Med8: And the different there's different types of fats too and it'll say um like we could we call um tri so glycerides is a type of fat. But we'll look at that and then there's different types of cholesterol HD LDL HDL. For different types of lipids. So this is like good. But when we do the blood test it we get your results we can go over this more you don't have to worry about this right now.

2 turns removed

EAL8: Does it mean mean low density and high density

Med8: Yeah, yeah you know! Yeah you know exactly well. That's pretty good. Okay um →so we'll do blood tests, a stress test and then what else what else did I say

EAL8: Uh I think maybe [some

Med8: Some meds] maybe we'll give some aspirin and then we'll see about

→EAL8: Ah aspirin yeah

Med8: [yeah

EAL8: I forgot] about the [aspirin (laughs)

23 turns removed

> Med8: Yeah. No that's a good way of thinking it. Of it yeah. All right um so sounds like you understand what's going to happen and kind of a little bit more about what we think is the problem and so we'll get these tests done and we'll probably get the results in a couple weeks so let's set up a follow-up appointment so you can come back here in a couple weeks and we'll go over the results together

Med8 starts with an acknowledgment of the difficulty of the discourse EAL8 has just engaged in, followed by an open-ended comprehension check. As EAL8 begins to explain what he has understood, it becomes clear that he is having trouble remembering one of the target lexical items, angina, and this creates an opportunity for him to negotiate it with Med8. Next, it becomes apparent that EAL8 is not sure what the difference is between high cholesterol and angina, and Med8 uses semantic modification to clarify for him. Once that is complete, Med8 prompts EAL8 with another open-ended comprehension check. This time, EAL8 admits that he doesn't know what one of the tests Med8 has ordered is for. After clarifying this, Med8 uses still another open-ended comprehension check, which allows room for EAL8 to admit that he had forgotten about a medication, aspirin, also a target vocabulary word. Med8 ends this series of comprehension checks by affirming that she believes that EAL8 understands what they have discussed and begins to close the interview. Thus, through Med8's series of three open-ended comprehension checks, she made possible four semantic modifications and four clarification requests, each of which may facilitate learning of vocabulary. EAL8 demonstrated a three-point gain on the target word cholesterol and a four-point gain on the target word angina, possibly in part because of these comprehension checks.

RQ 3

Regarding research question three, “What awareness do medical students and EAL speakers demonstrate of their use of negotiation moves and other strategies during a simulated medical interaction?” the stimulated recall interviews revealed twelve categories into which all of the comments from each interview were sorted. These categories are grouped into three blocks for discussion.

Expected Strategies

Confirmation checks, comprehension checks, clarification requests, and semantic modifications were among the main themes. About confirmation checks, students said that they used them to organize discourse, review consistency of the story, and to acknowledge patient comments. The following excerpts illustrate this.

Excerpt 11 – Confirmation Check to Organize Discourse

EAL2: Yeah. If uh if my chest hurt uh it's actually uh eight weeks ago

Med2: Mm hm

EAL2: So I don't know what if I feel pain from time to time [like

Med2: Kay]

EAL2: Three time a weeks and if I decide to go and plan go out then if I stay and then come again. So I don't know what should I do.

Med2: [Okay so

EAL2: With my chest]

→Med2: Retrack that for me. So you're telling me that um you're feeling um, if, okay, if the pain um is chest pain, correct?

SRI Med2: Based on what he told me I felt like it was everything was just all over so I just want to to let him talk first and then reword it and make sure that that's what he meant . . .

Excerpt 12 – Confirmation Check for Consistency

Med6: Okay. So um is the is still the same pain or did it get worse

EAL6: It get worse

Med6: It got worse, okay

EAL6: Yeah it bother me maybe last eight eight weeks.

→Med6: Oh so it's worse than the so now it's like been going on for eight weeks but got worse.

SRI Med6: Just to confirm, like to double check again. Like I said being consistent. To make sure he's consistent with his story.

Excerpt 13 – Confirmation Check to Acknowledge Patient Comments

Med7: So can you show me where your pain starts and does it radiate anywhere? For your chest pain?

→EAL7: Yeah. (Puts hand over heart) From the left side.

→Med7: The left side? (gestures to left side)

EAL7: Yeah my chest.

Med7: Okay.

SRI Med7: So with my hand gesture I was telling I was confirming that this part the side his left side was where the pain was, so I also you know also did the same thing to acknowledge that this is where pointing at is on his left side.

These multiple purposes may explain why confirmation checks were the most frequently used negotiation move.

Much like the multiple purposes for confirmation checks, the medical students outline four different strategies for formatting semantic modifications. The first was simply to substitute a new word, as in Excerpt 14.

Excerpt 14 – Semantic Modification with New Word Substituted

Med7: Okay. Unpredictable. Okay let's try that and then uh so what do you do for a living? →Or you always stressed or anything like that too?

EAL7: Excuse me?

→Med7: Do you have stress at work?

EAL7: No I am just estudying.

Med7: No? Okay.

SRI Med7: He probably didn't understood what stress means . . . like the definition of our stress so when I put work in there he understood that that's what I meant.

Another strategy was complete avoidance of a difficult word, as in Med9's comment in Excerpt 15.

Excerpt 15 – Semantic Modification through Avoidance

Med9: So you just wake up. Yeah okay. All right. All right. Uh does it stay in your chest →or does it does it move anywhere else. Like does it start in your chest and maybe move down your arm or maybe move to other places or does it just stay in your chest the pain

SRI Med9: You're probably asking why I didn't use the word radiate. I don't know, radiate is I guess I didn't feel it would easily get across what I was trying to ask him . . .

Medical students also chose to give examples to help EAL speakers give appropriate answers, as in Excerpt 16.

Excerpt 16 – Semantic Modification through Examples

Med8: Twice. Okay. And then how would you describe the pain? Like um is it like burning or is it like stabbing or is it like a pressure? On or is it pretty just uncomfortable like dull?

SRI Med8: When you ask people describe their pain it's often very difficult so you just give them, and even like within chest I think we are looking for certain trigger words . . . and so I just kind of selected from very different types of pain that would make it easier for him to identify with and also for us to use diagnostically.

One strategy that EAL speakers described as helpful was the use of gestures to add information to the interview. For example, EAL5 shares in Excerpt 17.

Excerpt 17 – Semantic Modification with Gesture

Med5: Okay so heartburn is when, or GERD, is what it's also called, is when the acid in your stomach

EAL5: Mm hm

→Med5: Comes up from your stomach into your esophagus (gestures with hand moving from stomach to neck)

EAL5: Oh okay

Med5: So into your chest and your throat

EAL5: Okay

Med5: Which might've which can contribute to the vomiting and to the pain in your chest

EAL5: I'm sorry what is esophagus?

SRI Interviewer: So would you have asked what the esophagus was if you hadn't seen the vocabulary test first?

SRI EAL5: I don't think I would ask because because of her hand gesture I could guess what she means.

This proliferation of strategies suggests that medical professionals have multiple resources to employ when explaining a difficult concept.

EAL speakers and medical students both reflected on the use of clarification requests. From the medical student perspective, they appeared to be a welcome guide to providing the appropriate level of discourse within an interview. Med5 describes this well in Excerpt 18.

Excerpt 18 – Medical Student Appreciates Clarification Request

Med5: Comes up from your stomach into your esophagus

EAL5: Oh okay

Med5: So into your chest and your throat

EAL5: Okay

Med5: Which might've which can contribute to the vomiting and to the pain in your chest

→EAL5: I'm sorry what is esophagus?

Med5: Oh it's the it's the tube that goes to your stomach after you swallow food.

SRI Med5: I was just describing what heartburn is and I didn't even think that she wouldn't have known the word esophagus so I'm glad she asked what it was. It's a really good thing to be conscientious of with medical terminology. It's easy to forget.

In fact, medical students were sometimes surprised when their EAL speaker did not use a clarification request, as in Med6's comment.

Excerpt 19 – Medical Student Expresses Surprise about Lack of Clarification Request

Med6: More of a chest? Okay. And um it looks like the ibuprofen is working so um I would suggest maybe trying to take aspirin and for the meantime also, it sounds like cause with the symptoms with the chest pain and it's dull and you said it comes when you move stuff, sounds like uh probably you have so-some kind of angina going on, and what angina means is just a chest pain. It's stable when it comes on with like moving stuff or →going up the stairs. So I would say um try using aspirin and probably a beta blocker Lopressal but what on our follow-up we'll write up a prescription for it . . .

Three turns omitted

Med6: Okay. So um basically just I feel like the aspirin should work and um you know try eating small meals and ch- I mean, you look you're already a healthy man so you don't have to lose weight and you already don't smoke or anything. So um I guess on our follow-up visit we can talk about the effects of how the aspirin worked and everything.

EAL6: Okay.

→Med6: All right. Well did you have any concerns anything you'd like to tell me?

EAL6: Uh

Med6: Anything else you wanted to talk about?

EAL6: No.

SRI Med6: But he didn't ask about the beta blocker. Weird. That's why I didn't follow up.

Because comprehension checks appeared so infrequently in the data, it was of great interest to see what explanations medical students would give for their use. A few comments

revealed that medical students seemed to be using methods to check for comprehension that I did not anticipate when designing the coding structure, including the use of response time, eye contact, and facial expression. Med6 summarizes this.

Excerpt 20 – Eye Contact and Response Time as Comprehension Check

→Med6: Okay so just both. Are you coughing or vomiting or anything?

EAL6: No

→Med6: No nausea? Um do c- do you smoke?

EAL6: No. Not at all.

SRI Med6: I thought he was. He replied me right away. There wasn't any pause and there was eye contact, so . . .

In terms of expected comprehension checks, Med8 went so far as to assert that these extended comprehension checks are important regardless of a patient's primary language, saying:

Excerpt 21 – Importance of Comprehension Checks with All Patients

Med8: And prevent any um clotting so that you don't get second another consequence could be a stroke, so we wanna eliminate that problem. Um but I know this kinda is like a →lot to take in so can you kind of repeat back to me kind of what you understand what I just told you?

SRI Med8: I think that we should do it because regardless of whether English is your first or second language there's some kind of there could be a communication error or you don't even know like interpret something as completely different. I think it also helps just cement and summarize for both your own memories like everything that you've talked about.

Med11 also asserted that she wished she had used more comprehension checks throughout one of her explanations.

Unexpected Strategies

Beyond the negotiation moves and semantic modifications, the medical students shared that they were implementing additional strategies that were unforeseen in the coding structure. Two additional strategies described by participants were those of gauging importance and gauging difficulty. EAL5 and EAL6 both explained that they didn't focus on a particularly challenging word because they felt that it wasn't as important as another point their partners had made. EAL speakers also were more likely to ask about a word they perceived to be important to the interaction, such as EAL5's comment in Excerpt 22.

Excerpt 22 – Gauging an Important Word

Med5: Uh huh. Okay. Um. It sounds like it sounds like um you have angina. Have you heard of that before? [Angina

EAL5: I've never heard of that]

Med5: No?

→EAL5: What's angina?

SRI EAL5: I think that's she's starting to diagnose? So I think I would try to clarifies that because that's the most important word that I need to know . . .

Med8 appeared to use her knowledge as a former ESL instructor to inform her choice of vocabulary, gauging the difficulty of the word, as in Excerpt 23.

Excerpt 23 – Gauging Lexical Difficulty

Med8: Or vomit? Okay. All right just one second while I write this. All right. And going back to your chest pain just really quick you said it lasts it can last five ten minutes or up

to a half but and you said you feel it when you're um like exerting your- so like when you're lifting something or you're, do you run or [exercise?

SRI Med8: I realized like when I said exertion like they may not always know what that means . . . he's college-educated, he's pretty smart – I'm trying to think on the level of vocabulary where exertion would fall.

EAL9 articulated that he actually forgot one lexical item because he had gauged another to be more difficult to remember and was allocating cognitive resources to it.

One further strategy employed was repetition, as multiple medical students chose to "recap" the interview before exiting the room. Med7 did this as she sought agreement with the treatment plan. EAL7 affirmed the value of this strategy, saying:

Excerpt 24 – Value of Repetition

Med7: No. Okay. Anything else?

EAL7: (shakes head)

Med7: No? Okay, so that would be the plan to um is there anything that you would

→disagree or that you would be more concerned about as far as the plan goes of taking aspirin

EAL7: Mm

→Med7: doing the bloodwork and seeing a cardiologist

SRI EAL7: When you hear it many times you will remember it more.

Other simple strategies similar to this, but without discussion sufficient for their categories, were the importance of speaking slowly and clearly, brought up by EAL9 and EAL6, respectively.

A strategy that medical students valued, but admitted they did not always use, was assessing prior knowledge. Med3 exemplifies this in Excerpt 25.

Excerpt 25 – Untapped Value of Assessing Prior Knowledge

Med3: Just um daily just a small amount of aspirin because aspirin can help uh what aspirin does is it thins your blood, so that if for example you have your your chest pain is caused by thinning of your arteries it it's more work for your heart to pump the blood through the arteries

EAL3: Mm hm

Med3: Do you understand? Okay so the aspirin will thin your blood so that it's easier to push the fluid through through the arteries if it were to be blocked.

SRI Med3: I should've asked her first what she knew about how the heart works. Just to get a gauge of what she understood.

One medical student explained that the value of assessing prior knowledge was in the fact that it could save him time, and another asserted that whether a patient appears to have medical background or prior experience with a medical condition would affect the level of vocabulary she used. Med9 also explained in Excerpt 26 that if a patient had prior knowledge, he might choose to explain more of the physiology behind a medical recommendation.

Excerpt 26 – Prior Knowledge Leads to More Background

→Med9: Have you heard of aspirin before

EAL9: Um for headache?

→Med9: Yeah. Yeah. Exactly. Um so one of the things that we have found out through research is that um taking aspirin really is small dose every day it doesn't it it uh actually can help your heart too. Um and you know it's it's a smaller dose than you would take for your for your headache and it's much safer this way but what it can do is it can help your blood move a little easier through your blood vessels and maybe that's what we need to

do instead of something that's affecting how your heart is working or a- affecting how how how dilated your blood vessels are. But I still feel like you're still getting angina despite what the stress test said just bas- because of like I said um angina's very common you know the way we call angina is you know like when you're working, or um what we call exertion you know act doing something that's heavy walking up stairs lifting things and then you get chest pain that's that's very typical of angina. Which sounds like what's what's goin on. Does that sound pretty close to what's going on?

SRI Med9: If he hadn't heard of it before I would tell him just aspirin . . . but I guess him knowing what it was and that it was for headache made me explain why it was smaller and that also probably launched me into what it's doing . . .

Further Observations

One item that became clear during the post-task interviews, which deviated from stimulated recall in that they followed a less structured format and allowed participants to speculate about why they made certain decisions and to pass judgment on the success or failure of their endeavors, was that participants reflected on the task and their performance. The remainder of the categories generated from the stimulated recall interviews were not strategies, but rather shared observations of the task, instances of unrepaired communication breakdowns, and an example of one challenging vein of discussion. The first consisted of participants commenting on the difficulty of the task. Five medical students, or almost half, explained that they recognized a shortcoming in their communication skills. Med 10 summarized this best in Excerpt 27.

Excerpt 27 – Difficulty of the Task

→Med10: Nauseous?

→EAL10: Mm pardon.

Med10: Nauseous meaning feels like you're going to throw up?

EAL10: Um not really.

SRI Med10: I think we just throw these terms around that it's not a very difficult word but nauseous honestly if I was trying to learn a different language I probably wouldn't know what nauseous was in Spanish . . . it's kind of just natural to throw out those words, it is difficult to redefine something that seems to simple to us.

Medical students also, in a category of universality and specificity, described that there were certain steps they would take with EAL speakers and others that they felt were useful with all patients. Excerpt 28 illustrates the universality of one technique used by Med5.

Excerpt 28 – Universality of Strategy

→Med5: I think you have, have you heard of heartburn before?

EAL5: Yeah.

→Med5: What do you what have you heard about it. What is it

EAL5: I heard it like uh if say there's some discomfort in my stomach

SRI Med5: Because I always think it's good to know if they know what that means regardless of if they are English as a Second Language or not, because one term can mean something different to so many different people and like society's way of using it . . .

In other cases, medical students suggested that they would care for EAL patients differently. Med10 suggested that she would give an EAL speaker more instruction on how to take medications properly because she felt that the prescription labels might be too difficult. Med9

saw EAL speakers as a more vulnerable population that deserved the dignity of participation in their own care, described in Excerpt 29.

Excerpt 29 – Seeking Agreement of an EAL Speaker

Med9: But I still feel like you're still getting angina despite what the stress test said just bas- because of like I said um angina's very common you know the way we call angina is you know like when you're working, or um what we call exertion you know act doing something that's heavy walking up stairs lifting things and then you get chest pain that's that's very typical of angina. Which sounds like what's what's goin on. Does that sound pretty close to what's going on?

EAL9: I think it is

Med9: Yeah. So I agree too. So I think I think what what's goin on is angina. And what we're gonna do is we're gonna switch you instead of Lopressor so I want you to stop taking the Lopressor

SRI Med9: I thought I should explain to him what I thought was going on . . . but I thought it was I wanted to make sure it was okay with him simply because I didn't . . . want to be that guy that you know that this guy may not understand English I'm just gonna do what I want with him, you know, he'll just accept.

Among the successful strategies and moves were also unrepaired communication breakdowns. These came to light during the stimulated recall interviews. For instance, EAL6 left the interaction believing that aspirin is for stomachaches, when in reality aspirin can exacerbate gastrointestinal distress. In this case, the medical student believed that the EAL speaker knew what aspirin was. A similar situation occurred with EAL3. In the case of Med10 and EAL10, both realized that the explanation had been poor. Excerpts 30 and 31 illustrate this.

Excerpt 30 – Poor Explanation of Angina

Med10: Pain all the time? Okay. Okay. Well let's focus on so we'll focus on having angina, which is your diagnosis of chest pain

EAL10: Mm hm?

Med10: That's angina is the diagnosis for what you're describing to me that you have.

SRI Med10: I kind of did a poor job of explaining what like angina is to the patient other than say it's what you're feeling . . .

Excerpt 31 – What is Angina?

Med10: Pain all the time? Okay. Okay. Well let's focus on so we'll focus on having angina, which is your diagnosis of chest pain

SRI EAL10: Is it like a illness? She explained it later, but I didn't quite get it.

The hope for research such as this is to reduce the number of exchanges such as this one.

To conclude the results section, I put forth the final theme: that of the pain scale. Because the pain scale is a widely used American construct that can be difficult for native speakers to use appropriately, it was of particular interest here. Participants EAL1, EAL5, and EAL7 confirmed that they had no prior experience with the scale. Their reactions to the scale seemed to vary depending on how it was explained to them. In the case of EAL1, Med1 noted that EAL1's confidence in using the scale increased after Med1 explained the scale, and EAL1 commented in her SRI that she would have liked further instruction in the scale. Med3 and Med5 perceived the pain scale to be more universal and simpler to use. Med5 explains it this way:

Excerpt 32 – Pain Scale is Universal

SRI Med5: I think that is more universal than most of the adjectives that I could ask about the pain . . . I mean, everybody knows numbers, if it hurts really bad it's going to be a high number.

A review of Med5 and EAL5's interaction combined with EAL5's SRI reveal a breakdown of communication.

Excerpt 33 – Chest Pain on a Scale of One to Ten

Med5: Okay. And what ki- on a scale of one to ten what would you say the pain is on your chest

EAL5: It's like six or seven.

Med5: Okay. That's really painful.

Here, Med5 receives EAL5's answer as "really painful," but EAL5's SRI in Excerpt 34 demonstrates a different intention.

Excerpt 34 – Five is Neutral

EAL5: When she say from one to ten I just say okay so five is neutral so not too much pain so I say six or seven. But I've never heard before.

Clearly, there is a breakdown in communication here created by an assumption of either prior knowledge or universality.

This concludes the results section. A discussion of these results, their implications, and future directions for research follows.

CHAPTER 5: DISCUSSION AND CONCLUSION

Discussion

As evidenced by the data, medical students are bringing numerous communication strategies into their interactions with patients, some of which were more common than others. This suggests that not all of these strategies are taught within medical school coursework; anecdotally, students commented that they had not learned how to use negotiation moves during their doctor-patient relationships course. In fact, Med8 confirmed that she had learned to use extended comprehension checks from a shadowing experience with a doctor that regularly employed them. Another student went so far as to say that medical school coursework discouraged the use of yes/no comprehension checks on the grounds that the patient will answer affirmatively the majority of the time.

The fact that EAL speakers employed the majority of the clarification requests while medical students contributed the vast majority of the semantic modifications reflects the fact that to be successful in the task, the EAL speaker had to successfully gain unfamiliar information from the medical student. Conversely, the information supplied by the EAL speaker to the medical student was more often in a format familiar to the medical student, and it was in times that the answer format was unexpected, often through a language-related error rather than an informational one, that medical students employed clarification requests. As expected per Foster and Ohta (2005), medical students appeared to ignore morphosyntactic errors as less important to the meaning of an utterance. Thus, medical students often confirmed that they had heard correctly rather than asking for clarification or correction of a prior utterance, while a more appropriate move for the EAL speaker was to ask for more information.

That the number of negotiation moves and semantic modifications strongly correlates to the length of time in the role-play is unsurprising. However, what is noteworthy is that length of interaction appeared to have no effect on lexical gains or retention of medical instructions. This suggests that how the negotiation moves are used, rather than how many of them or how long the interaction is, may determine the increase in health literacy during the interaction.

The fact that of the gains on the Vocabulary Knowledge Scale of target lexical items the majority of substantial increases involved a semantic modification suggests that medical providers can play a role in the learning of medical vocabulary. That there are multiple forms of semantic modifications implies that medical students are already developing a repertoire of strategies for patient education, something that several medical students commented was important to them. Further study of the types of semantic modification may reveal more and less effective strategies within this communication move. Given that semantic modification may be key to increasing patients' health literacy, which has effects for patient compliance (Nutbeam, 2000), teaching key strategies in medical school may improve treatment outcomes.

Additionally, a number of substantial increases on the Vocabulary Knowledge Scale involved a clarification request. This use of a clarification request falls into Laufer and Hulstijn's (2001) category of search, in which a learner must use resources to find the meaning of a word, and this may explain why it is integral to vocabulary learning in a clinical environment. This suggests that patients can take an active role in their learning of lexical items during a medical interview if they are willing to exert agency in a medical situation, something they may need training or encouragement to do so if they are from a background in which medical interactions take a more paternalistic, doctor-centered form as described in Pomerantz and Rintel (2004). To be proactive in encouraging this, medical professionals must overtly explain to patients that they

appreciate clarification requests, structure their interviews to allow space for clarification requests, and use comprehension checks to make sure that patients are comprehending the discussion. The fact that medical students welcomed clarification requests but did not always follow up on a perceived difficult topic because of the lack of one reflects an asymmetry in the doctor-patient relationship, possibly because of the more paternalistic stance described in Pomerantz and Rintel (2004). This asymmetry combined with the medical students' lack of training in use of comprehension checks potentially explains the relatively low level of vocabulary learning throughout a task designed to optimize acquisition of new lexical items, in some contrast with the findings of de la Fuente (2006). Another possible explanation is that the relatively free-form of the task did not ensure that each word appeared, and this, cross-referenced with the fact that some EAL speakers came in with some knowledge of medical vocabulary, did not create the number of opportunities for negotiation that would have precipitated greater gains. Some of the disparity in results stems from the methodology of de la Fuente (2006), in which learners were excluded if they already knew the words.

Confirmation checks, while very frequent during the interviews, did not appear to be linked to vocabulary gains and likely play a different role in discourse as a form of acknowledgement or assessment of patient information rather than a method of supplying new lexical information. This is consistent with the initiation-response-evaluation format described by ten Have (1991) as asymmetrical questioning, in which a doctor begins with a question or request for information, the patient provides a response in the format set forth by the doctor, and the doctor takes a "third turn" to assess the patient's response. In fact, this evaluation also fits into Laufer and Hulstijn's (2001) framework, although in this case it is partially through the medical provider that the learner evaluates his or her response.

Overall, Long's (1996) Interaction Hypothesis of negotiation for meaning appears to be applicable to medical contexts, particularly with EAL speakers, but likely with native speakers of English also.

Implications

As Groopman (2007) says, "there is nothing in biology or medicine that is so complicated that, if explained in clear and simple language, cannot be understood by any layperson" (p. 174). However, the unrepaired communication breakdowns suggest that medical students do not always have the resources to use this clear and simple language, although students did acknowledge attempting to gauge the difficulty of certain lexical items. Consciousness raising activities and training in the level of vocabulary medical professionals are using with patients may improve this situation. Physician education should especially focus on the use of effective comprehension checks, given that these were the least frequently used negotiation move and appeared to create capacity for greater patient education. The observation of some of the medical students that many strategies can be used with patients regardless of primary language underscores the need for further training in communication in American medical schools. A systematic reform of the curriculum to create implementation of language strategies in coursework that is given equal weight to the biological sciences would better prepare medical students to communicate with diverse patients.

For the EAL patient, the implication of the choice to gauge importance and difficulty suggests that further training in assessment of necessary information within a medical interview may build the EAL speaker's health literacy to allow better retention of critical information. Supplying patients with a note-taking sheet much like the exit questionnaire (Appendix A) is one possibility. Additionally, patient education in the structure of the American medical system,

including the more patient-centered approach, may prepare EAL speakers to effectively engage their health care provider.

For EAL teachers, the implications are that tasks, when structured appropriately, may create opportunities for students to discuss specialized vocabulary, particularly when teachers group students of varying ability levels and provide sufficient background information. Direct instruction in use of negotiation moves and semantic modification may aid in this process, although based on the data in this study, these will occur naturally throughout the task. The fact that participants managed to learn high-level specialized vocabulary with no explicit instruction suggests that task-based activities in an expert-novice structure, when combined with explicit instruction, may be an effective method of teaching vocabulary.

Limitations

This study faces limitations in a few areas. The first is the lack of actual medical need for the role-plays; language used may not reflect language behavior between patients and doctors, particularly because motivation for the interaction is not a potentially life-threatening illness. In fact, one EAL speaker commented on the difficulty of completing the task because it was not authentic and therefore he was missing information he needed to accurately and consistently answer his medical student's question. Another factor possibly affecting amount of negotiation is a practice effect related to participants' comfort with the task, vocabulary test, or exit form rather than lexical or semantic issues.

Additionally, the stimulated recall interviews were conducted with relatively little structure, such that at times they may have also encouraged participants to speculate on why they did something or to reflect further than a standard stimulated recall would. In future studies, I would standardize these interviews.

One significant limitation is the lack of interrater reliability. Due to constrained resources, it was not possible to find a second rater, but this does signify that results may differ when a second rater studies the data.

One further shortcoming is that of the participant pool. Several of the medical students had extended international experience through travel, contact with international students and scholars, or family members who resided in other countries. This likely translates to more practice in conversation with EAL speakers than a typical medical student might have. To effectively mitigate this problem, a random sampling or entire medical school class would have to be recruited, which was infeasible for this study. The EAL speakers, also, came from a variety of backgrounds and were of widely varying skill levels, as shown in their pre-role-play VKS scores and their class levels.

Directions for Future Research

A logical next step for the study of negotiation in medical interaction would be to train medical professionals in negotiation moves and semantic modification using an experimental format in which half of the participants receive the training before a simulated interview and half receive it afterward. This study should also be replicated with practicing physicians to determine whether medical students gain additional strategies throughout their clerkship years and residency.

It is important to note that while non-osteopathic physicians are beginning to move to a more patient-centered model, the medical students in this study are studying in an osteopathic program, a field in which patient-centeredness and holistic medicine have always been more highly valued. Therefore, this study should be replicated with allopathic medical students to ensure that the results are generalizable.

APPENDICES

Appendix A

Dyad#____

Medical Student Second Language Experience Questionnaire

Background Information

Age:

Year in School (Please circle): First Second

Gender:

Home Country:

Please complete the following questions as honestly as you feel comfortable.

1. Does your family speak a language other than English at home? If so, briefly describe your experiences.

2. Describe any second or foreign language learning you have done. Include study abroad experiences.

3. Please describe any other meaningful or prolonged relationships with speakers of English as an additional language.

Appendix B

Dyad#___
Visit#___

Medical Chart Note

Patient Name:
Age:
Visit Date:

Chief Complaint:

Subjective:

History of Illness:

Description of Symptoms:

Palliation (what makes it better) –

Provocation (what makes it worse) –

Quality (sharp/dull) –

Radiation (does it move) –

Severity (Pain from 1-10) –

Timing (when it occurs) –

Associated Symptoms –

*Do **NOT** try to complete a physical exam or take any vital signs.*

Assessment:

(Please circle a diagnosis)

GERD/Heartburn Angina

Plan:

Recommended diagnostics, medications and lifestyle changes

Appendix C

Dyad#___
Visit#___

Patient Discharge Form

Patient Name:
Age:

Visit Date:

Chief Complaint:

Diagnosis (circle one):

Heartburn/GERD Angina

Medications Prescribed (circle all that apply):

Aspirin 81 mg Antacid (as needed)

Lopressor 100/25 mg Nexium 20 mg

Tests Ordered (circle all that apply):

Stress Test X-ray with contrast

Recommended Lifestyle Changes:

Additional Discharge Instructions:

Date of Next Visit:

Appendix D

Diagnosis and Treatment Guide

You will be determining whether your patient has angina or severe heartburn/ gastroesophageal reflux disease (GERD). Here is some information about the two diseases to guide you in your decision. Once you have made your diagnosis, select appropriate treatments from list below.

	Angina	**Heartburn/GERD**
Symptoms	• Chest pain (center of chest) lasting a few minutes • Tightness/pressure/squeezing in chest • Pain that worsens with exertion, stress, anxiety • Nausea • Shortness of breath • Fatigue • Dizziness	• Chest pain or burning lasting a few hours • Pain that worsens when bending over or lying down • Vomiting • Coughing • Throat pain or burning • Hoarseness • Difficulty swallowing • Breathing problems
Medication	• Aspirin - baby aspirin 81 mg daily • *Lopressor (beta blocker) - 100/25 mg daily	• Antacid (as needed) • *Nexium (acid blocker) – 20 mg daily
Lifestyle changes	• Quit smoking • Lose weight • Eat small meals • Decrease saturated fats/cholesterol • Avoid overexertion • Develop a safe exercise plan	• Quit smoking • Avoid trigger foods (garlic, onions, caffeine, alcohol) and fatty foods • Elevate head of bed • Maintain a healthy weight • Relieve stress and anxiety
Tests	• Stress test	• X-ray with contrast
Discharge instructions (Call immediately if you)	• Have chest pain lasting longer than 20 minutes, without exertion, or with increasing severity or pain radiating to arm	• Have severe pain or pain radiating to arm, or if you have blood in vomit or stool.

Like in many cases, you will be able to choose a working diagnosis, but you will also order further tests to confirm your decision. Give patients instructions on obtaining medications and having diagnostic testing performed. Patients will not be given paper prescriptions, explain that you will have the script "called in." Also inform them to call your office if duration or severity of symptoms worsens.

Appendix E

Medical Student Instructions For Interview I

Today you will be conducting two patient interviews with a person who speaks English as an additional language.

Necessary information for this task is provided for you in your folder.

For each interview you are expecting to chart the patient encounter. You may have some familiarity with this type of note from your medical school coursework. (Hints are provided on the sheet.)

You will NOT be completing a physical exam NOR will you be taking any vital signs.

You will be assessing the patient and determining a diagnosis by choosing between two predetermined diseases. You will also formulate and discuss a treatment plan with your patient. You will be given time before the first interview to review the symptoms and treatments of each disease.

After each interview, you will also fill in a discharge form with all the instructions you would expect to give to your patient about their diagnosis and treatment.

You will receive further instructions after the first interview.

Appendix E

Medical Student Instructions for Interview II

You will be seeing your English as an Additional Language patient for their "return visit."

Using another physician's note form, reassess the patient's symptoms. Listen for new or worsening symptoms.

Again, you will NOT be conducting a physical exam NOR will you be taking any vital signs.

The medical tests ordered from the first encounter all came back inconclusive.

Using the new information gathered in this interview, make a diagnosis from the predetermined disease choices as given in the first interview. (This may be changing the diagnosis or confirming the initial diagnosis.)

Regardless of diagnosis, discuss the treatment plan with the patient.

After the interview, complete another discharge form and submit all materials to the research team.

Appendix F

Dyad#_____

EAL Background Information Form

Age: _____

Home Country: _____

Gender (Circle one): Male Female

Appendix G

Vocabulary List
Listed from Least to Most Frequently Used

Target Words

Angina
Antacid
Hoarse
Esophagus
Saturated fat
Heartburn
Cardiac
Pharmacy
Aspirin
Cholesterol
Inflammation

Non-target Words

Constipation
Tetanus
Lipitor
Adderall
Numbness
Discomfort
Respiratory
Arthritis
Blood pressure

Appendix H

Vocabulary Knowledge Scale

Choose the sentence that fits best for each word in the list.

1. I don't remember having seen or heard this word before.
2. I have seen or heard this word before, but I don't know what it means.
3. I have seen or heard this word before, and I think it means _____ (synonym).
4. I know this word and it means _____ (synonym).
5. I can use this word in a sentence: _____.

Appendix I

Symptoms Given to EAL Speakers for Interview I

EAL speakers are given either Situation A for the first interview and Situation A2 for the second, or Situation B for the first and B2 for the second.

Situation A

You will now act out a role play between you and a medical student (the medical student is acting as a doctor). You feel sick. Here are the things you want the doctor to know. The doctor will ask you questions to try to find out what is wrong so he or she can help you. If the doctor asks a question you don't know the answer to, you can say "I don't know" or ask him or her to tell you more.

Your chest hurts. It has been hurting for 3 months.
The pain lasts a long time.
You throw up about one time every week.
You cough.
Your chest hurts more when you bend over to pick up things on the floor.
This happens at least three times every week.

Situation B

You will now act out a role play between you and a medical student (the medical student is acting as a doctor). You feel sick. Here are the things you want the doctor to know. The doctor will ask you questions to try to find out what is wrong so he or she can help you. If the doctor asks a question you don't know the answer to, you can say "I don't know" or ask him or her to tell you more.

Your chest hurts. It has been hurting for about 5 weeks.
The pain does not last very long.
Your chest hurts more when you walk up the stairs or try to lift heavy things.
Your stomach is upset or feels bad a lot.
Sometimes it is hard to breathe.
You feel dizzy.

Appendix I

Symptoms Given to EAL Speakers for Interview II

Situation B2

You will now act out a role play between you and a medical student (the medical student is acting as a doctor). You feel sick. Here are the things you want the doctor to know. The doctor will ask you questions to try to find out what is wrong so he or she can help you. If the doctor asks a question you don't know the answer to, you can say "I don't know" or ask him or her to tell you more.

Your chest hurts. It has been hurting for about 8 weeks.
The pain lasts as much as 3 hours.
You throw up about one time every week.
You cough.
Your throat hurts.
Your chest hurts more when you bend over to pick up things on the floor.
The pain is worse at night.
This happens at least three times every week.
You tried taking pain medicine (like aspirin) and it doesn't help.

Situation A2

You will now act out a role play between you and a medical student (the medical student is acting as a doctor). You feel sick. Here are the things you want the doctor to know. The doctor will ask you questions to try to find out what is wrong so he or she can help you. If the doctor asks a question you don't know the answer to, you can say "I don't know" or ask him or her to tell you more.

Your chest hurts. It has been hurting for about 4 months.
Your chest hurts more when you walk up the stairs or try to lift heavy things.
The pain lasts for 5 to 10 minutes.
You feel tired more.
Sometimes it feels like something heavy is pushing on your chest.
Your stomach is upset or feels bad a lot.
Sometimes you throw up.
Sometimes it is hard to breathe.
You feel dizzy.

Appendix J

Dyad#___
Visit#___

Questions about Your Doctor's Visit

The researcher will ask you these questions. Please answer as much as you remember. Do not worry if you can't answer some of the questions.

1. Why did you come to see the doctor today?

2. What did the doctor say was wrong?

3. What medicines did the doctor tell you to take? How often do you need to take them? Where do you get this medicine?

4. What did the doctor tell you to do besides take medicine? What can you do at home to feel better?

5. What tests did the doctor tell you to get?

6. When do you need to come back to see the doctor again?

7. (Please finish this sentence.) You should call your doctor right away if:

Appendix K

Coding Categories taken from Eckerth (2009)

Negotiation took the form of:

CLARIFICATION REQUESTS - a request for further information from an interlocutor about a previous utterance.

For example:

Med5: Which might've which can contribute to the vomiting and to the pain in your chest
EAL5: I'm sorry what is esophagus?

Here EAL5 asks Med5 to clarify a lexical item in the previous utterance.

COMPREHENSION CHECKS - the speaker's query of the interlocutor(s) as to whether or not they have understood the previous speaker utterance(s).

For example:

Med8: And prevent any um clotting so that you don't get second another consequence could be a stroke, so we wanna eliminate that problem. Um but I know this kinda is like a lot to take in so can you kind of repeat back to me kind of what you understand what I just told you?

Med8 uses a comprehension check in which she requests that EAL8 explain to her what they have discussed to make sure that he understands.

CONFIRMATION CHECK - the speaker's query as to whether or not the speaker's (expressed) understanding of the interlocutor's meaning is correct.

For example:

Med3: Okay. Do you think um can you think of anything that you were doing differently three months ago when it started?
EAL3: Mm hm
Med3: Than um than than when you didn't have it.
EAL3: No.
Med3: No you don't think you were doing anything differently?
EAL3: No no.

In this example, Med3 asks EAL3 if she has correctly understand EAL3's answer to her question.

An additional non-negotiation coding category was:

SEMANTIC MODIFICATION through synonym, paraphrase, or example.

Semantic modification through example:

Med11: Okay. Does it hurt anywhere else? When you get that pain there? Does it anything any other arms or your face or?

Med11 provides EAL11 with parts of the body she feels might be affected to make it easier for EAL11 to answer.

Semantic modification with a paraphrase:

Med11: Um so I'm gonna give you a scale of one to ten. One being you feel great no pain at all and ten being the worst chest pain that you've had so far, um or the worst the worst pain you can imagine I suppose. Um how how badly does it does your chest hurt? On a scale of one to ten?

Here Med11 clarifies what she means when she describes a ten on the pain scale by paraphrasing herself.

Semantic modification with a synonym:

Med11: No no. No specific time? Okay. Well it sounds like um what you're having what we call chest pain
EAL11: Mm
Med11: Um is something or we call it we say angina.

In this example, Med11 makes it clear that chest pain and angina are synonyms.

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