Communication Strategy Use in Performing Informal Debate Tasks by Chinese English-as-an-Additional-Language Graduate Students in Electrical Engineering and Education

by

Ci-Hang Zhou
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Supervisory Committee

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Abstract

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In the field of second language acquisition, there are few studies focusing on Chinese English-as-an-additional-language (EAL) graduate students' communication strategy use, strategy use across different disciplines, and the relationships between communication strategy use and learners' speaking performance. To fill the gap identified in the literature reviewed, this study examined the communication strategies used by 11 Chinese EAL graduate students from the Departments of Electrical Engineering and Education in the completion of two informal debate tasks with a questionnaire adapted from Nakatani's (2006) Oral Communication Strategy Inventory and two post-task communication strategy recall questionnaires. Results from the study indicate that participants used eight categories of communication strategies, with *fluency-oriented strategies* the most frequently used strategy category and *translation* the least frequently used strategy category. Advanced English-language proficiency level learners used more *social affective*, *message reduction and alteration*, and *negotiation of meaning strategies* than learners at high-intermediate proficiency levels, to a degree that was statistically significant. No significant difference was identified in the overall communication strategy use but in one instance of individual strategy use (i.e., clarifying stance) across two disciplines. Significantly positive relationships were identified among certain categories of communication strategies (i.e., *social affective*, *negotiation of meaning*, *accuracy-oriented strategies*, and *message reduction and alteration strategies*), individual

strategies (i.e., turn yielding, exemplifying, clarifying meaning, correcting others, referring to notes for accuracy/fluency, message reduction and alteration), and participants' speaking performance. In addition, the retrospective results from the post-task strategy recall questionnaires suggest that participants in this study are not fully aware of their communication strategy use. The findings in this study can inform language practitioners' of communication strategies used by Chinese graduate students majoring in Electrical Engineering and Education. Implications and future research directions are discussed in light of the findings derived from the present study that can further contribute to research about EAL learners' communication strategies used at the graduate level.

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Chapter 1: Introduction

1.1 Background

Nowadays, an increasing number of Chinese students pursue higher education in North American countries. Take Canada as an example, according to a report published by Canadian Bureau for International Education in February 2013, the number of Chinese students has increased from 20,371 to 80,627, accounting for 26.5% of international students in Canada since 2001. According to an annual report[1] by the Chinese Education Bureau in 2012, 30% of these Chinese students are graduate students.

Research with English-as-an-additional-language (EAL) students studying at North American universities has indicated that Chinese graduate students experienced various challenges in their academic studies (e.g., Huang, 2004, 2005; Myles, Qian & Cheng, 2002; Wan, 2001), such as language proficiency, cultural differences, and financial difficulties. Among them, speaking challenges have been pointed out as one of the top concerns for Chinese students in North American classrooms (e.g., Sun & Chen, 1999; Wan, 2001).

In the field of second language acquisition (SLA), communication strategies have been acknowledged to help learners to compensate for their target language deficiency (e.g., Bialystok, 1990; Canale, 1980; Dörnyei, 1995; Faucette, 2001; Oxford, 2001). More specifically, second language (L2) learners can improve the effectiveness of speaking by developing their ability to use certain communication strategies (e.g., Dörnyei, 1995; Huang & Naerssen, 1987; Rost & Ross, 1991). Since the 1970s, large numbers of studies have been conducted in the field of communication strategies due to their potential

[1] http://www.eol.cn/html/lx/baogao2013/page1.shtml

benefits for L2 learners. Early studies in the field of communication strategies (e.g., Faerch & Kasper, 1983; Selinker, 1972; Tarone, 1981) generally focused on the definitions and classifications of communication strategies. Later on, researchers have investigated variables in the use of communication strategies that may affect the choices of strategies, such as gender (e.g., Baker & MacIntyre, 2003; Haastrup & Phillipson, 1983; Li, 2010; Tarone, 1977), language proficiency (e.g., Chen, 1990; Dörnyei, 1995; Paribakht, 1985; Tan, Nor, & Mohd, 2012; Yang & Gai, 2010; Yoshida-Morise, 1998), and motivation (e.g., Brown, 2007; Dörnyei, 1998; Guhlemann, 2011; MacIntyre & Noels, 1996; Schumann, 1986).

The past three decades have also witnessed a growth of studies on Chinese students' use of communication strategies (e.g., An & Nathalang, 2010; Chen, 1990; Dai & Shu, 1994; Gao, 2000; Wang, 2000; Yang & Gai, 2010). However, these studies were either reviews of communication strategy research or empirical studies focusing on the general communication strategies employed by Chinese undergraduate students in the local context. Among these studies, little attention has been given to Chinese graduate students' use of communication strategies in an English-speaking country. Furthermore, to my knowledge, few previous studies (e.g., Huang, 2013) have ever focused on the relationships between communication strategy use and learners' speaking performance. Moreover, limited studies have examined the relationships between communication strategy use and disciplines. Based on the literature reviewed, an in-depth study of Chinese graduate students' use of communication strategies in an English-speaking country is needed to fill these research gaps.

Electrical Engineering (EE) is a popular discipline among Chinese students who study science overseas. According to "People's Daily Online,"[2] engineering majors accounted for the largest number out of all the Chinese graduate students who studied abroad in 2010. From the literature reviewed, it can be concluded that speaking is still challenging for most of EAL students majoring in EE (e.g., Batley, 1998; Chen, 2006; Kassim & Radzuan, 2008; Myles, 2009).

Meanwhile, Education (Edu) is one of the popular options for Chinese humanities students to pursue higher education overseas. As seen in Dunn's (2006) study, international students majoring in arts and humanities generally have better English proficiency than those in science and engineering. I suspect that Chinese graduate students in the Department of Education in North America might have relatively high English language proficiency levels. A review of the graduate admission requirements of this major in North America indicates that a good command of the English language is essential for EAL applicants.

As previously mentioned, there have been insufficient studies of Chinese graduate students' use of communication strategies across different disciplines. Considering the potential differences of English proficiency levels between Chinese EE and Edu graduate students in North America, I select these two disciplines as the foci of my study. Although learners from both disciplines have fulfilled graduate admissions requirements, they might have reached different levels of proficiency in English. Furthermore, the interactive nature of communication suggests that it is worthwhile examining the communication strategies used by learners with different proficiency levels in performing

[2] http://english.peopledaily.com.cn/90001/90782/7120178.html

specific tasks (e.g., Rubin 1975; Stern 1975). In the field of second language acquisition, debate is a common interactive task type to elicit communication strategies, as learners need to engage with others during the debate. In this study, two informal debate tasks (without any control of the debate structure and participants' turns) are included as the task type since the structure of formal debate tasks may prevent participants from expressing themselves and influence the reliability of the results of participants' oral production and communication strategy use.

In sum, the present study was designed to compare the types and frequency of communication strategy use between Chinese graduate students majoring in EE and Edu in a North American university. First, this study identified and classified the communication strategies used by participants after they completed two informal debate tasks. Second, I analyzed and compared the use of communication strategies between two proficiency levels (advanced and high-intermediate levels) and two disciplines (EE and Edu). Finally, this study also addressed the concern about the relationships between participants' communication strategy use and their speaking performance, indicated by the speaking scores in the two informal debates.

This thesis includes five chapters. Following the introduction chapter, chapter two describes a review of the existing relevant research for this study, such as the definitions and classifications of communication strategies as well as key variables (i.e., language proficiency, disciplines, and task types) related to the use of communication strategies. Four research questions are proposed at the end of this chapter. In chapter three, participants' characteristics, data collection, and data analysis procedures are introduced. In chapter four, both qualitative and quantitative results to answer the four research

questions are presented. In chapter five, the discussions of results, empirical, methodological, and pedagogical implications, limitations, and future directions are reported. Finally, the conclusion chapter presents the summary of the work.

Chapter 2: Literature Review

In this chapter, previous conceptual frameworks and empirical studies related to communication strategies are reviewed. The chapter begins with the definitions and classifications of communication strategies. Next, it focuses on the key variables related to the use of communication strategies in this study. After that, empirical studies on Chinese students' use of communication strategies are reviewed. Finally, four research questions of this study are presented.

2.1 Definitions of Communication Strategies

Even though many definitions have been proposed regarding the communication strategies of L2 learners, scholars have not yet reached a consensus on a universal definition (An & Nathalang, 2010).

The term "communication strategies" was first coined by Selinker in 1972 in a theory to explain processes involved in interlanguage[3]. Communication strategies were regarded as one of the five processes which directly affected the output of the interlanguage system: language transfer (i.e., interlanguage transferred from the first language), transfer-of-training (i.e., interlanguage derived from the way in which the learners were taught), strategies of second-language learning (i.e., learning strategy), strategies of second-language communication (i.e., communication strategy), and overgeneralization of target language linguistic material (i.e., overgeneralization of target language rules and semantic features). In 1983, Corder defined communication strategies as "a systematic technique employed by a speaker to express his or her meaning when faced with some

[3] The type of language (or linguistic system) used by second- and foreign-language learners who are in the process of learning a target language.

difficulty" (p. 16). According to Corder, communication strategies are employed when learners face linguistic problems.

Tarone (1981) observed the interactive trait of communication strategies and regarded "interaction" as one of the important parameters in defining communication strategies. Tarone held that communication strategies were utilized to compensate for the gap between learners' native language and the target language. The main characteristic of the interactive trait of communication strategies was negotiation of an agreement on meaning. She considered communication strategies to be interactional phenomena: "a mutual attempt of two interlocutors to agree on a meaning in situation where requisite meaning structures are not shared" (p. 288).

Faerch and Kasper (1983) adopted a psycholinguistic approach and recognized communication strategies as being a part of verbal plans, "potentially conscious plans for solving what to an individual presents itself as a problem in reaching a particular communicative goal" (p. 36). The definition focused on the learner or, more precisely, on the problems experienced by the learner in speech reception and in planning and executing speech production. The definition conceived communication strategies as "mental plans implemented by the L2 learner in response to an internal signal of an imminent problem, a form of self-help that does not require support from the interlocutor for resolution, such as asking for help and negotiating for meaning" (p. 36). However, Faerch and Kasper's (1983) definition of communication strategies only focused on L2 learners' self-initiated solution to linguistic problems and it neglected the important role of assistance provided by the interlocutor in communication.

Building on Faerch and Kasper's (1983) work, Ellis (1986) believed that communication strategies were psycholinguistic plans. Communication strategies existed as part of language users' communicative competence (i.e., the ability to use language to convey and interpret meanings). They were potentially conscious thoughts and behaviours and served as substitutes for production plans, which the learner was unable to implement.

According to Bialystok (1990), however, communication strategies might be used equally well in situations where no problems had arisen, as was the case when a native speaker gave a road description to a stranger using a long definition of a word instead of the actual word. He also pointed out that although researchers offered various definitions for communication strategies, these definitions proposed up to this point seemed to share three main features: *problematicity, consciousness*, and *intentionality*. *Problematicity* included strategies that were adopted when there was a problem that might interrupt communication. *Consciousness* referred to either the learners' awareness of the employment of a strategy or the awareness of how that strategy might lead to an intended effect. *Intentionality* referred to the learner's control over those strategies so that particular ones might be selected from a range of options and deliberately applied to achieve certain effects.

Despite different researchers' definitions of communication strategies, there is one common feature shared by most definitions that learners adopt communication strategies when there is a gap between their linguistic competence and the performance of language tasks. This gap can be filled either by the learner him/herself by adopting certain communication strategies, such as paraphrasing or by the mutual efforts of the learner

and the interlocutor through strategies, such as negotiation. With the interactive feature of communication in mind, the term communication strategies in this study is defined as "strategic behaviours that learners use when facing communication problems during interactional tasks (Nakatani, 2006, p. 152). "

2.2 Classifications of Communication Strategies

As there is no consensus on the definitions of communication strategies, there are no generally agreed upon typologies of communication strategies, either. Various typologies have been proposed by Tarone (1981), Faerch and Kasper (1983), Bialystok (1990), and Nakatani (2006), among others.

Tarone (1981) classified communication strategies as follows:

1. Paraphrase: e.g., approximation, word coinage, and circumlocution
2. Transfer: e.g., literal translation and language switch
3. Asking for assistance: e.g., asking for assistance from the interlocutor
4. Mime: e.g., nonverbal strategies
5. Avoidance: e.g., topic avoidance and message abandonment

The advantage of Tarone's classification is that it is concise and easy to understand. However, the distinctions of some strategy types seem ambiguous. For instance, word coinage in the category of paraphrase could be under the category of transfer as well. Besides, as pointed out by Yang and Gai (2010), it fails to provide an explanation for how the strategy might have operated to achieve the communication goal. Furthermore,

Tarone's classification seems to be just a list of various communication techniques, which fail to reflect the role communication strategies play in the communication process.

Faerch and Kasper (1983) adopted the criteria of process or plan, conscious or unconscious, and problem-oriented or problem-free to define communication strategies. They tended to believe that communication strategies were solutions to an individual's problems of processing rather than the learner's and interlocutor's mutual problems. Based on this, they categorized the communication strategies into two general strategies: avoidance strategies and achievement strategies. When learners approach problems, they either avoid the problems or take efforts to solve the problems.

Avoidance strategies A learner with limited L2 resources may choose to alter or reduce his/her communicative goal to avoid problems of form or function. This may involve topic avoidance or message abandonment, or restricting communication to safe choices.

Achievement strategies Achievement strategies explore alternative ways of executing particular forms or functions where the learner attempts to solve the problem he or she confronts. Achievement may be affected by *non-cooperative* strategies and *cooperative* strategies. On the one hand, learners attempt to adjust their linguistic resources and to tackle the problem directly by using *non-cooperative* techniques, namely using strategies of code switching, interlingual transfer, and miming. On the other hand, they can adopt *cooperative* strategies, such as appealing for assistance.

Bialystok (1990) classified communication strategies into two types according to the differences of language: L1-based strategies, such as linguistic switch, foreignizing, and

transliteration, and L2-based strategies, such as substitution, description, and word coinage. The criteria of Bialystok's classification were based on the source of information that communication strategies relied on. The advantage of Bialystok's classification is that the function of communication strategies is emphasized to fill the gap in the knowledge of a second language. According to Bialystok (1990), "the familiar ease and fluency with which we sail from one idea to the next in our first language is constantly shattered by some gap in our knowledge of a second language" (p. 1). The forms of these gaps could be a word, a structure, a phrase, a tense marker or an idiom. The attempts to overcome these gaps were described as communication strategies. The limitation of her classification is neglecting the attribution of avoidance strategies and excluding this type of strategy in her classification. The appropriate employment of avoidance strategies can help learners carry out their communicative goals, keep the learning channels open, and draw comprehensible input, which are beneficial to the development of communicative competence. Meanwhile, overuse or misuse of avoidance strategies might lead to fossilization of learners' interlanguage. Therefore, avoidance is an important issue for second language acquisition research (Ellis, 1994). Unfortunately, Bialystok neglected the importance of avoidance communication strategies.

As pointed out by Nakatani (2006), most previous studies have generally categorized communication strategies into two types: *achievement or compensatory strategies* and r*eduction or avoidance strategies*. There has been little attention paid to examining how learners use strategies with their communication peers in actual English-as-a-foreign-language (EFL) classrooms. To fill this gap, Nakatani conducted a study to develop a reliable and valid questionnaire of oral communication strategies employed by Japanese

EFL students. Specifically, there were eight categories of strategies with 32 items for coping with speaking problems and seven categories with 26 items for coping with listening problems. The eight categories of communication strategies dealing with speaking problems included 1) *social affective strategies*, which were concerned with learners' affective factors in social contexts, such as controlling their anxiety and encouraging themselves to use English or to risk making mistakes; 2) *fluency-oriented strategies*, which were related to fluency of communication, such as paying attention to the rhythm, intonation, pronunciation, and clarity of speech; 3) *negotiating for meaning while speaking strategies*, which were related to the participants' attempts to negotiate with their interlocutors, such as checking listeners' understanding of their intentions, repeating the speech, and giving examples; 4) *accuracy-oriented strategies*, which were concerned with a desire to speak English accurately, such as paying attention to forms and grammatical accuracy of the speech; 5) *message reduction and alteration strategies*, which learners might use to avoid a communication breakdown by reducing an original message, simplifying their utterances, or using similar expressions that learners could use confidently; 6) *non-verbal strategies while speaking*, which involved learners using eye contact, gestures or facial expressions to give hints or help the listener guess what they wanted to say; 7) *message abandonment strategies*, which involved learners giving up their attempt to communicate when they faced difficulties executing their original verbal plan; and 8) *attempts to think in English strategies,* which required learners to think as much as possible in the foreign language during actual communication.

The advantage of Nakatani's (2006) classification is that he focused on the interactive characteristic of communication in the actual EFL classroom context. He further

classified communication strategies into strategies dealing with listening and speaking problems L2 learners encountered during communication. As the interactive nature of communication strategies is emphasized in my study, Nakatani's (2006) classification of communication strategies was therefore adapted. In addition, as this study focuses on the strategies coping with speaking problems, only a modified version of speaking strategies within Nakatani's Oral Communication Strategy Inventory (OCSI) was used.

2.3 Key Variables Related to the Use of Communication Strategies

This study is designed to specifically investigate some of the factors that may come into play in the use of communication strategies in the completion of informal debate tasks. The following section provides a brief review of the following key variables that are related to the study: language proficiency, disciplines, and task types.

2.3.1 Language proficiency

A learner's language proficiency is a potentially influential factor in the choice of communication strategies. Paribakht (1985) conducted a study on strategic competence and language proficiency. Two groups of Persian ESL students at the intermediate and advanced levels and a group of English-as-a-first language speakers as the comparison group took part in a concept-identification task. He reported that *the linguistic approach*, which exploited the semantic features of the target items, was used relatively more often by the English-as-a-first language speakers and the advanced students than by the low-proficiency students, whereas *the conceptual approach*, which exploited the speaker's knowledge of the world and of particular situations, was adopted proportionally more by low-proficiency group than by the other two groups. In addition, in solving

communicative problems at the earlier stages of L2 learning, learners drew more often on other knowledge resources, such as world and paralinguistic knowledge to compensate for the limitations of their target language knowledge than they did at more advanced stages of their L2 learning. Paribakht's design is problematic from a methodological point of view. The limitation of Paribakht's study is that such a controlled task (the concept-identification task) might not elicit as enough data as the interactive communication does in second language classes.

Liskin-Gasparro (1996) designed a study to analyze the use of communication strategies, particularly circumlocution, by speakers at the high-intermediate and advanced levels of oral proficiency in Spanish. A total of 17 high-intermediate level speakers and 13 advanced level speakers participated in the oral proficiency interviews. The study indicated that the high-intermediate level speakers favoured L1-based strategies while advanced level speakers relied on a range of L2-based communication strategies that included, but was not limited to, circumlocution. However, the generalizations about communication strategy use made by Liskin-Gasparro might be tempered by the fact that this study did not provide a definition of circumlocution in the guidelines for raters. The difference in interpretation of this term between raters may influence the reliability of the findings.

Nakatani (2006) conducted a study to develop the OCSI (a self-reported questionnaire used to assess learners' communication strategy use). Three phases were involved in the study. During the first stage of the study, an open-ended questionnaire was administered to 80 students to identify their general use of oral communication strategies. During the second phase, 400 university students were involved in an initial exploratory factor

analysis in order to determine the number of strategic variables. In the last phase, 400 Japanese learners were included for the final factor analysis as well as the construction of a stable self-reported questionnaire. The resulting OCSI included eight categories of strategies for coping with speaking problems and seven categories for coping with listening problems during communication.

The applicability of the OCSI was tested in a communicative test for 62 female Japanese students, and the validity was displayed through the correlation analysis with Oxford's Strategy Inventory for Language Learning (SILL). The SILL represents a set of language learning strategies for general purposes across four skills (listening, speaking, reading, and writing), so this questionnaire is not intended to assess strategies for oral communication for any specific tasks. However, it has been administered to large populations in different countries around the world and the instrument's reliability and validity have been examined through research (e.g., Hsiao & Oxford, 2002). Therefore, Nakatani used the SILL to examine the validity of the OCSI. There was a significant correlation between the total use of SILL and the total use of strategies for coping with speaking problems ($r = .62$, $p < .05$). Students who reported frequent use of the SILL items also tended to report frequent use of OCSI items.

Overall, students with high proficiency reported more use of the following three strategy categories than the low-proficiency level learners: social affective, fluency-oriented, and negotiation of meaning while speaking strategies. They were aware of using strategies for controlling affective factors and keeping the conversation flowing. The low-proficiency students relied more on message abandonment strategies, which did not

correlate with categories on the SILL and were regarded as learners' negative behaviours for coping with speaking problems.

Though a significant difference was found in students' use of communication strategies between two proficiency groups, the participants for examining the applicability of OCSI are relatively low-proficiency level speakers based on their role-play activities. As such, this design may not be applicable to the high-intermediate and advanced level learners in my study.

In conclusion, previous studies have found that speakers of different language proficiency levels tended to choose different types of strategies in communication. As Chinese graduate students have fulfilled the university admission requirements, most of their language proficiency levels are relatively high (i.e., with a minimum IELTS[4] score of 6.5). Therefore, this study will only recruit high-intermediate and advanced level students to investigate the possible differences of communication strategies between these two groups.

2.3.2 Disciplines

The relationships between academic subject majors and communication strategy use are less discussed. However, there have been a few studies regarding the relationships between learning strategy use and disciplines. As several researchers (e.g., Rubin, 1987; Stern, 1992) have classified communication strategy as one type of learning strategy, it is worthwhile reviewing the relationships between learning strategy use and learners' disciplines, which is likely to be relevant for examining the relationships between communication strategy use and disciplines. Although there were limited studies

[4] International English Language Testing System

concerning the choice of learning strategies related to disciplines, these few studies indicated that students across different subject majors tended to choose different learning strategies. Chang's (1991) study of Chinese and Taiwanese students in the United States reported more strategy use among ESL learners in humanities and social sciences than learners in sciences. Mochizuki's (1999) study of 157 Japanese EFL university learners reported that academic subject was one of the factors associated with the choice of learning strategy use. English major students used compensation strategies, social strategies, and metacognitive strategies more frequently than science major students. However, it seems difficult to generalize Mochizuki's findings as there is an imbalance of participants from only two majors, with 44 second-year English major students and 113 first-year science and agriculture major students. Peacock and Ho's (2003) study avoided such problems and investigated the use of learning strategies by 1,006 university English for Academic Purposes (EAP) class students across eight disciplines. Except for a large percentage (34%) of business students and a slightly small percentage (17%) of computer studies students, there is an even number of participants in the other six disciplines. Furthermore, in addition to using Oxford's SILL, in-depth interviews were also conducted to explore why students did or did not use certain strategies. They reported that strategy use was higher among humanities students than among science and engineering students. They also mentioned the weakness of their study that only a limited number of students (n = 3) from each discipline participated in the in-depth interview. All in all, all the studies mentioned above have identified the potential influence of disciplines on the overall use of learning strategies as well as their subcategories, such as communication

strategies. These findings point to the need to conduct in-depth studies on the relationships between communication strategy use and disciplines.

There were even fewer studies comparing communication strategy use among learners from different disciplines. One of the most recent studies by An and Nathalang (2010) recruited 117 Chinese first-year students from two different academic departments (arts and science) at one university in China. Participants were required to complete two tasks: a one-way task (i.e., concept-identification) and a two-way task (i.e., role play). The study indicated that science participants resorted to clarification requests more frequently than arts participants. However, the design of data collection is problematic as participants' performance was audio-recorded, which underestimated non-verbal strategies in communication.

Based on the literature reviewed, sharp differences were found in the use of strategy categories across disciplines. Moreover, reported strategy use is much higher among humanities students than science students. Therefore, it can be hypothesized that discipline might play a role in graduate students' use of communication strategies. Students majoring in EE might employ different communication strategies from those majoring in Edu.

2.3.3 Task types

Task types are generally accepted among SLA researchers to be a variable that may affect the nature of interaction among learners, thus directly/indirectly affecting language acquisition (e.g., Macaro, 2006; Rossiter, 2003; Skehan, 1998). Task types which were frequently used by researchers in previous studies included: translation task, story telling,

topic-discussion, Jigsaw, decision-making, and object-description (e.g., Flyman, 1997; Linda, 2012; Rossiter, 2003; Smith, 2003).

Flyman (1997) conducted a study of ten secondary French-as-a-foreign-language students' use of communication strategies in the completion of three tasks (i.e., translation, story telling, and topic-discussion). She reported that different types of tasks elicit varied communication strategy use which ultimately affect learners' language acquisition. Specifically, compensatory strategies, especially conceptual strategies (speakers manipulate the target concept to make it expressible through available linguistic resources) were most frequently used in the translation task while story telling of pictures evoked a large number of code strategies (speakers use their knowledge about different language to keep the original intention with the utterance). In contrast to the two previous tasks, learners used relatively few compensatory strategies as well as code strategies in the topic-discussion task. Even though Flyman found that students responded to different task requirements with different strategies, all the participants in the study were secondary students, which might not be applicable to adult learners. In addition, the language this study examined was French, therefore, the results might not be generalizable to EAL students.

Contrary to Flyman's (1997) findings, in another study on communication strategy use in a task-based computer-mediated context, Smith (2003) concluded that the two task types (jigsaw and decision-making) did not affect the amount and nature of communication strategy use. Based on Bialystok's (1981) findings that students responded to different task requirements with different strategies, Smith presumed that the two task types in the study were more similar than different, with both asking learners

to engage in a pedagogical task based loosely on an authentic scenario. He also suggested studies to explore the role of task type in communication strategy use in greater detail expanding the number of task types examined. However, in An and Nathalang's (2010) study, it was reported that different types of tasks led the participants to use different communication strategies. To perform one-way tasks, participants frequently used interlanguage-based communication strategies, such as generalization, paraphrase, word coinage, reconstruction, and approximation. Meanwhile, they frequently used interlanguage negotiation strategies, such as clarification request, repetition, and positive confirmation check to perform two-way tasks.

More recently, Khan and Victori (2011) designed a study to explore learners' communication strategy use cross three tasks (i.e., picture story, role play, and guessing game between two students). Twenty-two high-intermediate EFL undergraduate students participated in this study. Participants needed to complete a questionnaire after each task. They reported that except for the compensation strategies and a few individual strategies, learners tended to use a similar set of strategies across different tasks. However, results did show the correlation between strategy use and task type. For instance, the role-play task elicited significantly more individual strategies, such as appealing for help, planning, and evaluating than the other two tasks. This indicates that some communication strategies are more task-specific or presumably are more easily elicicted from certain tasks than other tasks. However, only four students were involved in validating the instrument, and 21% strategies were not confirmed in the processing of validation. The limitation of the instrument could have influenced the accuracy of findings in this study.

Recent studies have offered conflicting conclusions of the communication strategy use with the influence of the task type variables (Macaro, 2006). Some studies have revealed that learners employ different communication strategies to perform various types of tasks, while others have indicated no significant difference of communication strategy use in relation to task types. This points to the need to conduct an in-depth study of task type in communication strategy use. This study focused on the two-way tasks because Long (1981) assumed that the task features impacted upon the demand the task made upon the learner (task difficulty) with two-way tasks being more difficult than one-way tasks. Since few studies have examined the role of specific task type in the use of communication strategies by Chinese graduate students, the study is the critical next step in providing a fuller picture of the relationships between communication strategy use and task type.

2.4 Statement of Problems

It can be hypothesized based on the literature reviewed that learners with different language proficiency levels from two different disciplines may employ different communication strategies to perform a two-way task, such as a debate. However, a review of the literature also indicated that the results are inconclusive and the studies focusing on specific-discipline Chinese graduate students' use of communication strategies are insufficient. The few studies (e.g., An & Nathalang, 2010; Chang, 1991; Li, 2010; Liu, 2009; Yang, 2000; Yang & Gai, 2010) mainly focused on the research of Chinese EAL undergraduate students. In addition, as these studies were exploratory in nature, they were only concerned about the general use of communication strategies by Chinese students in the local context. To my knowledge, this is the first study designed to

compare Chinese graduate students' communication strategy use between these two different disciplines (EE and Edu) in an English-speaking country. The overgeneralization of Chinese students' preference of certain types of communication strategies based simply on the questionnaire data is also problematic and merits in-depth investigations. This study has used both qualitative and quantitative methods to investigate the use of communication strategies by Chinese graduate students at the high-intermediate and advanced English proficiency levels in EE and Edu in coping with informal debate tasks.

2.5 Research Questions

The present study involved 11 Chinese EAL graduate students at high-intermediate and advanced levels. The research purposes were to identify Chinese EAL graduate students' communication strategy use, to analyze the strategy use across different disciplines and proficiency levels, and to examine the relationships between communication strategy use and speaking performance.

Specifically, this study examined the following research questions:

1. What are the communication strategies used by Chinese graduate students majoring in EE and Edu?

2. Are there any differences in communication strategy use depending on the participants' language proficiency?

3. Are there any differences in communication strategy use depending on the participants' disciplines?

4. What are the relationships between the communication strategy use and the participants' oral production?

Chapter 3: Methodology

This chapter describes the methods used to gather the research data from both quantitative and qualitative sources. This chapter is divided into the following sections: 1) participants, 2) instruments, 3) procedures, and 4) data analysis.

3.1 Participants

The present study was designed to investigate the communication strategies used by Chinese EAL graduate students in British Columbia, Canada. Responded to my recruitment e-mail (see Appendix 1), 12 participants from a Canadian university agreed to participate in the main study. Since one participant from the Education Department did not participate in the second debate, therefore, she was removed from the entire data analysis process. Finally, the data of 11 participants were analyzed.

3.1.1 Participants' characteristics

All the participants were full-time graduate students from the Electrical Engineering (EE, n = 6) and Education Department (Edu, n = 5), respectively. They were all from the People's Republic of China with Mandarin as their first language and English as their additional language.

The specific information of the participants was obtained from the background information questionnaire (see Appendix 2). This questionnaire was designed to gather information related to participants' age, education, and other personal data relevant to the study.

Table 1
Participants' Characteristics

Age in years	Mean	25
	Range	22 - 29
Length of residence	Mean	14 months
	Range	3 months – 48 months
Experience living or studying in another English speaking country		None
Years of learning English	Mean	13
	Range	8 - 17
Degree program	Electrical Engineering	*n* = 6
	Education	*n* = 5
Weekly time of communicating in English	0 - 5 hours	*n* = 7
	6 – 10 hours	*n* = 4

Note. $N = 11$

As shown in Table 1, the average age of the participants was 25 years old. All the participants learned English formally in China, and the average years of learning English was 13 years. None of them had any experience living or studying in another English-speaking country before they were admitted to the graduate school. The minimum length of participants' residence in Canada was three months while the maximum length was four years. As international students, they must provide proof of English language proficiency test (IELTS or TOEFL[5]) when they apply for graduate schools in North

[5] Test of English as a Foreign Language

America. Therefore, participants in this study were requested to provide their English language test scores used for their graduate admissions to the university. These scores were used to corroborate with the language scores participants achieved in the pre-test (refer to Section 3.2.1) of this study. Among the eleven participants, five reported TOEFL speaking scores, ranging from 20 to 22, with an average of 20.4, and seven reported IELTS speaking scores, ranging from 6.0 to 7.5, with an average of 6.7.

Erlenawati (2005) discovered that international students did not have sufficient exposure to English language conversation either in classroom or outside class prior to coming to an English-speaking country, which was one of the key factors that contributed to their communication difficulties in English. However, in this study, participants had already resided in an English-speaking country for a period of time. Considering the important role of practicing time on oral English, I also asked participants to report the amount of time spent on communicating with others in English every week. Seven participants reported that they spent less than five hours per week, among whom one participant spent less than two hours. Three participants reported that they spent six to seven hours talking with others in English, while one participant reported spending eight to ten hours per week.

Participants in this study were also asked to provide some information about the speaking challenges they had encountered in academic settings. Results from this question in the personal background questionnaire indicated that most participants were, to some degree, struggling with communication in English concisely with preciseness. Nine out of eleven participants mentioned their shortage of vocabulary and difficulty in selecting “proper words” to express clearly what they wanted to say. In addition, two out

of eleven participants mentioned that they had listening problems communicating with others when their interlocutors were speaking very fast. Two participants were struggling with their own accent, and one of them said that he could not speak like a native speaker. Two participants reported their fluency problems while another two participants were annoyed with their grammatical errors in speech. In sum, vocabulary size was one of the major concerns for participants (n = 9) in this study.

3.2 Instruments

3.2.1 Language pre-test

An English language proficiency test was administered in order to select six advanced and six high-intermediate level participants for the main study. Their reported IELTS or TOEFL scores were used for reference rather than as the benchmark because some participants had resided in Canada for more than four years, and they might have made some progress since the tests were taken.

The topic of the test was adapted from the Test of English as a Foreign Language internet-Based Test (TOEFL iBT) topic pool[6]. The speaking tasks in the TOEFL test were an appropriate tool to examine students' language proficiency level as TOEFL scores were widely used for admissions and ESL placement decisions. Educational Test Service (ETS) stated that concerns about TOEFL test validity were an integral part of the test design process. Also, test validity is an ongoing process, which continues to be actively supported by ETS and the TOEFL Board through the Committee of Examiners (COE) Research Program.

[6] The speaking topic pool in the TOEFL iBT is published on the TOEFL website: http://www.ets.org/s/toefl/flash/18690_insideTOEFL-Speaking-Q1-2_transcript.html

The speaking test was composed of two parts: 1) a one-minute self-introduction, and 2) a one-minute talk on a given topic: “Some people think it is more fun to spend time with friends in restaurants or cafes. Others think it is more fun to spend time with friends at home. Which do you think is better? Explain why.” Participants had one minute to prepare for both topics.

3.2.2 Oral Communication Strategy Inventory (OCSI)

A modified version of Nakatani’s (2006) OCSI was used to examine the communication strategies employed by the participants in coping with their speaking problems. The OCSI had been widely used to investigate communication strategy use across different countries (e.g., Brown, 2013; Diaz Larenas, 2011; Saziyen & Pelin, 2013; Teng, 2011) since it was published. Nakatani’s OCSI was chosen for this study as the OCSI is a synthesized inventory, in which most EFL learners’ perspectives and communicative problems encountered are taken into account (Chen, 2009).

Although Nakatani’s OCSI consists of strategies dealing with both speaking and listening problems in communication, speaking strategies and listening strategies are not integrated and can be separated. In the current study, I used only the speaking strategies because my concern is communication strategies in dealing with speaking problems. The adapted questionnaire (see Appendix 3) was composed of 28 items and still used a five-point scale, ranging from the category “never use” to “always use” (1 = never, 2 = hardly, 3 = sometimes, 4 = usually, 5 = always). It contained seven[7] types of communication

[7] The category of translation strategies was not included in the OCSI questionnaire but was reported by participants in the post-task communication strategy recall questionnaires. There were eight categories of

strategies: social affective strategies (items 1-6), fluency-oriented strategies (items 7-12), negotiation of meaning while speaking strategies (items 13-16), accuracy-oriented strategies (items 17-19), message reduction and alteration strategies (items 20-22), nonverbal strategies (items 23-25), and message abandonment strategies (items 26-28).

3.2.3 Informal debate tasks

Participants in this study were requested to carry out two informal debates[8] on topics adapted from the speaking section of TOEFL iBT topic pool: 1) "It is better for children to grow up in the countryside than in a big city." 2) "It is better for students to live with local families than with friends when they study abroad." Informal debate is an appropriate task type for participants in this study as the form of informal debate is very similar to critical evaluation that graduate students normally do in seminar discussions. The dynamic nature of debates require students to advocate their stance while simultaneously acknowledge the opposition's arguments, plan counter-arguments, and refute the opposition's claims with a logical line of thought (e.g., Hall, 2011). This helps students develop their critical thinking through arguments. Likewise, graduate students are encouraged to inquire, evaluate, and discuss among individuals based on asking and answering questions to stimulate critical thinking and illuminate ideas.

3.2.4 Post-task communication strategy recall questionnaire

Plenty of previous research in communication strategy (e.g., Brown, 2013; Diaz Larenas, 2011; Saziyen & Pelin, 2013; Teng, 2011) only used questionnaires to generate

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communication strategies used by participants in the completion of the informal debate tasks and the post-task communication strategy recall questionnaires in this study.

[8] The debate tasks were informal in this study as there were no specific instructions and controls in terms of the structures of the debates.

results despite the limitation of using questionnaires. As Oppenheim (1992) states, results from questionnaires can be threatened by many factors including: faulty questionnaire design, sampling and non-response errors, and biased questionnaire design and wording. Furthermore, questionnaires could not elicit task-specific communication strategies. Additionally, data elicited from questionnaires may not yield information about the cognitive processes underlying learners' performance. Consequently, in order to obtain such information and increase the reliability of data collection instruments, the participants were asked to complete a post-task communication strategy recall questionnaire with seven open-ended questions (see Appendix 4) immediately after each informal debate task. This questionnaire was an in-depth investigation of challenges encountered by the participants in performing the informal debate tasks, and the communication strategies they employed. The questionnaire was designed to elicit task-specific communication strategies, and was used to obtain a fuller picture of participants' cognitive process in performing the informal debate tasks.

3.3 Procedures

3.3.1 Participant recruitment

I started to recruit participants from the Departments of EE and Edu through e-mail in October 2012. First, I sent an email to department secretaries, requesting them to distribute the email to graduate students in their departments. I briefly stated the purpose, the general process of the study, and my contact information in the email. After receiving replies from Chinese graduate students who were interested in the study from each department, I met with each participant to obtain their consent (see Appendix 5) and to

administer the pre-test. In November 2012, I completed recruiting all the participants and scheduled the two debates with them.

3.3.2 Pre-main study modifications

Nakatani's (2006) OCSI was modified prior to the main study to improve its suitability for the context of this study. From a statistical perspective, a factor with fewer than three items was generally regarded as weak and unstable (e.g., Bollen, 1989; Costello & Osborne, 2005; Velicer & Fava, 1998). Even Nakatani himself admitted that results from the factors with two items might not be as reliable as those with three or more items. Also, Nakatani's OCSI was designed for use in the Japanese context. It would be essential to adapt the inventory to suit the unique context and participants of this study. Therefore, the modification of the instrument was necessary before the main study.

To modify the instrument, my supervisor and I carefully reviewed the instrument. Based on the aforementioned rationale, I first deleted the "attempt to think in English strategy" category which comprised only two items. However, I designed an open-ended question related to this item in the post-task communication strategy recall questionnaire (see Appendix 4) to compensate for the deleted category of strategy. For the "non-verbal strategy" category which also contained two items only, I split the original one "I use gestures and facial expressions" into two items so that the non-verbal strategy category was composed of three items, including eye contact.

In addition to the modifications mentioned above, some other items under Nakatani's classification were revised after careful examination. 1) I transferred some items to other more appropriate factors. For instance, I transferred "I ask other people to help when I can't communicate well" from "message abandonment strategies" to "social affective

strategies" following the categorization of socio-affective strategies proposed by previous researchers (e.g., O'Malley et al., 1985; O'Malley & Chamot, 1990). Meanwhile, I transferred "I try to use fillers when I cannot think of what to say" from "social affective strategies" to "fluency-oriented strategies" as many researchers have highlighted the significance of using fillers and hesitation devices as a tool to improve fluency (e.g., Brown, 2003; Canale, 1983; Canale & Swain, 1980; Ellis, 1986). 2) I deleted a few items which either did not fit the context or were repetitions of other items. For example, I deleted "I try to talk like a native speaker" from the "accuracy-oriented strategies" as I thought trying to speak like native speakers could fill in both the accuracy-oriented and fluency-oriented strategies. I also deleted "I try to emphasize the subject and verb of the sentence" from the "accuracy-oriented strategies" as the interpretation of this item was already contained in another item "I notice myself following grammatical rules in expressing what I want to say" from the same category, which made this item lengthy and repetitive. Last, I deleted "I change my way of saying things according to the context" from "fluency-oriented strategies." The underlying reason for learners' speaking according to the context could be explained by Giles, Gallois, and Ogay's (2005) "communication accommodation theory," which focused on the links between "language, context, and identity." According to the "communication accommodation theory," people adjust their speech to accommodate to others. I deleted this item as the purpose of speaking according to the context was far beyond the scope of fluency-oriented strategies.

To sum up, the original eight categories of speaking strategies were reduced to seven categories and thirty-two items were reduced to twenty-eight items. Also, a few items

were either deleted or moved (see Appendix 3). All in all, some obvious limitations of Nakatani's (2006) categorization of items in the OCSI have been taken into consideration and restructured in this study.

3.3.3 Pilot study

Two volunteers were involved in the pilot study in September 2012 before the main study. These two volunteers were from the Departments of EE and Linguistics. The process of the pilot study was almost the same as the main study except for the informal debate tasks, due to the difficulty of recruiting participants for the pilot study. The purpose of the pilot study was to field-test the data collection instruments and the implementation of the data collection procedures. In the pilot study, each participant completed the language proficiency pre-test, the background information questionnaire, the OCSI questionnaire, a mock debate with me for five minutes, and the post-task communication strategy recall questionnaire. The data from the pilot study were not included in the data analysis of the main study. The following modifications were made according to the feedback from the participants in the pilot study.

1. I reduced the approximate time participants needed to complete the OCSI questionnaire from 20 minutes to 10 minutes. Originally, I thought it would take high-intermediate level participants more time to read and understand each item in the questionnaire; however, the participant spent almost as much time (five minutes) as the advanced level participant.
2. I changed the debate topics to make sure that the topics were controversial enough for participants to debate. I asked participants to choose two topics out of three that they felt interested: 1) For higher education, online courses are a more beneficial option

than universities. 2) Face-to-face communication is better than other types of communication, such as letters, email, or telephone calls. 3) Teachers should be paid according to how much their students learn. The participant from the Linguistics Department preferred topics 1 and 2, while the participant from the EE department favoured only topic 3. He emphasized that topics 1 and 2 were not controversial at all, hence not worth debating. Given that these topics may potentially influence participants' performance as some participants who were interested in the topics might speak more while others might not, I selected another two more controversial topics (see Section 3.2.3), and both participants were interested in these two topics.

3. I further modified a few items in the OCSI questionnaire (see Appendix 2) to make them more specific and clear. Under the social affective strategy category, I reworded the item "I try to use fillers when I cannot think of what to say." I exemplified "fillers" with "um, uh, ah, okay, you know" as one participant had difficulty understanding this term. Under the fluency-oriented strategy category, the original item "I try to speak clearly and loudly to make myself heard" was modified into "I try to speak clearly to make myself understood" as both participants thought they never raised their voices to speak more fluently. Under the negotiation of meaning strategy category, I modified "While speaking, I pay attention to the listener's reaction to my speech" into "While speaking, I pay attention to the listener's viewpoints in reaction to my speech" to focus specifically on the linguistic reaction in the comprehension of speech. In addition, the item "I repeat what I want to say until the listener understands" was modified into "I repeat myself to help the listener understand what I want to say" to make the purpose of repeating more obvious for participants. Under

the accuracy-oriented strategy category, I modified "I notice myself using an expression which fits a rule that I have read" into "I use the grammatical rules I've learned to express what I want to say" so that participants might easily understand and respond to this item. Under the message reduction and alteration strategy category, "I use words which are familiar to me" was modified into "I use words which are familiar to me to express what I want to say" to make this item specific to the tasks participants were required to complete. Last, both participants commented that they felt uncomfortable with the expression of "I abandon the execution of a verbal plan" under the message abandonment strategy category. To distinguish clearly between "message reduction and alteration strategies" and "message abandonment strategies," I modified the following two items "I replace the original message with another message because of feeling incapable of executing my original intent" and "I abandon the execution of a verbal plan and just say some words when I don't know what to say." They were modified into "I replace the original message with a similar message because of feeling incapable of executing my original intent" and "I replace the original message with a different message because of feeling incapable of executing my original intent," respectively.

4. I modified one question and added a new question in the background information questionnaire. Question 5 originally asked "How did you feel about talking with others in English when you were in China?" This question was designed to ask participants about their language challenges in communicating with others, and their corresponding solutions. Therefore, it was revised for clarity:" Do you struggle with talking to others in English? If yes, what are the challenges you have encountered?

(Please be specific.) If not, please skip to the next question." In addition, Question 6 "How much time do you spend approximately communicating with others in English every week? Please check (√) the box that most accurately describes your estimate." was added into the questionnaire. In the pilot study, one participant stated that he had few opportunities to communicate with others in English, as most of his classmates and friends were Chinese. However, the other participant did not have this issue. The approximate time spent in communicating with others in English every week may vary among participants and may influence their speaking performance even though all of them are in Canada. Therefore, Question 6 was included in the questionnaire to factor this variable (see Appendix 2).

5. I made minor modifications of the post-task questionnaire. For the first question, I exemplified "academic settings" since one participant had difficulty understanding this phrase. I also added one more question at the end of the questionnaire to ask participants to write down their final comments on the speaking challenges and solutions to obtain a fuller picture of participants' use of communication strategies (see Appendix 4).

3.3.4 Main study

I conducted the main study after the pilot study was completed from September to December 2012. The main study included three data collection sessions (see), and they were conducted on different days. Overall, it took participants approximately 2 hours and 15 minutes to complete all the sessions. There was a one-week interval between Session 2 and Session 3.

Table 2

Data Collection Sessions

Session	Participants	Procedures
Session **1** (20 minutes per group)	EE	• Ethics (7 minutes) • Language proficiency pre-test (3 minutes) • Oral Communication Strategy Inventory (OCSI) (10 minutes)
	Edu	• Ethics (7 minutes) • Language proficiency pre-test (3 minutes) • Oral Communication Strategy Inventory (OCSI) (10 minutes)
Session **2** (55 minutes per group)	Edu (*n* = 6)	• Background information questionnaire (5 minutes) • Oral production task 1—informal debate topic 1 (35 minutes) • Post-task communication strategy recall questionnaire (15 minutes)
	EE (*n* = 6)	• Background information questionnaire (5 minutes) • Oral production task 1—informal debate topic 1 (35 minutes) • Post-task communication strategy recall questionnaire (15 minutes)
Session **3** (60 minutes per group)	Edu (*n* = 5)	• Oral production task 2—informal debate topic 2 (35 minutes) • Post-task communication strategy recall questionnaire (15 minutes) • Oral Communication Strategy Inventory (OCSI) (10 minutes)
	EE (*n* = 6)	• Oral production task 2—informal debate topic 2 (35 minutes) • Post-task communication strategy recall questionnaire (15 minutes) • Oral Communication Strategy Inventory (OCSI) (10 minutes)

Note. N = 11. EE = Electric Engineering; Edu = Education.

Session One: I first reviewed the consent form with each participant before he/she signed it. I emphasized that it was voluntary and that he/she may withdraw at any time. After that, the participant completed the OCSI questionnaire. The reason why I administer the OCSI questionnaire in Session 1 was to minimize the potential awareness-raising effect of the questionnaire on participants' performance in the informal debate tasks. Questions related to the understanding of OCSI items could be asked either in Chinese or in

English. Participants were asked to take a language pre-test after they completed the OCSI questionnaire. The pre-test session was audio-recorded. Each participant had one minute to prepare for two topics (see Section 3.2.1), and was required to speak for a minute on each of the two topics. Each participant was given the option to take notes.

Session Two: Participants participated in the second session as groups. The Edu group and the EE group completed this session on two different days but during the same week. Participants first individually completed the background information questionnaire. Meanwhile, I asked each person to randomly select a number from a box. After they completed the background questionnaire, they were assigned to either side of the debate based on their chosen numbers. Participants with odd numbers were assigned to the positive side while those with even numbers were assigned to the negative side. All participants had ten minutes to prepare for the informal debate task, and each participant was provided with a pen and a piece of paper to take notes. The process of the informal debate was video-recorded, and it took them 23 minutes to complete the informal debate task. To maintain consistency in task implementation, I assigned the same amount of time for the other group to complete the first debate task. This was also applicable to the second debate task for each group. Furthermore, participants were signalled when there were five minutes left. Immediately after the debate, participants were required to individually complete the post-task strategy recall questionnaire. Again, they could raise questions relevant to the questionnaire. All the participants from the same group completed the post-task questionnaire individually at the same time and in the same room. There was no time limit in the completion of the questionnaire for each participant.

Session Three: The process of Session Three was almost the same as Session Two. First participants randomly picked up a number from a box, and they were assigned to either side of the debate according to their chosen numbers as described in Session Two. The debate topic was different from the previous one. Immediately after the debate, they were required to complete the post-task communication strategy recall questionnaire and the OCSI questionnaire again. The repetition of completing the OCSI was to examine whether participants completed the OCSI consistently or not.

3.4 Data Analysis

3.4.1 Data transcription

There were four clips from the informal debate tasks. I transcribed all four clips except for the 10-minute preparation time to facilitate coding by the second coder.

3.4.2 Data coding

The present study employed Nakatani's category of communication strategies as the basis to identify and classify the main categories of communication strategies. I developed the coding scheme (see Appendix 10) based on findings in different studies (e.g., Swain et al., 2009; Tarone, 1981) and the data elicited from the main study.

The coding scheme in Appendix 6 contains eight categories of communication strategies: 1) social affective strategies, 2) fluency-oriented strategies, 3) negotiation of meaning strategies, 4) accuracy-oriented strategies, 5) message reduction and alteration strategies, 6) nonverbal strategies, 7) message abandonment strategies, and 8) translation strategies. Within each category are a few individual strategies. For instance, the category of nonverbal strategies is composed of three individual strategies: *eye contact*,

gestures, and *facial expression*, which were coded as instances of nonverbal behaviours or actions in the process of communication. In addition, some of individual strategies are further divided into subcategories based on their purposes of using a particular strategy. For example, the individual strategy - *gestures* is divided into the following subcategories: 1) *Participants using gestures to indicate the intended meaning,* 2) *participants using gestures to indicate that they have encountered difficulties in speaking*, and 3) *participants using gestures to direct others to take turns*. Although the data were coded at the level of subcategory, the subcategories were later collapsed into their respective strategy categories to facilitate statistical analyses.

In terms of data coding, I individually coded 100% of the transcripts, which were the observed and oral production data generated from the informal debate tasks and the written data from the post-task communication strategy recall questionnaires. A second coder independently coded 100% of the written data from the post-task communication strategy recall questionnaires, and 50% of the observed and oral production data from the informal debate tasks. The second coder was also a Master's student in the Department of Linguistics.

There were five coding sessions from June 2013 to August 2013. In each session, we first coded the data independently; after that, we met to discuss the coding decisions for which there was a disagreement. Decisions were made until 100% agreement was reached. The total number of coding counts for 50% of the observed and oral production data and 100% of the written data was 1,138. The inter-coder agreement rate was 85.68% (the number of agreement counts between two coders 975 divided by the total number of coding counts 1,138).

In coding the data, certain actions were taken while there was disagreement between the two coders:

1. We refined the coding scheme by adding the following strategy, which was identified in the reported data but not listed in the coding scheme.

   "Yeah, well, living with your friends means you guys pay the f…umm, the rent to your landlord or something." (P10) ➔ *Clarifying meaning*

Originally, the coding scheme only included individual strategies, such as *clarifying stance* and *seeking clarification*. The individual strategies mentioned did not apply to participants' strategic behaviours here. Therefore, a decision was made by two coders that a new individual strategy should be added to the coding scheme: *clarifying meaning*.

2. We recoded the data and split the strategies carefully especially when there was more than one strategy in one statement, and one coder missed one or a few individual strategies. For example:

   "So I think, umm, from Monday to Friday (looking at notes), maybe we go home very late, so the children may sleep and they will not influence us (gesturing), right?" (P4)

This statement involves four individual strategies (see underlined): *using fillers, referring to notes, gesturing-indicating meaning,* and *empathizing with others*.

3. We clarified the issue of coding certain strategies, such as message reduction and alteration strategy, and eye contact.

Take eye contact as an example, it can be further classified based on participants' purposes of using this particular strategy: *making eye contact when participants*

*encounter difficulties to seek assistanc*e and *making eye contact to seek agreement*. It was easy to identify *eye contact to seek assistance* and *eye contact to seek agreement* between a participant and the team member as the participant needed to turn around to make eye contact. However, it was difficult to distinguish eye contact from gazing between the participant and those on the other side. According to Gregersen (2007), nonverbal messages (gesture, facial expression, and eye contact) all work together with verbal messages to create meaning, both in encoding and decoding messages in communication. In view of the fact that verbal and nonverbal messages interact with each other in communication, verbal cues were therefore examined for reference to code *eye contact to seek agreemen*t between the speaker and the interlocutor. The second coder and I carefully watched the video again, and only the gazing with clear intention to seek agreement was coded as *eye contact to seek agreement*.

For message reduction and alteration strategies, we originally disagreed in the following situations:

> Ok, first, I, I wanna, umm, clarify is, umm, this debate--<u>usually for, it's better for us to live with families or live with</u>, umm, friends, depends on how much time you spent in home. And for students, usually we spend most of the time in school, right? (P2)
>
> I mean, <u>you, you, culture is not, is</u>, is something different from the coursework, from homework at all, is correct or wrong, you learn it, you can give a condemnation on the culture. It's quite difficult. (P6)

In both cases, one coder coded them as *message reduction and alteration* strategy while the other coder coded them as *self-correction* strategy. After I discussed the issue

with my supervisor, these incidences were coded as "restarting." Hence the second coder and I finally decided to code them as *self-correction* strategy.

After the second coder and I completed the five coding sessions, I recoded 50% of the debate data based on the decisions we had made. Three weeks later, I coded the same data (50% of the debate data) again. The intra-coder reliability was 89.86%.

3.4.3 Quantitative data analysis

For quantitative data analyses, I conducted nonparametric statistical tests by using SPSS (Statistical Package for the Social Sciences) Version 20. The quantitative analysis included the following data: language pre-test data, oral production data, and strategy use data.

Language pre-test data: I sent the recorded audio data to a second rater. The second rater was a certified TESL (Teaching English as a Second Language) teacher in the Department of Linguistics. We independently rated all the audio clips based on the TOEFL test speaking rubrics[9] with a four-point scale. For each speaking sample, when the score difference was less than or equal to 0.5 between two raters, the mean of the two scores was calculated as the final score of the oral production data. While the score difference was over 0.5, the two raters had to examine the audio data again together until reaching 100% agreement on the final scores. The inter-rater reliability was checked by a Spearman's *rho* test (see Table 3) and the coefficient was .872.

[9] The TOEFL test speaking rubrics is published on the TOEFL website: http://www.ets.org/Media/Tests/TOEFL/pdf/Speaking_Rubrics.pdf

Table 3
Inter-rater Reliability for Language Pre-test

			Second Rater
Spearman's *rho*	First Rater	Correlation Coefficient	**.872****
		Sig. (2-tailed)	.000
		N	11

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

Based on the language pre-test speaking scores, I divided the participants into two proficiency level groups. Group 1 (n = 5) represented the advanced level participants whose pre-test scores fell into the scale from 3.6 to 4, while group 2 (n = 6) represented the high-intermediate level participants whose pre-test scores fell into the scale from 3 to 3.5. Table 4 presents the descriptive results of two groups.

Table 4
Descriptive Statistics for Pre-test Scores by Two Proficiency Levels

	n	Mean	SD	Min	Max
Group 1	5	3.77	.10	3.65	3.90
Group 2	6	3.18	.20	3	3.4

Note. N = 11. Group 1 = Advance Proficiency Group; Group 2 = High-intermediate Proficiency Group.

Oral production data: The process of rating the informal debate data was the same as the rating of the pre-test data. Similarly, two raters were involved in rating participants' oral production data from the informal debate tasks. The four videos of debates were uploaded online with a password so that both raters could have access to them. Both raters were certified TESL teachers in the Department of Linguistics, while one of them was the rater of the language proficiency pre-test. The procedures of rating oral production data followed the same procedures as rating the pre-test data. The inter-rater reliability was checked by a Spearman's *rho* test (see Table 5) and the coefficient was .838.

Table 5
Inter-rater Reliability for Oral Production Scores

			Second Rater
Spearman's *rho*	First Rater	Correlation Coefficient	**.838****
		Sig. (2-tailed)	.000
		N	11

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

The relationships between participants' pre-test scores and their oral production scores were analyzed through Spearman's *rho* test. The pre-test scores were significantly correlated with the oral production scores and the coefficient was .933 (see Table 6).

Table 6
Correlation between Pre-test Scores and Oral Production Scores

			Pre-test Scores
Spearman's *rho*	Oral Production Scores	Correlation Coefficient	**.933****
		Sig. (2-tailed)	.000
		N	11

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

Strategy use data: Observed and oral production data from the informal debate tasks and written data from the post-task communication strategy recall questionnaires were analyzed to answer the four research questions.

Research question 1 asked about the identified communication strategies used by Chinese graduate students in EE and Edu. Descriptive statistics such as frequencies from the OCSI questionnaire and strategy categories as well as individual strategies derived from the two informal tasks and post-task communication strategy recall questionnaires were examined with SPSS. Meanwhile, Spearman's *rho* test was conducted to examine the relationships among the strategy categories.

Research questions 2 and 3 focused on the differences of communication strategy use depending on participants' language proficiency levels and disciplines. Mann-Whitney test was conducted to compare the differences in the use of communication strategies between the participants at the advanced and high-intermediate levels, as well as between the two disciplines. At the same time, I used descriptive statistics to examine the ranks, the means of the categorized strategies and individual strategies used by different groups (i.e., the advanced level group vs. the high-intermediate level group and the EE group vs. the Edu group).

To address research question 4, Spearman's *rho* test was conducted to examine the correlations between the frequencies of communication strategies and oral production scores.

3.4.4 Qualitative data analysis

Although quantitative data analyses can provide score-based interpretation of data, they may not yield information about the process underlying learners' performance. In order to obtain the information of learners' perception of communication strategy use, which can complement the quantitative results, qualitative data from the post-task communication strategy recall questionnaires were analyzed. The purposes of the qualitative data analyses were to: 1) obtain the information about participants' perception of challenges they encountered in communication and their corresponding solutions, 2) confirm the communication strategies identified from the informal debate tasks, and 3) help discover the translation strategy category which remained unidentified during the quantitative data analyses. All in all, qualitative data analyses enable me to go beyond common practice of analyzing second language learners' communication strategy use on

the basis of performance data or questionnaires. Hence, qualitative data analyses provide me with a fuller picture of participants' cognitive processes underlying their performances.

Chapter 4: Results

This chapter presents the results of the main study. The results address the four research questions.

4.1 Research Question 1

What are the communication strategies used by Chinese graduate students majoring in EE and Edu?

4.1.1 Comparison of two OCSIs

Before presenting the results of the OCSI, I conducted nonparametric Wilcoxon test to compare the results from the first and second OCSI.

Table 7

Comparison of the Results from the First and Second OCSI

	Soc 1 - Soc2	Flu 1- Flu 2	Neg 1 - Neg 2	Acc 1 - Acc 2	M-redu 1 - M-red 2	Nonv 1 - Nov 2	M-aban 1 - M-aban 2
Z	-.052[b]	-.179[b]	-.211[c]	-.979[c]	-.686[c]	-.525[c]	-.264[c]
Sig. (2 tailed)	.959	.858	.833	.327	.493	.599	.792

Note. Wilcoxon Signed Ranks Test, $N = 11$. Soc = Social Affective;
Flu = Fluency-oriented; Neg = Negotiation of Meaning; Acc = Accuracy-oriented;
M-redu = Message Reduction and Alteration; Nonv = Nonverbal; M-aban = Message Abandonment;
1 = The First Test; 2 = The Second Test.
b. Based on negative ranks.
c. Based on positive ranks.

Table 7 presents the comparison of results from the first and second OCSIs. A Wilcoxon signed-rank test showed that there was no significant difference regarding the results of two OCSIs. This suggests that the two informal debate tasks did not elicit a statistically significant change in the completion of the OCSI and participants completed the OCSIs consistently.

4.1.2 Self-reported communication strategy use

Since the results from the two OCSIs did not indicate any statistical difference, the means of two OCSI scores were used as the results of participants' self-reported communication strategy use. See Appendix 7 for the detailed descriptive statistical results of the 28 OCSI items, including frequency of response, means, and standard deviation.

The graph below represents the OCSI findings of categorized strategy use averaged over 11 participants based on a five-point scale (see Appendix 3), from a possible lowest ranking of 1 to a possible highest ranking of 5.

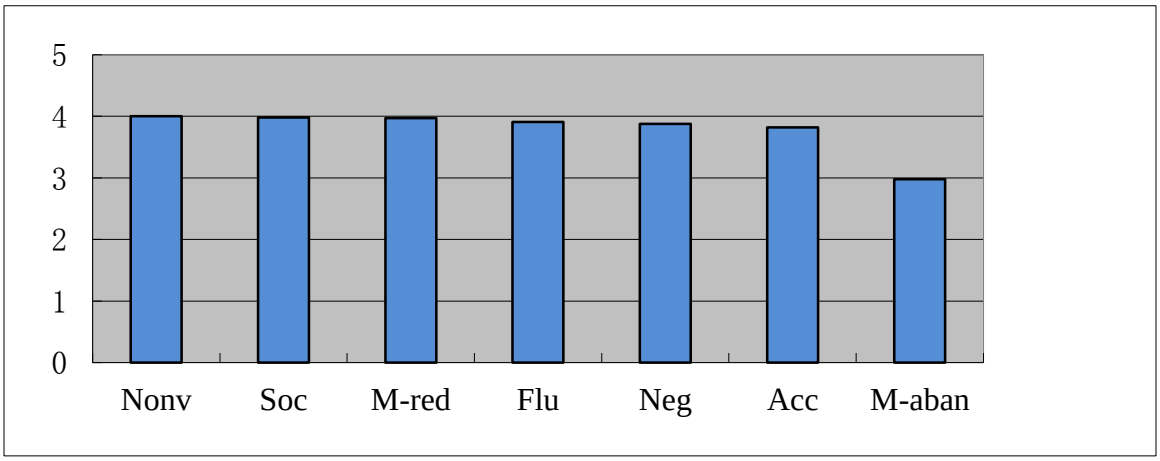

Figure 1: *Average OCSI strategy use for all participants.*

Note. N = 11. Nonv = Nonverbal; Soc = Social Affective; M-redu = Message Reduction and Alteration; Flu = Fluency-oriented; Neg = Negotiation of Meaning; Acc = Accuracy-oriented; M-aban = Message Abandonment.

The graph exhibits that the most commonly used strategy category reported by participants was nonverbal strategy, with an average mean of 4.00 (*SD* = 0.44). Social affective strategy, fluency-oriented strategy, negotiation of meaning strategy, message reduction and alteration strategy, and accuracy-oriented strategy all reach near the 4.00 level of the scale (4 = usually used), which indicates that participants were high users of

these strategies. Message abandonment strategy was the least reported strategy category by participants (*M* = 2.98, *SD* = 0.63).

Among the 28 items of the OCSI inventory, the following 10 items were the most frequently reported individual strategies by participants, with an average over 4.0.

1. I try to speak clearly to make myself understood: *M* = 4.41, *SD* = 0.49 (fluency-oriented strategy)
2. I use words which are familiar to me to express what I want to say: *M* = 4.36, *SD* = 0.39 (message reduction and alteration[10])
3. I actively encourage myself to express what I want to say: *M* = 4.32, *SD* = 0.51 (social affective)
4. I try to give a good impression to the listener: *M* = 4.32, *SD* = 0.81 (social affective)
5. I give examples if the listener doesn't understand what I am saying: *M* = 4.23, *SD* = 0.52 (negotiation of meaning)
6. I try to enjoy the conversation: *M* = 4.18, *SD* = 0.51 (social affective)
7. I try to make eye-contact when I am talking: *M* = 4.14, *SD* = 0.71 (nonverbal)
8. I correct myself when I notice that I have made a mistake: *M* = 4.09, *SD* = 0.54 (accuracy-oriented strategy)
9. I try to use fillers (e.g., *um, uh, ah, ok, you know*) when I cannot think of what to say: *M* = 4.09, *SD* = 0.74 (fluency-oriented strategy)
10. I pay attention to my pronunciation: *M* = 4.09, *SD* = 0.58 (fluency-oriented strategy)

[10] This is Nakatani's (2006) categorization of this individual item under the category of message reduction and alteration strategy. As Bialystok (1990) reported, foreign language learners tend to use familiar words and avoid taking risks by using new or unfamiliar words, even though they sometimes realize that the utterance is far from their communication goal.

Except for the message abandonment strategy, the list covered all the other six strategy categories. In the list, three were social affective strategies; three were fluency-oriented strategies; one was nonverbal strategy; one was accuracy-oriented strategy; one was negotiation of meaning strategy; and one was message reduction and alteration strategy. In line with the finding in this study that participants did not use message abandonment strategy frequently, the item "I give up when I can't make myself understood" was the least used individual strategy reported by participants, with an average of 2.68 (*SD* = 0.78).

In terms of individual differences in reported communication strategy use, the largest variance was in the category of fluency-oriented strategy (*M* = 3.91; *SD* = 1.42). The frequency of fluency-oriented strategy reported by 11 participants ranged from 28 to 19.50. This suggests that participants present various degrees of favouring in using this category of communication strategy.

4.1.3 Identified communication strategies

The frequencies of individual strategies derived from the informal debate tasks (observed data) and post-task communication strategy recall questionnaires (self-reported data) were analyzed by strategy categories. Overall, participants used eight categories of communication strategies with 28 individual strategies. One strategy (translation), which was not in the OCSI questionnaire, was added to the coding scheme according to the data obtained from the post-task questionnaires (self-reported data).

As shown in Table 8, fluency-oriented strategy was the most frequently used category of strategy by participants (27.43%), followed by accuracy-oriented strategy (26.04%). These two strategies accounted for over half of the identified strategies. Participants were

medium users of negotiation of meaning strategy, non-verbal strategy, and social affective strategy with 15.77%, 15.10%, and 10.99%, respectively. Message abandonment, message reduction and alteration, and translation strategy were the least used three strategies, which in total accounted for only 4.67% of all reported strategies, with translation strategy being the least frequently used category of strategy.

Table 8
Identified Communication Strategy Use by Category

	Soc	Flu	Neg	Acc	M-Alter	Nonv	M-Aban	Trans
Median	17.00	46.00	28.00	49.00	3.00	24.00	6.00	2.00
Mean	19.45	48.55	27.91	46.09	3.00	26.73	4.91	0.36
Max	30.00	77.00	55.00	82.00	8.00	45.00	12.00	2.00
Min	8.00	19.00	6.00	17.00	0.00	10.00	0.00	0.00
Range	22.00	58.00	49.00	65.00	8.00	35.00	12.00	2.00
Frequency	214	534	307	507	33	294	54	4
Percentage	10.99%	27.43%	15.77%	26.04%	1.69%	15.10%	2.77%	0.21%

Note. N = 11. Soc = Social Affective; Flu = Fluency-oriented; Neg = Negotiation of Meaning; Acc = Accuracy-oriented; M-Alter = Message Reduction and Alteration; Nonv = Nonverbal; M-Aban = Message Abandonment; Trans = Translation.

The value of range[11] in Table 8 indicates there is a big variance in some strategy categories among the 11 participants. For example, the maximum number of accuracy-oriented strategy reported by participants was 82 while the minimum number of this category of strategy was 17. This suggests that although accuracy-oriented strategy was

[11] Range means the difference between the lowest and highest values.

one of the most frequently used strategy categories among participants; some participants may highly rely on this strategy and others may not.

The total number of instances of individual strategies across all tasks (the informal debate tasks and post-task communication strategy recall questionnaires) and participants was 1,947 (see Appendix 8 for the detailed descriptive statistical results of the identified individual strategies). Overall, the top-10 individual strategies in relation to total number of strategies used were presented from the highest to the lowest percentage:

1. Fluency-oriented strategy: *using fillers* (13.82%)
2. Accuracy-oriented strategy: *self-correction* (13.82%)
3. Fluency-oriented strategy: *referring to notes for fluency* (12.07%)
4. Accuracy-oriented strategy: *referring to notes for accuracy* (12.07%)
5. Nonverbal Strategy: *eye contact* (8.06%)
6. Nonverbal Strategy: *gesturing* (6.68%)
7. Social affective strategy: *turn-yielding* (5.96%)
8. Negotiation of meaning strategy: *exemplifying* (4.31%)
9. Negotiation of meaning strategy: *clarifying stance* (2.88%)
10. Social affective strategy: *empathizing with others* (2.87%)

Among the top-10 individual strategies, two were in the category of social affective strategy, two were in the category of fluency-oriented strategy, two were in the category of negotiation of meaning strategy, two were in the category of accuracy-oriented strategy, and two were in the category of nonverbal strategy. The least frequently used individual strategies among all the identified individual strategies were *correcting others* (0.15%) and *chunking* (0.15%).

As shown in Table 9 in bold, the individual strategy with the highest percentage in categories were: *turn-yielding* (social affective; 54.21%), *using fillers* (fluency-oriented; 50.37%), *exemplifying* (negotiation of meaning; 27.36%), *self-correction* (accuracy-oriented; 53.06%), *message reduction and alteration strategy* (message reduction and alteration; 90.91%), *eye contact* (nonverbal, 53.40%), *abandoning* (message abandonment, 100%), and *translating* (translation, 100%).

Table 9
Identified Individual Strategy Use in Each Strategy Category

Individual strategy	Total	*M*	Range	SD	% in relation to strategy category
		Social affective			
Lowering your anxiety	6	.55	3.00	1.04	2.80%
Self encouragement	7	.64	2.00	.81	3.27%
Empathizing with others	56	5.09	13.00	4.32	26.17%
Asking for assistance	7	.64	3.00	1.03	3.27%
Turn-yielding	**116**	**10.55**	**20.00**	**6.22**	**54.21%**
Turn-requesting	22	2.00	5.00	1.67	10.28%
		Fluency-oriented			
Using fillers	**269**	**24.45**	**28.00**	**10.07**	**50.37%**
Rehearsing	6	.55	3.00	1.04	1.12%
Referring to notes for fluency	235	21.36	36.00	10.89	44.01%
Stalling	24	2.18	5.00	1.78	4.50%
		Negotiation of meaning			
Repeating	45	4.09	12.00	3.81	14.66%
Exemplifying	**84**	**7.64**	**11.00**	**4.13**	**27.36%**
Approximating	27	2.45	6.00	2.25	8.80%
Analogy	7	.64	4.00	1.29	2.28%
Elaborating	46	4.18	7.00	2.64	14.98%
Clarifying stance	56	5.09	21.00	6.35	18.24%
Seeking clarification	33	3.00	8.00	3.10	10.75%
Clarifying meaning	9	.82	3.00	.98	2.93%
		Accuracy-oriented			
Self-correction	**269**	**24.45**	**40.00**	**13.47**	**53.06%**
Referring to notes for accuracy	235	21.36	36.00	10.89	46.35%
Correcting others	3	.27	2.00	.65	0.59%
		Message reduction and alteration			
Chunking	3	.27	1.00	.47	9.09%
Message reduction and alteration	**30**	**2.73**	**8.00**	**2.45**	**90.91%**

Individual strategy	Total	*M*	Range	SD	% in relation to strategy category
		Nonverbal			
Eye contact	**157**	**14.27**	**26.00**	**8.15**	**53.40%**
Gesturing	130	11.82	27.00	8.40	44.22%
Facial expression	7	.64	3.00	1.03	2.38%
		Message abandonment			
Abandoning	54	4.91	12.00	3.86	100%
		Translation			
Translating	4	.36	2.00	.67	100%

Note. $N = 11$.

Finally, Spearman's *rho* test was conducted to analyze the relationships among the eight categories of communication strategies. The test revealed some statistically significant, positive correlations between certain categories of strategies as shown in Table 10 in bold. More specifically, social affective strategy was positively correlated with fluency-oriented strategy, negotiation of meaning, accuracy-oriented strategy, message reduction and alteration strategy, and message abandonment strategy. Fluency-oriented strategy was positively correlated with negotiation of meaning strategy and accuracy-oriented strategy. Negotiation of meaning strategy was positively correlated with accuracy-oriented strategy, message reduction and alteration strategy, nonverbal strategy, and message abandonment strategy. Message reduction and alteration strategy was positively correlated with social affective strategy, negotiation of meaning strategy, and accuracy-oriented strategy. Notice that translation strategy had a negative correlation with all the other strategies except for message abandonment strategy although the correlation was not significant.

Table 10

Correlations Among the Eight Strategy Category

	Soc	Flu	Neg	Acc	M-redu	Nonv	M-aban	Trans
Soc	1.000							
Flu	**.632***	1.000						
Neg	**.769****	**.637***	1.000					
Acc	**.767****	**.888****	**.715***	1.000				
M-redu	**.653***	.566	**.769****	**.705***	1.000			
Nonv	.458	.379	**.726***	.342	.409	1.000		
M-aban	**.690***	.415	**.654***	.581	.594	.135	1.000	
Trans	-.009	-.032	-.169	.081	-.315	-.174	.295	1.000

Note. Spearman's *rho* Correlation Coefficient, *N* = 11. Soc = Social Affective; Flu = Fluency-oriented; Neg = Negotiation of Meaning; Acc = Accuracy-oriented; M-redu = Message Reduction and Alteration; Nonv = Nonverbal; M-aban = Message Abandonment; Trans = Translation.

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

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

Overall, participants who were identified to use more negotiation of meaning strategy, had a tendency to use more accuracy-oriented strategy, message reduction and alteration strategy, nonverbal strategy, message abandonment strategy, and vice versa. Participants, who were identified to use more social affective strategy, had a tendency to use more fluency-oriented strategy, negotiation of meaning strategy, accuracy-oriented strategy, message reduction and alteration strategy, message abandonment strategy, and vice versa.

4.2 Research Question 2

Are there any differences in communication strategy use depending on the participants' language proficiency?

To answer this question, I first conducted the Mann-Whitney test to compare the use of eight categories of communication strategies between the advanced and high-intermediate level groups. After that, I conducted the same test to compare the use of individual strategies between the two proficiency level groups.

4.2.1 Comparison of overall strategy use between advanced and high-intermediate level participants

Table 11 presents the descriptive results as well as the results of the Mann-Whitney test in comparison to the usage of eight categories of communication strategies between the advanced and high-intermediate groups.

The results of the Mann-Whitney test revealed that the advanced level participants used the following three categories of communication strategies statistically more frequently than the high-intermediate level participants: social affective strategy (Z = -2.109, p = .035), negotiation of meaning strategy (Z = -2.104, p = .035), and message reduction and alteration strategy (Z = -2.129, p = .033).

Table 11

Comparison of Communication Strategy Use by Category between Advanced and High-intermediate Level Participants

Category	Proficiency	N	Mean	Mean Rank	Standard Deviation	Median	*U* score	Z score	*p* value
Soc	A	5	24.00	8.30	5.48	23	3.50	-2.109	**.035***
	H-I	6	15.67	4.08	5.68	16			
Flu	A	5	57.40	8.00	12.70	54	5.00	-1.830	.067
	H-I	6	41.17	4.33	18.06	37.50			
Neg	A	5	37.40	8.30	11.46	31	3.50	-2.104	**.035***
	H-I	6	20.00	4.08	11.17	18			
Acc	A	5	56.60	8.00	15.18	49	5.00	-1.826	.068
	H-I	6	37.33	4.33	23.12	32			
M-reduc	A	5	4.60	8.30	2.07	4	3.50	-2.129	**.033***
	H-I	6	1.67	4.08	1.63	1.50			
Nonv	A	5	33.00	7.50	13.91	40	7.50	-1.372	.170
	H-I	6	21.50	4.75	10.93	20			
M-aban	A	5	7.00	7.40	3.00	6	8.00	-1.287	.198
	H-I	6	3.17	4.83	3.82	1.50			
Trans	A	5	0.00	4.50	0.00	0	7.50	-1.748	.080
	H-I	6	0.67	7.25	0.82	0.50			

Note. N = 11. Soc = Social Affective; Flu = Fluency-oriented; Neg = Negotiation of Meaning; Acc = Accuracy-oriented; M-redu = Message Reduction and Alteration; Nonv = Nonverbal; M-aban = Message Abandonment; Trans = Translation; A = Advanced; H-I = High-intermediate.

***** *p* value of < .05 is statistically significant.

The average mean results of the test reveal that high-intermediate level participants only used the category of translation strategy more frequently than advanced level participants. Although the translation strategy was uniquely used by high-intermediate level participants, this category of strategy was merely reported in the post-task communication strategy recall questionnaire by only a few participants. For instance, one participant reported in the post-task questionnaire: “Sometimes I could only translate my

understanding from Chinese into English" (P9). More specifically, the category of translation strategy only accounts for 0.21% among the total number of strategy used (see Appendix 8).

The comparison of means of each category in Table 11 shows that overall ranking of eight categories of communication strategies did not differ greatly between two groups. Both groups used fluency-oriented strategy the most frequently, followed by accuracy-oriented strategy while translation strategy was the least frequently used strategy category. Nevertheless, the advanced group used the negotiation of meaning strategy category more frequently than the nonverbal strategy category. By contrast, the high-intermediate group used the category of nonverbal strategy slightly more frequently than the category of negotiation of meaning strategy.

The results of the standard deviation in Table 11 illustrates great individual differences in the use of certain categories of communication strategies within each group: i.e., fluency-oriented strategy, negotiation of meaning strategy, accuracy-oriented strategy, and nonverbal strategy.

Take accuracy-oriented strategy as an example, Table 12 shows the identified frequency of accuracy-oriented strategy by the advanced and high-intermediate groups. The highest number of accuracy-oriented strategy in the advanced group was 82 while the lowest number of this strategy was only 17. Meanwhile, the highest number of accuracy-oriented strategy in the high-intermediate group was 78 while the lowest number of this strategy was 43. The results did demonstrate the vast difference of using the category of accuracy-oriented strategy by participants within each group. To

conclude, individual differences need to be taken into account before drawing conclusions.

Table 12

Identified Frequencies of Accuracy-oriented Strategy by Advanced and High-intermediate Level Participants

Proficiency	Participants										
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
High-intermediate	33	38	17	31	23	82					
Advanced							43	46	49	78	67

Note. $N = 11$. P = Participant.

4.2.2 Comparison of individual strategy use between advanced and high-intermediate level participants

Overall, advanced level participants were identified using individual strategies more frequently than high-intermediate level participants, which can be seen from the means (see Appendix 9) for the detailed descriptive statistical results of individual strategies used by both groups). Advanced level participants used 1,100 individual strategies while high-intermediate level participants used 847 individual strategies. Only certain individual strategies were used more frequently by high-intermediate level participants than advanced level participants: *self-encouragement*, *empathizing with others*, *seeking clarification*, *chunking*, *facial expression*, and *translating*. Among 28 individual strategies, the most frequently used individual strategy for the advanced level participants was *self-correction* (7.56%) while *using fillers* (6.83%) was the most frequently individual strategy for high-intermediate level participants. *Chunking* (0.15%) and *translating* (0.21%) were two individual strategies uniquely used by high-intermediate

level participants while *correcting others* (0.15%) was the strategy uniquely used by advanced level participants.

Table 13 presents the results of Mann-Whitney test comparing individual strategy use between the advanced and high-intermediate groups that reached the significance level of difference. Advanced level participants used the following two individual strategies statistically more frequently than high-intermediate level participants: *turn-yielding* (Z = -2.018, p = .044) and *message reduction and alteration strategy* (Z = -2.453, p = .014).

Table 13

Mann-Whitney U Test Comparing Individual Strategy Use between Advanced and High-Intermediate Participants

Individual Strategy	Proficiency	N	Mean Rank	Rank Sum	*U* score	Z score	*p* value
Turn-yielding	A	5	8.20	41.00	4.00	-2.018	**.044***
	H-I	6	4.17	25.00			
Message reduction and alteration	A	5	8.60	43.00	2.00	-2.453	**.014***
	H-I	6	3.83	23.00			

Note. N = 11. A = Advanced; H-I = High-intermediate.

***** p value of < .05 is statistically significant

Even though significant differences of certain individual communication strategy use (i.e., *turn-yielding, message reduction and alteration strategy*) were identified between the advanced and high-intermediate groups, the rankings of individual strategies were the same in the following three categories of communication strategies for both groups: fluency-oriented strategy, accuracy-oriented strategy, and message reduction and alteration strategy. In the category of fluency-oriented strategy, *using fillers* ranked number one, followed by *referring to notes for accuracy*, *stalling*, and *rehearsing*. Notice that *referring to notes* and *using fillers* accounted for more than 90% of the fluency-oriented strategy for both groups. In the category of accuracy-oriented strategy, participants in each group tended to use *self-correction* the most frequently, followed by

referring to notes for accuracy and *correcting others. Self-correction for accuracy* and *referring to notes for accuracy* also made up over 90% of the accuracy-oriented strategy for both groups. In the category of message reduction and alteration strategy, participants preferred *message reduction and alteration* to *chunking*. Though *message reduction and alteration strategy w*as the most frequently used individual strategy in this category, it only accounted for 1.18% and 0.36%, respectively, among 1,947 individual strategies for the advanced and high-intermediate groups (for the individual strategies' specification, see Appendix 9).

In addition to the similarities of individual strategy use shared by the advanced and high-intermediate groups, variations in strategy use were identified in certain strategy categories (e.g., social affective strategy, negotiation of meaning strategy, and non-verbal strategy) though they were not at the significant level. The subsequent section presents the comparison of participants' individual strategy use in the three categories mentioned above between two groups.

As shown in Table 14, in the social affective strategy category, *turning yielding* (S5) was predominantly used, followed by *empathizing with others* (S3) by the participants at both proficiency levels. In terms of the least frequently used individual strategy in this strategy category, the advanced level participants hardly used *self-encouragement* strategy (0.10%). Meanwhile, the high-intermediate level participants used *lowering your anxiety* (S1, 0.15%) and *asking for assistance* (S4, 0.15%) the least frequently.

Notice that the participants at the advanced level referred to *turning yielding* (M = 14.80, SD = 5.63) twice as frequently as the participants at the high-intermediate level (M = 7.00, SD = 4.34). Interestingly, the more proficient the participants were, the less

frequently they used the following individual strategies: *self-encouragement* (S2) and *empathizing with others* (S3).

Table 14

Comparison of Individual Social Affective Strategies between Advanced and High-intermediate Participants

Category	Proficiency	Participants	Mean	SD	Median	*p* value	% in relation to total number of strategy used
S1	A	5	0.60	0.89	0	.562	0.15%
	H-I	6	0.50	1.22	0		0.15%
S2	A	5	0.40	0.55	0	.480	0.10%
	H-I	6	0.83	0.98	0.50		0.26%
S3	A	5	5.00	4.80	2	.712	1.28%
	H-I	6	5.17	4.36	3.50		1.59%
S4	A	5	0.80	0.84	1	.289	0.21%
	H-I	6	0.50	1.22	0		0.15%
S5	A	5	14.80	5.63	14	.044*	3.80%
	H-I	6	7.00	4.34	7		2.16%
S6	A	5	2.40	1.82	2	.290	0.62%
	H-I	6	1.67	1.63	1		0.52%

Note. $N = 11$. S1= Lowering Your Anxiety; S2 = Self-Encouragement; S3 = Empathizing with Others; S4 = Asking for Assistance; S5 = Turn-yielding; S6 = Turn-requesting; A = Advanced; H-I = High-intermediate.
* p value of $< .05$ is statistically significant

Table 15 presents the results of individual negotiation of meaning strategies used by participants at both proficiency levels. There appeared to be a great difference between the two groups in terms of the overall ranking of individual strategies. However, for both groups, *analogy* (N4) and *clarifying meaning* (N8) were the least frequently used individual strategies in this category. For the advanced level participants, the frequency of individual strategies in the category of negotiation of meaning strategy from the highest to the lowest percentage was as follows: *clarifying stance* (25.13%), *exemplifying* (24.06%), *repeating* (13.90%), *elaborating* (12.84%), *approximating* (8.56%), *seeking clarification* (8.56%), *clarifying meaning* (3.74%), and *analogy* (3.21%). Notice that *clarifying stance* and *exemplifying* accounted for 49.19% of the negotiation of meaning strategy category. For high-intermediate level participants, the frequency of individual

strategies in this category from the highest to the lowest percentage was as follows: *exemplifying* (32.50%), *elaborating* (18.33%), *repeating* (15.83%), *seeking clarification* (14.17%), *approximating* (9.17%), *clarifying stance* (7.50%), *clarifying meaning* (1.67%), and *analogy* (0.83%). Notice that *exemplifying* and *elaborating* accounted for 50.83% of the negotiation of meaning strategy category.

Table 15
Comparison of Individual Negotiation of Meaning Strategies between Advanced and High-intermediate Participants

Category	Proficiency	Participants	Mean	SD	Median	*p* value	% in relation to strategy category
N1	A	5	5.20	4.55	4	.462	13.90%
	H-I	6	3.17	3.19	2		15.83%
N2	A	5	9	4.36	10	.232	24.06%
	H-I	6	6.50	3.94	6		32.50%
N3	A	5	3.20	2.68	2	.350	8.56%
	H-I	6	1.83	1.83	1.50		9.17%
N4	A	5	1.20	1.79	0	.296	3.21%
	H-I	6	0.17	0.41	0		0.83%
N5	A	5	4.80	2.59	5	.517	12.84%
	H-I	6	3.67	2.80	3		18.33%
N6	H-I	6	9.40	7.54	8	.080	25.13%
	A	5	1.50	1.05	1.50		7.50%
N7	H-I	6	3.20	3.56	1	.926	8.56%
	A	5	2.83	2.99	2		14.17%
N8	H-I	6	1.40	1.14	1	.077	3.74%
	A	5	0.33	0.52	0		1.67%

Note. N = 11.N1=Repeating; N2 = Exemplifying; N3 = Approximating; N4 = Analogy; N5 = Elaborating; N6 = Clarifying Stance; N7 = Seeking Clarification; N8 = Clarifying Meaning.
A = Advanced; H-I = High-intermediate.

In the category of nonverbal strategies, both groups used *facial expression* the least frequently. However, there was a slight difference regarding the most frequently used strategies in this category. Advanced level participants used *gesturing* (50.91%) slightly more frequently than *eye contact* (47.88%) while the most frequently used individual strategies for high-intermediate level participants were *eye contact* (60.46%) and *gesturing* (35.66%).

4.3 Research Question 3

Are there any differences in communication strategy use depending on the participants' disciplines?

To answer this question, I first conducted the Mann-Whitney test to compare the use of eight categories of communication strategies between the EE and Edu groups. After that, I conducted the same test to compare the use of individual strategies between the two discipline groups.

4.3.1 Comparison of overall strategy use between the EE and Edu groups

As shown in Table 16, the EE and Edu groups did not differ significantly in the use of eight categories of communication strategies. Similarly, for both groups, fluency-oriented strategy and accuracy-oriented strategy were the most frequently used strategies among eight strategies while translation strategy was the least frequently used strategy.

Despite the similarities identified above between the two groups, the following differences were still identified based on the descriptive results even though they were not at the significant level. Overall, the Edu participants used communication strategies more frequently than the EE participants except for fluency-oriented strategy (M = 47.20, SD = 10.08 vs. M = 49.67, SD = 22.68) and accuracy-oriented strategy (M = 41.80, SD = 6.38 vs. M = 49.67, SD = 29.24). In terms of the top two categories of communication strategies, the Edu group tended to use fluency-oriented strategy more frequently than the accuracy-oriented strategy while the EE group used these two strategies equally. As far as the ranking of each category of strategy was concerned, the overall ranking was almost the same except for negotiation of meaning strategy and nonverbal strategy. For the EE group, they used negotiation of meaning strategy (M = 25.83, SD = 14.05) more

frequently than nonverbal strategy (*M* = 22.67, *SD* = 11.84). For the Edu group, there was barely any difference regarding using these two categories of strategies, with the frequency of nonverbal strategy (*M* = 31.60, *SD* = 14.26) slightly higher than negotiation of meaning (*M* = 30.40, *SD* = 15.26).

Table 16
Comparison of Communication Strategy Use by Category between EE and Edu Participants

Category	Proficiency	Participants	Mean	SD	Range	Median	Z score	*p* value
Soc	EE	6	16.83	6.43	17	16.50	-1.284	.199
	Edu	5	22.60	6.58	14	21		
Flu	EE	6	49.67	22.68	58	47.50	-.091	.927
	Edu	5	47.20	10.08	27	46		
Neg	EE	6	25.83	14.05	37	28	-.549	.583
	Edu	5	30.40	15.26	40	30		
Acc	EE	6	49.67	29.24	65	49	.000	1.000
	Edu	5	41.80	6.38	16	43		
M-reduc	EE	6	2.50	1.64	4	3	-.463	.644
	Edu	5	3.60	3.05	8	3		
Nonv	EE	6	22.67	11.84	32	20	-.823	.410
	Edu	5	31.60	14.26	33	40		
M-aban	EE	6	3.33	3.27	8	3	-.147	.141
	Edu	5	6.80	3.96	11	7		
Trans	EE	6	0.17	0.41	1	0	-.932	.351
	Edu	5	0.60	0.89	2	0		

Note. N = 11. Soc = Social Affective; Flu = Fluency-oriented; Neg = Negotiation of Meaning; Acc = Accuracy-oriented; M-redu = Message Reduction and Alteration; Nonv = Nonverbal; M-aban = Message Abandonment; Trans = Translation; EE = Electrical Egineering; Edu = Education.
* *p* value of < .05 is statistically significant

The results of range in Table 16 indicated that both groups showed dramatic individual differences in the use of the following strategy categories: fluency-oriented strategy, negotiation of meaning strategy, accuracy-oriented strategy, and nonverbal strategy. The greatest individual difference in using the eight categories of strategies among six participants in the EE group was in the category of accuracy-oriented strategy. The distance between the participant with the highest number of this strategy and the

participant with the lowest number was 65. However, the greatest individual difference in using the eight categories of strategies among five members of the Edu group was in the category of negotiation of meaning strategy. The distance between the participant with the highest frequency of using this strategy and the participant with the lowest frequency of using this strategy was 40.

4.3.2 Comparison of individual strategy use between the EE and Edu groups

Table 17 illustrated the only difference (reaching statistical significance) in individual strategy use between the EE and Edu groups. The Edu participants only used *clarifying stance* (Z = -2.211, p = .027) statistically more frequently than the EE participants. More specifically, the frequency of using this individual strategy identified among the Edu participants (2.26%) was three times as many as the frequency identified among the EE participants (0.62%, see Appendix 10).

Table 17

Mann-Whitney U Test Comparing Individual Strategy Use between the EE and the Edu Groups

Individual Strategy	Discipline	N	Mean Rank	Rank Sum	*U* score	Z score	*p* value
Clarifying stance	EE	6	4.00	41.00	4.00	-2.211	**.027***
	Edu	5	8.40	25.00			

Note. N = 11. A = Advanced; H-I = High-intermediate.

***** p value of < .05 is statistically significant

Though not statistically significant, difference in individual strategy use between the EE and Edu groups were identified in all categories of communication strategies except the category of message reduction and alteration strategy. Specifically, in the category of message reduction and alteration strategy, participants from both groups tended to use *message reduction and alteration* more frequently than *chunking*. In the following section,

the overall use of individual strategies by both groups is presented first, followed by the results of individual strategies in major strategy categories.

The most frequently used strategy among the 28 individual strategies in relation to the total number of strategies used for the EE group was *self-correction* (8.94%) while the most frequently used individual strategies for the Edu group were r*eferring to notes for accuracy* (5.70%) and *referring to notes for fluency* (5.70%). The EE participants never used *correcting others* in their debates or post-debate recall questionnaires while the Edu participants hardly used *chunking* (0.10%).

Table 18 presents the results of the individual social affective strategies used by the two groups. The top two frequently used individual strategies were the same for both groups: *turn-yielding* (S5) and *empathizing with others* (S3). As shown in Table 18, the Edu group used *lowering your anxiety* (S1, $M = 0.60$, $SD = 0.89$), *turn-yielding* (S5, $M = 13.80$, $SD = 6.98$), and *turn-requesting* (S6, $M = 2.60$, $SD = 1.52$) slightly more frequently than the EE group. On the contrary, *self-encouragement* (S2, $M = 0.83$, $SD = 0.98$), *empathizing with others* (S3, $M = 5.50$, $SD = 5.24$), and *asking for assistance* (S4, $M = 0.67$, $SD = 1.21$) were used more frequently by the EE group. Even though both the EE group ($M = 7.83$, $SD = 4.36$) and Edu group ($M = 13.80$, $SD = 6.98$) referred to *turning-yielding* (S5) the most frequently among the six individual social affective strategies, this individual strategy also illustrated the great variance in usage among participants within each group, as seen from the values of the standard deviation. Similar variance was also identified in using the individual strategy *empathizing with others* (EE: $M = 5.50$; $SD = 5.24$, Edu: $M = 4.60$; $SD = 3.44$) within both groups.

Table 18

Comparison of Individual Social Affective Strategies between the EE and the Edu Participants

Category	Proficiency	Participants	Mean	SD	Median	Z score	*p* value
S1	EE	6	0.50	1.22	0	-581	.562
	Edu	5	0.60	0.89	0		
S2	EE	6	0.83	0.98	0.50	-.706	.480
	Edu	5	0.40	0.55	0		
S3	EE	6	5.50	5.24	3.50	-.277	.782
	Edu	5	4.60	3.44	3		
S4	EE	6	0.67	1.21	0	-.106	.916
	Edu	5	0.60	0.89	0		
S5	EE	6	7.83	4.36	9.50	-1.376	.169
	Edu	5	13.80	6.98	14		
S6	EE	6	1.50	1.76	1	-.1.636	.102
	Edu	5	2.60	1.52	2		

Note. N = 11. S1= Lowering Your Anxiety; S2 = Self-Encouragement; S3 = Empathizing with Others; S4 = Asking for Assistance; S5 = Turn-yielding; S6 = Turn-requesting; EE = electrical engineering; Edu = education.

* *p* value of < .05 is statistically significant

As seen in Table 19, in the category of fluency-oriented strategy, the EE participants used *using fillers* (*M* = 26.83, *SD* = 9.75) most frequently, followed by *referring to notes for fluency* (*M* = 20.67, *SD* = 14.65). The most frequently used individual strategy for the Edu group was *referring to notes for fluency* (*M* = 22.20, *SD* = 5.17), followed by *using fillers* (*M* = 21.60, *SD* = 10.78).

Table 19

Comparison of Individual Fluency-oriented Strategies between the EE and the Edu Participants

Category	Proficiency	Participants	Mean	SD	Median	Z score	*p* value
F1	EE	6	26.83	9.75	28	-.730	.465
	Edu	5	21.60	10.78	17		
F2	EE	6	0.50	0.84	0	-.232	.816
	Edu	5	0.60	1.34	0		
F3	EE	6	20.67	14.65	20.50	-.365	.715
	Edu	5	22.20	5.17	21		
F4	EE	6	1.67	1.97	1	-1.215	.224
	Edu	5	2.80	1.48	3		

Note. N = 11. F1= Using Fillers; F2 = Rehearsing; F3 = Referring to Notes for Fluency; F4 = Stalling; EE = electrical engineering; Edu = education.

* *p* value of < .05 is statistically significant

Notice that the EE participants used fillers much more frequently than the Edu participants. Participants from both groups were medium users of *rehearsing* and *stalling*. As seen from the values of the standard deviation, the greatest variance in the use of individual strategies among members in each group were as follows: *using fillers* (EE: *SD* = 9.75; Edu: *SD* = 10.78) and *referring to notes for fluency* (EE: *SD* = 14.65; Edu: *SD* = 5.17).

Table 20 presents the results of the individual negotiation of meaning strategies used by the EE and Edu participants. The difference in terms of the ranking of each individual strategy between the two groups was particularly visible in this strategy category. However, both groups seldom used *analogy* (N4) and *clarifying meaning* (N8).

Table 20

Comparison of Individual Negotiation of Meaning Strategies between the EE and the Edu Participants

Category	Proficiency	Participants	Mean	S.D.	Median	Z score	*p* value
N1	EE	6	3.67	3.72	3.50	-.460	.646
	Edu	5	4.60	4.28	3		
N2	EE	6	9.00	4.73	10	-1.011	.312
	Edu	5	6.00	2.92	5		
N3	EE	6	3.17	2.56	3	-1.028	.304
	Edu	5	1.60	1.67	2		
N4	EE	6	0.67	1.63	0	-.581	.562
	Edu	5	0.60	0.89	0		
N5	EE	6	4.50	2.81	5.5	-.370	.711
	Edu	5	3.80	2.68	4		
N6	EE	6	2.00	3.03	1	-2.211	**.027***
	Edu	5	8.80	7.60	8		
N7	EE	6	2.33	3.27	0.50	-1.299	.194
	Edu	5	3.80	3.03	2		
N8	EE	6	0.50	0.55	0.50	-.884	.377
	Edu	5	1.20	1.30	1		

Note. N = 11. N1=Repeating; N2 = Exemplifying; N3 = Approximating; N4 = Analogy; N5 = Elaborating; N6 = Clarifying Stance; N7 = Seeking Clarification; N8 = Clarifying Meaning.
EE = electrical engineering; Edu = education.
***** *p* value of < .05 is statistically significant

Exemplifying (*M* = 9.00, *SD* = 4.73) and *elaborating* (*M* = 4.50, *SD* = 2.81) were dominantly used by the participants from the EE discipline. As can be seen from the percentages of both individual strategies (34.84% vs. 17.42%) in relation to the strategy category (see Appendix 10), they accounted for more than half of the individual strategies under the category. *Repeating* (*M* = 3.67, *SD* = 3.72) and *approximating* (*M* = 3.17, *SD* = 2.56) were the third and fourth most frequently used individual strategy by the EE participants, followed by *seeking clarification* (*M* = 2.33, *SD* = 3.27), *clarifying stance* (*M* = 2.00, *SD* = 3.03), *analogy* (*M* = 0.67, *SD* = 1.63), and *clarifying meaning* (*M* = 0.50, *SD* = 0.55).

For the Edu participants, they tended to use *clarifying stance* (*M* = 8.80, *SD* = 7.60) and *exemplifying* (*M* = 6.00, *SD* = 2.92) very often. These two strategies also accounted for almost half of the individual strategies under the category. R*epeating* (*M* = 4.60, *SD* = 4.28), *elaborating* (*M* = 3.80, *SD* = 2.68), and *seeking clarification* (*M* = 3.80, *SD* = 3.03) were occasionally used by the Edu group, followed by *approximating* (*M* = 1.60, *SD* = 1.07), *clarifying meaning* (*M* = 1.20, *SD* = 1.30), and *analogy* (*M* = 0.60, *SD* = 0.89). The main difference in using the individual strategies among participants within the EE group was *exemplifying* (*M* = 9.00, *SD* = 4.73). Within the Edu group, participants varied greatly in the use of *clarifying stance* (*M* = 8.80, *SD* = 7.60).

In the category of accuracy-oriented strategy, *correcting others* was the least used individual strategy by participants from both groups. Interestingly, participants from the Edu group relied more on notes than participants from the EE group. *Referring to notes for accuracy* constituted 53.11% of the accuracy-oriented strategy for the Edu group

while *self-correction* represented 58.39% of the strategy category for the EE group (for the individual strategies' specification, see Appendix 10).

Table 21 presents the results of the individual nonverbal strategies used by the EE and Edu participants. In the category of nonverbal strategy, *facial expression* was the least frequently used individual strategy by both groups. As seen in Table 21, *eye contact* and *gesturing* were the most frequently used individual strategies for both groups. However, the Edu participants used *eye contact* more frequently than *gesturing* whereas the EE participant used these two individual strategies equally.

Table 21

Comparison of Individual Nonverbal Strategies between the EE and the Edu Participants

Category	Proficiency	Participants	Mean	S.D.	Median	Z score	*p* value
NV1	EE	6	11.17	6.43	10.50	-.460	.646
	Edu	5	18.00	9.08	15.00		
NV2	EE	6	11.17	7.63	9.50	-1.011	.312
	Edu	5	12.60	10.11	9.00		
NV3	EE	6	1.00	0.52	0.00	-1.028	.304
	Edu	5	1.60	1.41	0.00		

Note. $N = 11$. NV1=Eye Contact; NV2 = Gesturing; NV3 = Facial Expression. EE = electrical engineering; Edu = education.

* p value of $< .05$ is statistically significant

** p value of $< .01$ is highly statistically significant

4.4 Research Question 4

What are the relationships between communication strategy use and the participants' oral production?

To answer this research question, I conducted the Spearman's *rho* test to examine the relationships between: 1) participants' overall strategy use and oral production scores, 2) strategy categories and oral production scores, 3) individual strategies and oral production scores.

4.4.1 Overall strategy use and oral production scores

As shown in Table 22, the Spearman's *rho* test result showed a statistically significant relationship in terms of the identified number of communication strategies and participants' speaking scores in performing the informal debate tasks.

Table 22
Correlation between Number of Communication Strategies and Debate Scores

			Debate Scores
Spearman's *rho*	Frequencies of Communication Strategies	Correlation Coefficient	.727*
		Sig. (2-tailed)	.011
		N	11

Note. Correlation is significant at the 0.05 level (2-tailed)

More specifically, participants' debate scores were positively correlated with the identified frequencies of communication strategies. In other words, the more strategies participants employed, the better they would perform in the informal debate tasks, and vice versa.

4.4.2 Strategy categories and oral production scores

Similarly, statistically significant relationships were identified between certain categories of communication strategies and participants' oral production scores, as shown in Table 23.

Among the eight categories of communication strategies, there were five categories of strategies significantly positively correlated with participants' debate scores. More specifically, participants' debate scores were positively correlated with the following strategies: social affective strategy, fluency-oriented strategy, negotiation of meaning strategy, accuracy-oriented strategy, and message reduction and alteration strategy. The

results indicated that participants' increasing use of the previously mentioned strategy categories would contribute to higher debate scores. Nevertheless, though not statistically significant, frequently translating from the first language to the second language tended to be associated with lowering participants' debate scores instead.

Table 23
Correlation between Number of Communication Strategies by Category and Debate Scores

		Soc	Flu	Neg	Acc	M-redu	Nonv	M-aban	Trans
Debate Scores	Correlation Coefficient	**.616***	**.661***	**.765****	**.691***	**.834****	.510	.568	-.284
	Sig. (2-tailed)	.043	.027	.006	.019	.001	.109	.069	.397

Note. Spearman's *rho*, *N* = 11. Soc = Social Affective; Flu = Fluency-oriented; Neg = Negotiation of Meaning; Acc = Accuracy-oriented; M-redu = Message Reduction and Alteration; Nonv = Nonverbal; M-aban = Message Abandonment; Trans = Translation.
* *p* value of < .05 is statistically significant
** *p* value of < .01 is highly statistically significant

4.4.3 Individual strategy use and oral production scores

As shown in Table 24, seven individual strategies were found correlated with participants' debate scores, which were at the significant level.

Table 24
Significant Correlations between Individual Strategies and Debate Scores

		S5	F3	N2	N8	A2	A3	MR2
Debate Scores	Correlation Coefficient	.690*	.664*	.636*	.680*	.664*	.607*	.893**
	Sig. (2-tailed)	.019	.026	.035	.021	.026	.048	.000

Note. Spearman's *rho*, *N* = 11. S5 = *Turn-yielding*; F3 = *Referring to Notes for Fluency*; N2 = *Exemplifying*; N8 = *Clarifying Meaning*; A2 = *Referring to Notes for Accuracy*; A3 = *Correcting Others*; MR2 = *Message Reduction and Alteration.*
***** *p* value of < .05 is statistically significant
****** *p* value of < .01 is highly statistically significant

The usage of the individual strategies: *turn-yielding*, *referring to notes for fluency*, *exemplifying*, *clarifying meaning*, *referring to notes for accuracy*, *correcting others*, and

message reduction and alteration were all positively correlated with participants' debate scores.

Table 25 presented the negative correlations between six individual strategies and participants' debate scores even though the results were not statistically significant.

Table 25

Negative Correlations between Individual Strategies and Debate Scores

		S2	S3	F2	N7	MR1	Trans
Debate Scores	Correlation Coefficient	-.312	-.097	-.451	-.009	-.323	-.284
	Sig. (2-tailed)	.351	.778	.164	.978	.333	.397

Note. Spearman's *rho, N* = 11. S2 = *Self-encouragement*; S3 = *Empathizing with Others*; F2 = *Rehearsing*; N7 = *Seeking Clarification*; MR1 = *Chunking;* Trans = *Translating.*

* *p* value of < .05 is statistically significant

The following individual strategies had a negative correlation with participants' debate scores: *self-encouragement*, *empathizing with others*, *rehearsing*, *seeking clarification*, *chunking,* and *translating*. The results suggested that increases in debate scores were correlated with decreases in using these individual strategies.

4.5 Qualitative Analysis Results

To better understand participants' perceptions of challenges they encountered in communication and their corresponding solutions, I asked the participants to complete the post-task communication strategy recall questionnaire, which required them to describe the general speaking challenges encountered in academic settings, specific task-related speaking challenges in the informal debate tasks, and their solutions. Meanwhile, as the translation strategy is not in the OCSI, the questionnaire asked participants to report their use of this strategy. Therefore, the results will be presented in terms of four sections: general speaking challenges, challenges encountered in the informal debate tasks, reflections on strategy use, and the use of translation strategy.

4.5.1 General speaking challenges

Generally, the participants were concerned about expressing themselves accurately, listening challenges in speaking, and vocabulary size. How to express accurately and precisely was especially challenging for most of them.

Nine out of 11 participants were struggling with presentations. "Proper choice of words," "expressing clearly," "speaking accurately," "using correct grammar," and "describing figures and tables correctly" were major concerns among these participants. Eight participants expressed their desire for "using accurate, authentic English." In the present study, accuracy-oriented strategy was one of the most frequently used categories of strategies by participants in performing the informal debate tasks. When participants used "accurate English," they did not mean they could not express grammatical sentences; rather, they could not express them like native speakers. For example, one participant reported:

> The vocabulary and the talking habit are challenges for me. With limited vocabulary, it is difficult to make my talk/presentation/article vividly and attractive although I am still able to present the idea understandable. Sometimes, I try to translate from Chinese to English, which makes my sentence strange. I don't have enough vocabularies to present my idea vividly. (P6, EE, Advanced)

To my surprise, four out of 11 participants expressed the listening challenges they had encountered in academic settings, especially with professors. They found it difficult to comprehend professors if some technical terms were involved in the speech. For instance, one participant wrote that: "During classes, I have met difficulties like I can't

catch up with the ideas that the professors mentioned because of the gap in the way of thinking." (P9, Edu, High-intermediate)

Vocabulary size was another concern for some participants. Three out of 11 participants mentioned about the vocabulary challenges. The vocabulary size could either influence participants' comprehension of others or the comprehensibility of their own expressions. For example, one participant wrote that: "Because there are some words I don't know, I could not understand the speaker quite well." (P5, EE, Advanced) Similarly, participants were identified to be medium users of negotiation of meaning strategy when they were performing informal debate tasks.

Other challenges include: how to express fluently, how to speak in a logical sense, and how to rid oneself of the accent. However, each of these challenges was mentioned by only one or two participants. Finally, one participant was struggling with constructing complicated sentences while other participants were trying to figure out how to express their thoughts more properly and concisely.

4.5.2 Challenges encountered in the informal debate tasks

Shortage of vocabulary was the predominant challenge for all participants in the informal debate tasks. Vocabulary size prevented participants from expressing their intentions. There appeared to be a gap between participants' intentions and the ultimate expressions because of the lack of vocabulary. For instance, one participant wrote that:

> Yes, sometimes I would like to express something or some ideas, since my vocabularies are not rich enough, I could not use some proper and explicit words to express myself. During this procedure, the information conveyed

> will have some errors between the initial meaning and the information listeners got. (P5, EE, Advanced)

Grammatical mistakes were another issue for some participants. Four participants were concerned about the grammatical mistakes they made in the informal debate tasks. For instance, one participant reported that: "I think I spend too much time on grammar like she/he, tense." (P2, EE, High-intermediate)

Due to the dynamic nature of debates, participants need to comprehend their interlocutors on one hand and formulate arguments based on what was heard on the other hand. Two participants found it hard to express themselves in a logical sense. For example, one participant wrote that: "The problem is to organize the points in a logical order and stay that way." (P1, EE, High-intermediate)

Other challenges, mentioned by some participants, included: difficulty of understanding others, turn-taking, accent, and turn-maintaining[12]. Take turn-maintaining as an example, one participant reported that: "For me, I get my points to say, the thing is I don't have enough time to say. Interrupted by people. They are so active." (P10, Edu, Advanced)

4.5.3 Reflections on strategy use

Undoubtedly, communication strategies provided by participants were tailored to the needs of each participant, as there was a diversity of strategies reported by each participant. Even though participants reported all eight categories of communication strategies in the post-task questionnaire, they might not be fully aware of their strategic behaviours in performing the informal debate tasks. Only common individual strategies,

[12] In conversational turn-taking, the speaker prevents another person from interrupting his/her speech.

such as *using examples, message reduction and alteration strategy,* and *approximating* were frequently reported by many participants. Furthermore, all participants mentioned that the usage of certain strategies worked and could solve some of the problems they encountered in communication, though not necessarily "the best" solutions. For example, one participant evaluated the individual strategy she used (*elaborating*) that: " Yes, I think it worked, but it may make the conversation less concise." (P11, Edu, High-intermediate)

Negotiation of meaning strategy was the most frequently reported strategy category by participants while *using examples* was the most frequently used individual strategy in this category. Five out of 11 participants reported that they used examples when they encountered difficulties in speaking. For example, one participant reported that he used L1 debate strategy of using examples: "I might use debate skills in Chinese such as giving examples." (P1, EE, Advanced) Similarly, *exemplifying* was among the top-10 individual strategies in relation to total number of strategies used by participants in the informal debate tasks.

Approximating was another individual strategy commonly reported by participants. Participants would replace original expressions with similar but simpler expressions they felt comfortable with when they encountered difficulties in communication. For example, one participant reported that: "Sometimes it's hard for me to find a proper word to express myself clearly. So I may choose to use some simple words or synonyms to express." (P5, EE, Advanced)

Social affective strategy was another category of strategy commonly reported by participants. Even though hardly any instance of participants' self-encouragement and

lowering their anxiety was identified in the debate data, four participants reported that they were anxious in communicating with others in English and tried to overcome those negative feelings. For example, one participant wrote that:

> Once you are getting so nervous in the conversation (English as a second language), try to relax but it is always hard. Because once you make a mistake, you will feel nervous. Once you feel nervous, you will make more mistakes. So just stop for a few seconds trying to adjust yourself and back to the right side. (P10, Edu, Advanced)

Self-correction was another frequently used individual strategy for some participants. Three participants said that they would correct themselves when they realized they had made mistakes. For example, one participant said: "When I realized the mistakes, I correct myself." (P9, Edu, High-intermediate) In the present study, participants used *self-correction* as well as *using fillers* (which shared the first place among all the individual strategies) the most frequently in performing the informal debate tasks.

Message reduction and alteration and message abandonment strategy were another two solutions to communication challenges for some participants. Two participants reported the use of message reduction and alteration strategy while three participants reported the use of message abandonment strategy. For message abandonment strategy, three participants reported that they would simply ignore and pass the difficulties or give up. Take message reduction and alteration strategy as an example, one participant said that: "I might express my ideas in another way." (P2, EE, High-intermediate)

4.5.4 Use of translation strategies

In order to examine participants' use of translation strategy, they were required to provide examples while they used translation strategy during communication. On the whole, participants rarely used this strategy. Nine participants reported that they did not use the translation strategy during the debate though four of them admitted they took notes in Chinese during the preparation time. For example, one participant said:

> Yes, since the preparation time is limited. I would like to use the less time to convey the most information. I may take some notes or write down the main points I'd like to say during the debate in Chinese. But in the procedure of the debate, I will not think and express in the Chinese way. I may switch to the English communication way. (P5, EE, Advanced)

Only two participants reported that they would use the translation strategy occasionally. For example, one participant reported: "Yes, I translated some words, such as *expand your foreign experience* and *enrich your foreign experience*." (P11, Edu, High-intermediate) Similarly, translation strategy was the least frequently used category of strategy by participants to perform the informal debate tasks in this study.

As discussed previously, the retrospective results from the post-task communication strategy recall questionnaires proved invaluable tool in identifying strategies that would have been otherwise overlooked (i.e., social affective strategy and translation strategy). In addition, it allowed me to confirm participants' use of a particular strategy category, such as message reduction and alteration strategy. Furthermore, the challenges provided by the participants allowed me to perceive the attributes underlying participants' use of certain communication strategies (i.e., accuracy-oriented strategy). Moreover, the most

frequently reported individual communication strategies by participants were those common strategies, such as *exemplifying* and *self-correction*. Considering the total number of communication strategies ($N = 95$) identified in the post-task communication strategy recall questionnaire, it can be concluded that participants are not fully aware of their communication strategy use.

Chapter 5: Discussion

In this chapter, key findings of the study are interpreted and discussed according to each of the four research questions. After that, limitations and implications are addressed. Recommendations for future research end the chapter.

5.1 Discussion of Key Findings

5.1.1 What are the communication strategies used by Chinese graduate students majoring in EE and Edu?

The present study investigated the communication strategies used by 11 Chinese EAL leaners in the completion of the informal debate tasks. Consistent with previous studies (e.g., Brown, 2013; Diaz Larenas, 2011; Nakatani, 2006; Saziyen & Pelin, 2013; Teng, 2011), the research findings demonstrate that participants in this study have used a fairly large number of communication strategies. Overall, eight categories of communication strategies have been identified from the informal debate tasks and the post-task communication strategy recall questionnaires.

Results from the OCSI questionnaire indicate that participants use the nonverbal strategy category the most frequently while they use the message abandonment strategy category the least frequently. However, results from the identified communication strategies used by participants in performing the informal debate tasks and the post-task communication strategy recall questionnaires illustrate that participants are frequent users of fluency and accuracy-oriented strategies, and they rarely use the translation strategies. The identified communication strategy results corroborate with Abunawas's (2012) finding that learners with higher proficiency levels use fewer L1-based communication strategies. The results of the identified strategies from the informal debate tasks and post-

task communication strategy recall questionnaires did not corroborate with the OCSI findings. The possible explanations could be: 1) As was indicated in Gao's (2007) and Phakiti's (2003) studies, participants may not be aware of their strategy use and their responses to the questionnaire may be biased or inaccurate. 2) Participants may respond to different task requirements with different strategies. 3) The questionnaire might not be a highly reliable instrument to retrieve possible variation in strategy use across tasks. Given that the modification of the OCSI questionnaire is not the focus of the study and therefore was not validated before implementation, and the quantitative data were based on only 11 participants, the adapted OCSI questionnaire might not yield valid results. Despite the limitation, significant relationships have been found among some identified strategy categories and all the relationships are positive. This indicates that the usage of some categories of strategies may be related to the usage of other strategies.

In terms of individual strategies, the most frequently used individual strategies by participants are *using fillers* and *self-correction* while the least frequently used individual strategies are *correcting others* and *chunking*. Participants' high frequent usage of fillers and self-correction strategies suggest that the advanced and high-intermediate level learners have a strong awareness of promoting fluency and accuracy in conversation. This can be reflected from their post-task communication strategy recall questionnaire results as well. Speaking fluently as well as accurately are two of the major concerns for participants (n = 9) in this study. The possible reason why participants in this study seldom correct others could be that: the informal debate tasks allow the participants to focus more on meanings rather than forms of their language. As Swain (1985) has noted, it is possible for second language learners to understand the meaning of an utterance

without reliance on or recognition of its morphology or syntax. From this perspective, the participants might believe further modification of the interlocutors' grammatical errors is not needed for comprehensibility. It is also speculated that the communication context of the informal debate tasks might not trigger as many grammatical modifications among learners as natural language courses do.

5.1.2 Are there any differences in communication strategy use depending on the participants' language proficiency?

Overall, advanced level learners resort to communication strategies more often than high-intermediate level learners. The advanced group reports significantly higher usage of the following strategy categories than the high-intermediate group: social affective strategies, negotiation of meaning strategies, and message reduction and alteration strategies. The results corroborate with findings from previous studies (e.g., Abunawas, 2012; Liskin-Gasparro, 1996; Paribakht, 1985) that the selections of communication strategies vary between the advanced and high-intermediate participants. In other words, it seems that learners with more linguistic competence feel more able to control their anxiety, interact with others, solve communication problems through negotiation, and change their way of speaking when they encounter difficulties to manage the speaking tasks. As seen from the post-task questionnaire results, the advanced level learners (n = 5) indeed are more able to monitor and especially evaluate the benefits of using certain communication strategies than the high-intermediate level learners (n = 2). For instance, one advanced level learner reflected in his post-task communication strategy recall questionnaire that:

> Yes, reading more materials is useful to enlarge vocabulary. I think most times it works. Most listeners could get the point when I choose some simpler or more common words. But sometimes, the simpler words that I choose could not express the deep meaning which I would like to express. (P5, EE, Advanced)

One thing worth noticing is the significant difference in the use of message reduction and alteration strategy category between the advanced and high-intermediate level participants. Though the advanced level learners in this study use message reduction and alteration strategies more frequently than high-intermediate level participants, this strategy category, along with the translation strategies, is the least frequently used strategy category among eight categories of communication strategies by both groups. The result is consistent with previous findings (e.g., Faerch & Kasper, 1980; Margolis, 2001; Zhao & Intaraprasert, 2013) that successful learners more frequently resort to achievement strategies than avoidance strategies. However, it also underscores Tarone's (1981) statement that the purpose underlying the use of avoidance strategies may be extremely complex and very difficult to examine in any given case. Therefore, the present study highlights the need for further investigation of the avoidance strategies.

In terms of the individual communication strategies, the advanced group report significantly more *message reduction and alteration* and *turn-yielding* strategies than the high-intermediate group. The possible explanation for advanced level participants' frequent usage of *turn-yielding* could be attributed to the fact that the participants in each group know each other as they are from the same discipline. As demonstrated in Scollen and Scollen's (1995) study, hierarchical relationship and the distance between people are

factors that could influence turn-taking in communication. Considering the fact that they know each other, the participants might yield their turns to avoid challenging the so-called face-threatening acts (e.g., Poehaker, 1998), which may evoke interpersonal conflicts.

5.1.3 Are there any differences in communication strategy use depending on the participants' disciplines?

Contrary to research findings in communication strategy use across different disciplines (e.g., An & Nathalang, 2010; Chang, 1991; Mochizuk, 1999; Peacock & Ho, 2003), statistical results in this study indicate that there is no significant difference between the EE and Edu participants in terms of using eight categories of communication strategies. This finding could be due to the small number of participants in this study. Nevertheless, statistical significance is not equivalent to practical significance. As Huang (2013) mentioned, "no statistical differences do not necessarily imply that the results are not important or do not have meaningful implications in reality (p. 13)." It can only be concluded that the number of participants as well as disciplines in this study might not be large enough to detect the distinctive usage of strategies across disciplines.

However, there is a significant difference in terms of individual strategy use between the EE and Edu participants. Participants from the Edu Department use significantly higher number of *clarifying stance* than participants from the EE Department. This could be attributed to the peer influence on participants' communication strategy use within the Edu group. From the perspective of collaborative learning (e.g., Clark & Schaefer, 1987; Dobao, 2012; Swain, 2000; Lantolf & Thorne, 2006), communicative problems arising in foreign language interaction have been regarded as mutually shared problems, in the

sense that their solution is the responsibility of all the interactional participants. In this study, one side within the Edu group does not share the same understanding of the second topic with the other side. Nevertheless, learners do not want to drop their beliefs just because there are disagreements or their own arguments have been refuted. To reach the final goal of shared understanding of the topic, participants have to clarify their stances to clarify their intended meaning. As the EE group does not experience such disagreements among members, this might have reduced the chance of using the individual strategy (*clarifying stance*) within the EE group.

5.1.4 What are the relationships between the communication strategy use and the participants' oral production?

The overall usage of communication strategies has significant positive relationships with participants' oral production (debate) scores.

Statistically significant relationships have been identified between the frequency of communication strategies and participants' debate scores. Consistent with Nakatani's (2010) findings, participants' speaking performance has a significant positive relationship with the following categories of communication strategies: social affective strategies; fluency-oriented strategies; negotiation of meaning strategies; accuracy-oriented strategies and message reduction and alteration strategies. Significant positive relationships have also been found between the frequency of individual strategies and participants' debate scores. Participants' debate scores are positively correlated with the following individual strategies: *turn-yielding*, *referring to notes for fluency*, *exemplifying*, *clarifying meaning*, *referring to notes for accuracy*, *correcting others*, and *message reduction and alteration*.

The significant findings are in line with Zhao and Intaraprasert's (2013) study that there exists a relationship between strategy use and language skills. It could be speculated that frequently employing certain communication strategies, such as social affective strategies, fluency-oriented strategies, negotiation of meaning strategies, accuracy-oriented strategies, and message reduction and alteration strategies is connected with improvement in speaking. However, as emphasized by Cohen (2000), it is important to keep in mind that correlation does not imply causality. The findings presented above simply demonstrate that frequent usage of certain strategies is related to speaking performance. This study does not aim to examine the effect of communication strategies on participants' speaking performance. More specifically, examining how participants employ communication strategies effectively to achieve successful speaking is not the focus of this study. Taking into account the recognition of context and individual factors in the application of strategies, I agree with Macaro (2001) that the frequency of communication strategies might play second fiddle to the quality of employed strategies.

One possible explanation of the finding that the advanced level participants use higher frequency of communication strategies than the high-intermediate level participants in this study could be: the advanced level learners have stronger awareness of the use of communication strategies and its importance role in improving their oral productions than the high-intermediate level participants. As seen from the post-task questionnaire results, the advanced level learners have reflected a higher frequency (M = 10.6, SD = 3.74) of communication strategy use than the high-intermediate level learners (M = 6.83, SD = 2.68). In short, the higher the proficiency level of learners, the more frequently they would refer to communication strategies in speaking. In addition, high-intermediate level

participants' reticence could be another factor influencing the identified number of communication strategies. In this study, the advanced level participants are more active in communication than the high-intermediate level participants, measured by the average turns they take in two informal debate tasks (M = 79.80, SD = 35.38 vs. M = 39.67, SD = 16.29). A few high-intermediate level participants in this study are reticent most times; therefore, it has increased the difficulty of examining their strategy use as well as rating their speaking performance. The following expressions reported by high-intermediate level learners could explain why they were reticent in the informal debate tasks. For example, one participant reported: "Sometimes I am afraid to speak when I haven't prepared all the words and grammar of the sentences I'm going to say." (P3, EE, High-intermediate) The other participant mentioned: "In my mind, the worse one's language ability is, the less he talks." (P4, EE, High-intermediate)

Therefore, before conclusions are made, it is worth exploring other variables, such as individual differences, task type, and communication context rather than simply concluding that the advanced proficiency learners definitely use communication strategies more frequently than high-intermediate proficiency learners.

5.2 Implications

Implications are presented in this section, including empirical, methodological, and pedagogical, respectively.

5.2.1 Empirical implications

Research with a focus on message reduction and alteration strategies has been largely neglected. Though several studies have reported that high proficiency learners tend to use achievement strategies more often (e.g., Bialystok, 1983; Ellis, 1986; Margolis, 2001;

Tarone, 1977; Zhao & Intaraprasert, 2013), strategy use follows a complex pattern in that the increase of strategy use in the process of L2 learning is not necessarily leading to the corresponding success on language proficiency. Contrary to previous studies (e.g., Nakatani, 2006; An & Nathalang, 2010), a significant positive relationship has been found between the avoidance strategies (message reduction and alteration strategies) and language proficiency in this study. Considering language practitioners' attention on achievement strategy, I would argue that compensation strategies might also contribute to EAL learners' speaking performance. It is worth exploring how students efficiently employ this category of strategy in the process of communication.

5.2.2 Methodological implications

A crucial question of previous studies is how precise and accurate learners' responses on strategy questionnaires really are. Triangulation of strategy data has often been proposed (e.g., Macaro, 2006; Phakiti, 2003) to validate questionnaire findings, but it has less frequently been carried out (e.g., Bråten & Samuelstuen, 2007), especially for oral communication strategies (e.g., Dai & Shu, 1994; Gao, 2000; Teng, 2012; Wang, 2000; Yang & Gai, 2010).

In this study, both qualitative and quantitative data have been collected from the OCSI questionnaire, video recording, and a reflective questionnaire to triangulate the data. The benefits of triangulation include "increasing confidence in research data, creating innovative ways of understanding a phenomenon, revealing unique findings, challenging or integrating theories, and providing a clearer understanding of the problem" (Thurmond, 2001, p. 254). These benefits largely result from the diverse sources of information, different investigators to analyze data, and multiple qualitative and/or

quantitative methods to collect data. However, reflecting from the data collection methods in this study, I may suggest an interview after each oral production task for this study. The post-task questionnaire might not elicit as much information of participants' use of communication strategies in the informal debate tasks as interviews do. Adams and Cox (2008) once pointed out that: "An interview enables the researcher to obtain more detailed and thorough information on a topic than might be gleaned from the questionnaire (p. 21)." Also, since the same post-task communication strategy recall questionnaire is employed after each debate task in this study, the second time participants complete the questionnaire might be biased towards simply repeating what they said in the first post-task questionnaire. Furthermore, communication strategies are related to learners' mental planning of their speech. Considering the fact that participants might not be fully aware of their strategy use, an interview might be more effective to help interpret or code some oral data more accurately. Also, it is suggestive for researchers who want to replicate this study to modify the post-task communication strategy recall questionnaire to make it suitable in a different context.

Another consideration in data gathering is about the grouping of participants based on their language proficiency levels. In this study, in order to create a natural context of learning, participants have conducted their informal debate tasks based on their disciplines. This means certain controls possible in an experimental environment are not applied in this case. However, some advanced proficiency participants are extremely active in the debate while some high-intermediate participants cannot interject, take their turns, and thus keep reticent most times in the debate. In other words, the data gathered from some high-intermediate level participants might not reflect their typical pattern of

communication strategy use. Hence, grouping participants based on their language proficiency levels could provide more information regarding high-intermediate speaking performance as well as communication strategy use.

5.2.3 Pedagogical implications

Numerous previous studies (e.g., Brown, 2007; Canale, 1983; Dörnyei, 1995; Nakatani, 2006; Oxford, 1990) have demonstrated the effectiveness of teaching second language learners communication strategies, and the results of these studies generally lead them to advocate the teaching of communication strategies. The findings of this study provide some insights into the strategic behaviours of Chinese EAL learners when they perform their speaking tasks. The research findings indicate that advanced and high-intermediate proficiency learners in this study have employed a wide range of strategies to complete the speaking tasks. It has also demonstrated some significant relationships between participants' strategy use and their speaking performance. Instructors may consider teaching L2 low-level learners certain communication strategies by providing L2 models of the use of certain communication strategies, including compensation strategies. On the one hand, instructors can evaluate the effectiveness of training the communication strategies (i.e., lowering learners' anxiety in communication, negotiation of meaning strategy, fluency-oriented, and accuracy-oriented strategies) on learners' progress in second language learning. On the other hand, learners can become more aware of how to use such strategies for more effective communication (e.g., Cohen, 1998; Nakatani, 2005).

Instructors should also be aware that high-intermediate proficiency learners might need more encouragement in communication. Although not statistically significant, this study

has found that high-intermediate level participants used the following individual strategies more frequently than advanced level participants: *self-encouragement*, *empathizing with others*, and *chunking*. In other words, the high-intermediate level learners are more aware of the emotional factors in learning than the advanced level learners. Even though the use of certain communication strategies might not be a perfect way to solve their speaking problems, they still try to use various strategies to conquer the fear of making mistakes, to empathize with the interlocutors, and to simplify their expressions to make the speech smooth. This could also be detected from their post-debate reflections. In fact, three out of six high-intermediate level participants mentioned about the fear of making grammatical mistakes in speaking. For example, one participant said that:

> I have so many problems: grammatical rules, Chinese accent, improper word order, grammatical problems like emphasis, tense, etc. I still need improvement. Although I am not as nervous as I was before, it seems that I make more mistakes and repeat more words. I am really short of words and sentence diversification. (P3, EE, High-intermediate)

Notice that participants might not be fully aware of their communication strategy use, which can be detected from the individual differences in using communication strategies. The results of the study indicate that there are great variations regarding communication strategy use among participants either at the same proficiency level or from the same discipline. It is likely that participants might overuse some categories of communication strategies based on their previous learning experiences and neglect the role of other strategies (i.e., those they are not familiar with) play in communication. Furthermore,

even high-intermediate or advanced level EAL learners might not be able to use communication strategies effectively. Some participants in this study could not select specific strategies to solve their communication strategies. For example, two participants wrote in the post-debate questionnaire:

> I think the solution for speaking better is to speak more. Everyday, I should spend more time in practising English. (P4, EE, High-intermediate)
>
> My problem is limited vocabulary. I think there is no way (to conquer the difficulty). Reading, listening, and speaking more in English can help. (P6, EE, Advanced)

As stated by Cohen and Weaver (2005), learners should be explicitly taught how, when, and why certain strategies can be used to facilitate language learning. These are important considerations for strategy instruction.

5.3 Limitations

5.3.1 Sample size and grouping of participants

The size of the present study is small and all the participants have been recruited from the same school in British Columbia, Canada, thus the results of this study might not be generalizable beyond the participants and the context. In addition, as the design of the study was trying to create a class-like context, participants have conducted their debates based on their disciplines. Certain controls in a laboratory environment (i.e., grouping based on participants' language proficiency) are not considered in this study. Despite this limitation, the heterogeneous groups (with both advanced and high-intermediate learners in each group) of the study seem more reflective of learners' classroom performance. For

example, it is highly possible that some learners keep reticent all the time in practice, as they would not be able to take their turns.

5.3.2 Number of tasks and task types

In this study participants were asked to conduct the informal debate tasks twice. Conducting two debate tasks is intended to obtain rich data. In other words, participants' speaking performance and strategy use could not be reflected simply in one oral production task. However, factors, such as unfamiliar debate topics, peer influences, and task difficulty all potentially could have an effect on participants' speaking performance and the research findings. In fact, some participants did perform differently in two debate tasks. Some participants participated in the second debate more actively, as measured by the number of words they spoke in each task. Some participants performed worse in the second debate, as they were unsatisfied with the second debate topic. For instance, one participant evaluated the second debate topic that: "I think this oral task is not as thought provoking as the first one because different people have different interpretations towards certain key words in the topic." (P7, Edu, Advanced) Therefore, including a larger number of tasks especially task types into the study could provide a fuller picture of participants' speaking performance and their task-specific communication strategy use.

5.3.3 Research instruments

With regard to research instruments, more questions could be included in the language proficiency pre-test. Though the validity of pre-test questions was taken into account in this study (questions were adapted from the TOEFL iBT topic pool), it only contained participants' monologues on two given topics. Raters could evaluate and rate participants' language proficiency levels more accurately with an increase in the number of questions

in the language proficiency pre-test. Despite this limitation, this study has demonstrated the necessity of conducting such a language pre-test along with the reference of IELTS or TOEFL scores to recruit the suitable participants.

The OCSI inventory may need further validation. The OCSI inventory in this study was adapted from Nakatani's (2006) inventory. It was aimed to measure participants' self-reported communication strategy use. The original OCSI was modified to make it suitable for the participants in this study and the research context. However, the modification of the OCSI was not validated before application. Several issues regarding the validity and reliability of the OCSI were detected after I implemented the instrument in this study. Firstly, the classification of communication strategies in Nakatani's OCSI inventory is worth scrutinizing. For instance, I do not agree with him that combining the social and affective strategies together in the OCSI inventory, as these two strategies are very different strategy categories (e.g., Oxford, 1990; Stern, Allen & Harley, 1992; Swain et al., 2009). Secondly, some of the items under certain categories in the OCSI inventory might overlap with another category, which can potentially affect the reliability of the inventory. It also increases the difficulty of coding and ultimately influences the reliability of results. For instance, in the category of fluency-oriented strategy, this item "I pay attention to my pronunciation" could be under the accuracy-oriented strategy category as well. Therefore, to validate Nakatani's OCSI before its application is essential.

5.4 Future Directions

The small number of participants in this study has made it impossible to generalize the research findings. A large-scale study should be beneficial for the validation of the research findings in this study.

In the present study, participants have been identified using a fairly large number of communication strategies and significant correlations have been identified between certain communication strategy use (e.g., social affective strategies) and participants' speaking performance. Future studies could expand the scope of investigation by including the following variables: task types and contexts (e.g., natural classroom setting). Although several previous studies (e.g., Dörnyei, 1995; Nakatani, 2006, 2010) have focused on identifying the effect of training communication strategies on speaking performance, there does not exist a consensus among researchers on the teaching of communication strategies. Considering the significant relationships identified in this study between strategy use and learners' oral performance, conducting an action research of communication strategy use in classroom settings could help language practitioners as well as discipline instructors gain more concrete teaching-related implications regarding communication strategies. Moreover, examining the variables, such as task types, and contexts could explore the transferability of communication strategies across various tasks and contexts (e.g., Macaro, 2006).

Another area for investigation would be the validation of OCSI inventory. The adapted OCSI from Nakatani's (2006) original version was used for the first time and was not validated in the present study. Researchers might want to replicate this study or adapt the original OCSI to conduct their own study. Modifying some individual items under Nakatani's classification of communication strategies and pilot the adapted OCSI at a

large scale is suggested. Ultimately, refining the existing OCSI would increase the reliability of the inventory and benefit researchers in the field of communication strategies.

Finally, I suggest future studies pay more attention to the social and affective strategies used by L2 learners. Even though the importance of socio-affective strategy has been reported in considerable studies (e.g., Fandiño Parra, 2010; Habte-Gabr, 2006; Rainey De Diaz; 2005), little attention has been paid to the role it plays in speaking performance (e.g., Huang, 2012). This study has identified significant relationships between the social affective strategies and learners' proficiency level as well as their speaking performance. Notice that these two different categories of strategies have been combined as one strategy category in this study in order to comply with Nakatani's classification of communication strategies. For future studies, there is a need to explore the specific relationships between each strategy (i.e., social strategy vs. affective strategy) and learners' speaking performance.

Chapter 6: Conclusion

This present study aimed at investigating the use of communication strategies in performing informal debate tasks by Chinese EAL graduate students in EE and Education. The findings of this study offer instructors and learners information about the self-reported communication strategy use as well as frequencies and categories of communication strategies generated from the informal debate tasks and post-task communication strategy recall questionnaires. It has been found that advanced and high-intermediate level participants employed a wide range of strategies to complete the informal debate tasks even though there are several statistical differences regarding communication strategy use between the two language proficiency level participants. Overall, both advanced and high-intermediate level participants resort to achievement strategies far more frequently than the avoidance strategies. The results of statistical differences imply that learners with more linguistic competence feel more able to control their anxiety, interact with others, solve communication problems through negotiation, and change their way of speaking when they encounter difficulties to manage the speaking tasks. Therefore, high-intermediate level learners might need more encouragement than advanced level learners in communication. Also, improving learners' awareness of communication strategy use and enhancing the effectiveness of their strategy use are suggested for language practitioners as there are wide variations in communication strategy use among participants in this study. However, there is no statistical difference regarding the use of communication strategies between EE and Edu participants. In addition, significant positive relationships have been identified between

the use of certain categories of communication strategies as well as some individual strategies and participants' speaking performance. To my knowledge, this is the first study to examine the relationships between communication strategy use and learners' speaking performance in the completion of two informal debate tasks across two disciplines. In addition, this study went beyond such previous communication strategy studies such as that of Chaing (2011), which utilized a questionnaire as the only instrument for the study. The informal debate data as well as qualitative post-task strategy recall questionnaire data provided insights into both learners' strategy use and the design of instruments in studies of communication strategies. Last, even though significant correlation has been identified between strategy use and learners' speaking performance, the issue concerning whether participants' behaviours in this study represented their performances in academic classes merits in-depth studies. Further research should be conducted investigating participants' communication strategy use in the natural classroom contexts.

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Appendix 1: Recruitment Email

Hello,

My name is Jessie. I am studying for my Master's degree in the Department of Linguistics at the University of Victoria. I am looking for 12 intermediate- and high-proficiency level Chinese English-as-an-additional-language graduate students in the Departments of Electrical Engineering and Education (six in each discipline) for a study of Chinese graduate students' reported communication strategies.

If you decide to participate in this study, you will need to take a language proficiency pre-test; complete a background information questionnaire and an oral communication strategy inventory; conduct two debates and complete a post-task communication strategy recall questionnaire after each debate. The language proficiency pre-test and the debates will be video recorded. It will take you approximately 2.5 hours to complete all the tasks.

The benefits that you may expect from participating in this study is that you may gain a deeper understanding of your oral communication strategies and also have opportunities to explore ways to deal with some of your oral communication challenges, which may contribute to your academic success in the future.

Your participation is *voluntary* and you may withdraw from this study at any time and for any reason.

Please know that you are free to ask any questions about the research at any time throughout the study. If you have any questions or concerns, you can contact me at cihangzh@uvic.ca or my supervisor, Dr. Li-Shih Huang (lshuang@uvic.ca; 250-472-4665). This research project has received ethical approval from the university and is being conducted in accordance with its ethical guidelines. In addition to being able to contact my supervisor and me, you may verify the ethical approval of this study or raise any concerns that you may have by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

If you are interested in participating or have any questions about the study, please don't hesitate to email to cihangzh@uvic.ca.

Best,

Jessie

Appendix 2: Background Information Questionnaire

1. What's your age?

2. How long have you been learning English formally?

3. How long have you been in Canada?

4. Did you have any experience living or studying in another English-speaking country?
   If yes, where and for how long?

5. Do you struggle with talking to others in English?
   If no, please skip to Question 6.
   If yes, what are the challenges you have encountered? (Please be specific.)

6. How much time do you spend approximately in communicating with others in English every week? Please check (□) the box that most accurately describes your estimate.

   ☐ Less than 2 hours ☐ 2 – 3 hours ☐ 4 -5 hours

   ☐ 6 -7 hours ☐ 8 – 10 hours ☐ More than 10 hours

7. Have you ever taken any of the following language proficiency tests--TOEFL (iBT) or IELTS?
   If not, please mark ×. If yes, please mark the test you've taken and provide the score(s) and the year you took the test.

Mark (✓ or ×	Test	Year	Score	Score in speaking
	TOEFL (iBT)			
	IELTS			

Appendix 3: Oral Communication Strategy Inventory (OCSI)

Directions: This questionnaire contains 30 questions. All the questions are related to communication strategy use during communication. Each question has **one** answer only and there is no right or wrong answer. Please circle the number most suitable to the actual situation you encounter in communication. Different numbers stand for different frequencies: 1 = never, 2 = hardly, 3 = sometimes, 4 = usually, 5 = always.

No.	When I talk to other people in English	never	hardly	sometimes	usually	always
1	I actively encourage myself to express what I want to say.	1	2	3	4	5
2	I try to relax when I feel anxious.	1	2	3	4	5
3	I change my way of saying according to the context.	1	2	3	4	5
4	I try to give a good impression to the listener.	1	2	3	4	5
5	I don't mind taking risks even though I might make mistakes.	1	2	3	4	5
6	I change my way of saying things according to the context.	1	2	3	4	5
7	I pay attention to pronunciation.	1	2	3	4	5
8	I pay attention to my rhythm and intonation.	1	2	3	4	5
9	I take my time to express what I want to say.	1	2	3	4	5
10	I try to speak English as fluently as native speakers.	1	2	3	4	5
11	I try to speak clearly and loudly to make myself heard.	1	2	3	4	5
12	I'll think of what I want to say in Chinese first and then construct the English sentence.	1	2	3	4	5
13	I pay attention to grammatical errors made by the listener.	1	2	3	4	5
14	I use words which are familiar to me to express what I want to say.	1	2	3	4	5
15	I use the grammatical rules I've learned to express what I want to say.	1	2	3	4	5
16	I pay attention to organisation of sentences, such as subject, verb, etc.	1	2	3	4	5
17	I pay attention to grammatical structures during conversation, such as grammar, word order, etc.	1	2	3	4	5
18	I correct myself when I notice that I have made a mistake.	1	2	3	4	5

No.	When I talk to other people in English	never	hardly	sometimes	usually	always
19	While speaking, I pay attention to the listener's reaction to my speech.	1	2	3	4	5
20	I make comprehension checks to ensure the listener understands what I want to say.	1	2	3	4	5
21	I repeat myself to help the listener understand what I want to say.	1	2	3	4	5
22	I give examples if the listener doesn't understand what I am saying.	1	2	3	4	5
23	I replace the words if the listener doesn't understand what I am saying.	1	2	3	4	5
24	I use words which are familiar to me.	1	2	3	4	5
25	I reduce the message and use simple expressions.	1	2	3	4	5
26	I replace the original message with another message because of feeling incapable of executing my original intent.	1	2	3	4	5
27	I abandon the execution of a verbal plan and just say some words when I don't know what to say.	1	2	3	4	5
28	I leave a message unfinished because of some language difficulty.	1	2	3	4	5
29	I give up when I can't make myself understood.	1	2	3	4	5
30	I ask other people to help when I can't communicate well.	1	2	3	4	5

Appendix 4: Post-task Communication Strategy Recall Questionnaire

1. Describe the specific language challenges you have encountered in academic settings (e.g., classes, presentations, and group discussions)?
2. What do you think about the oral task (e.g., level of difficulty, choice of topics, and length, etc.)?
3. What do you think about your performance during the debate?
4. During the debate, did you perform differently or in the same way you usually speak in classes?

   If the same, please skip to Question 5.

   If differently, how did you perform differently?
5. Did you encounter any problems in expressing what you wanted to say during the debate?

   If yes, what were these problems? (Please be specific.)
6. What did you do to solve the problems described in Question 5? (Please be specific.)
7. Did your solutions work? Which ones worked? Which ones didn't work?
8. Were there any occasions where you were preparing your opinions before or during the debate when you translated from Chinese to English?

   If no, please skip to Question 9.

   If yes, when did that happen? Please provide some examples.
9. Thinking back to your performance of the informal debate tasks, are there any final comments that you would like to share about your speaking challenges and what you have done to overcome them?

Appendix 5: Informed Consent Form

Project title: *Reported Communication Strategy Use in Performing Informal debate tasks by Chinese English-as-an-Additional-Language Graduate Students in Electrical Engineering and Applied Linguistics*

You are invited to participate in a study entitled as above that is being conducted by me. I am a graduate student in the Department of Linguistics at the University of Victoria. My name is Jessie Zhou, and I can be contacted at cihangzh@uvic.ca.

I am working on an MA research project on the use of communication strategies by Chinese graduate students who are studying in the major of applied linguistics and electrical engineering at the University of Victoria. I am, therefore, asking if you would agree to participate in my research. Your voluntary participation in this study will involve the following:

(a) Complete a language proficiency pre-test, which will be audio recorded and is composed of two parts: a one-minute self-introduction and a one-minute talk about your favourite subject at the University of Victoria;
(b) Complete a background information questionnaire, which has six questions and should take about five minutes (or less) to complete;
(c) Complete a five-point likert scale questionnaire, which has 30 statements and requires you to circle the number (1 = never, 2 = hardly, 3 = sometimes, 4 = usually, 5 = always) most suitable to the actual situation you encounter in communication and should take about 20 minutes (or less) to complete;
(d) Perform two informal debate tasks on two different days (**30 minutes for each task)**; and
(e) Complete a reflective questionnaire after each debate, which has seven questions related to your debate participation experiences **(15 minutes for each questionnaire)**.

Your participation will be entirely voluntary and, during the process of the study, you may withdraw at any time without any explanation. You do not have to answer any questions you do not want to answer. Please also be assured that your name will not be attached to the questionnaires. I will try to ensure that your participation remains confidential although there might be limitations to confidentiality due to the cooperative nature of the debate. I will also take the steps necessary to safeguard your identity. The data collected will be used solely for the purpose of this research. The results of this study may be shared with others at my thesis defense and scholarly meetings, as well as through publications, and all participants' identities will remain undisclosed.

If you decide to withdraw from the study, please be reassured that most of your data will be destroyed and will not be used in the study, and, if you decide to participate, all the data collected will be destroyed five years after the research is complete. However, it is

logistically impossible to remove your individual participant data of the debate due to the nature of this group activity.

Please note that participation in this study may cause some inconvenience to you, including taking up some of your personal time, which is approximately 2.5 hours.

The benefits that you may expect from participating in this study is that you may gain a deeper understanding of your oral communication strategies and also have opportunities to explore ways to deal with some of your oral communication challenges, which may contribute to your academic success in the future.

Please know that you are free to ask any questions about the research at any time throughout the study. If you have any questions or concerns, you can contact me at cihangzh@uvic.ca or my supervisor, Dr. Li-Shih Huang (lshuang@uvic.ca; 250-472-4665). This research project has also received ethical approval from the university and is being conducted in accordance with its ethical guidelines. You may verify the ethical approval of this study or raise any concerns that you may have by contacting the Human Research Ethics Office at 250-472-4545 or ethics@uvic.ca.

_____

My signature below indicates that I understand the purpose of the study specified above and that I have had the opportunity to have my questions answered. I have been given a copy of this form to keep for my records, and I hereby consent to participate in this study.

_____	_____	_____
Participant's printed name	Participant's signature	Date

Appendix 6: Coding Scheme

Social Affective Strategies: Participants' strategic behaviours or actions to encourage themselves to continue engaging in oral communication with others		
Individual Strategies	Definition	Example
Lowering anxiety	Participants trying to relax to lower their anxiety in speaking	Once you are getting so nervous in the conversation, try to relax. Because once you feel nervous, you will make more mistakes. (P10, Task 2)
Self encouragement	Participants encouraging themselves through positive statement	Sometimes I could remind myself to overcome the fear, try to speak more and be confident. (P4, Task 2)
Empathizing with others	Participants using rhetorical questions to seek emotional resonance	No. That's not true. We have communities in the city, right? We have playground in almost every community. Children can play and communicate with each other in the playground. In the countryside, people live far away from each other, right? (P6, Task 1)
Asking for assistance	Participants asking for assistance when they encounter difficulties	How can I make my point clearly? (P6, Task 2)
Turn-yielding—pausing	Participants pausing to yield a turn when they realize that another speaker or interlocutor is speaking simultaneously to show their respect.	P 10: You are not really sure the family won't interrupt your private life. P 7: My understanding is…[The participant stops when he realizes P8 is talking at the same time]. P8: But you can…are not sure about friends, either, right? (P7, Task 2)
Turn-yielding—signalling	Participants using a filler to signal the end of turns	So I think the education system is not the distinct feature between the countryside and the city. OK, so… (P6, Task1)

Turn-requesting—demanding	Participants requesting for a turn through asking questions	Can I say something? Can I say something? (P11, Task 1)
Turn-requesting—raising voice	Participants raising their voices to grab attention in order to take their turns	[Raising voice] Our friend does not necessarily have to be Chinese. (P7, Task 2)
Fluency Oriented Strategies: Participants' strategic behaviours or actions to speak more fluently		
Individual Strategies	Definition	Example
Using fillers	Participants using fillers to gain some time when they encounter problems	Ok, the first point is, umm, we have museums, umm, umm, umm, in the, in big cities. (P3, Task 1)
Referring to notes for fluency	Participants referring to notes in order to speak more fluently	Yeah, I think, [referring to notes] I think we can gain more information from the local family. (P11, Task 2)
Rehearsing	Participants mentally rehearsing what to say	Key points, write down my opinions. Organize them in my brain, put them in orders in my brain. Express them out. (P8, Task1)
Stalling	Participants pausing for a few seconds to gain some time	And also, [a long pausing] and I think language is not the most important thing for us. (P5, Task 2)
Negotiation of Meaning: Participants' strategic behaviours or actions to interact with interlocutors to improve comprehension/comprehensibility		
Individual Strategies	Definition	Example
Repeating	Participants repeating their speech to be understood	P2: So at school, we spend time listening to a lecturer. P3: Lecturer? P2: Yeah, we spend time listening to a lecturer, umm, umm, speaker, speaker, to a speaker who speaks in English. (P2, Task 2)
Exemplifying	Participants giving examples to	I think living with friends may influence their study, right?

	make themselves understood	Maybe they spend much time playing, liking chatting, having parties or something else. (P4, Task 2)
Approximating	Participants using synonyms to clarify meaning	So that's why people are more willing to move from the countryside to the big cities, looking for chances for their, umm, sons or girls, for, for, for offspring. (P1, Task 1)
Analogy	Participants using an analogy to make themselves understood	But so long as the crime rate is below certain structure, we don't care about that, such as drink[ing] water. You can be drowned [choked] by drinking water. So don't drink water, that's ridiculous. The same thing. (P6, Task 1)
Elaborating	Participants elaborating to clarify meaning	I do not mean speaking, it is about skills, you know, communication skills. (P8, Task 2)
Clarifying stance	Participants clarifying their position when they realize there is misunderstanding	This is your understanding. This is not our understanding. (P10, Task 2)
Comprehension checks/seeking clarification	Participants making comprehension checks through questions	You mean hierarchy? (P8, Task 2)
Clarifying meaning	Participants clarifying meaning when there is misunderstanding	But it [living with family] doesn't mean that they have to support your food [provide you food]. (P10, Task 2)
Accuracy Orientated Strategies: Participants' strategic behaviours or actions to correct expressions when there are mistakes		
Individual Strategies	Definition	Example
Self-correction for accuracy	Participants correcting themselves to enhance accuracy	I didn't see the difference between Victoria and Nanaimo, and Nanaimo [self-correcting the pronunciation of Nanaimo]. The city has, have to grew [grow] better than countryside. (P6, Task 1)
Self-correction for preciseness	Participants correcting themselves to enhance precision	You don't have lakes [in the city]. Usually you don't have lakes. (P2, Task 1)

Referring to notes for accuracy	Participants referring to notes in order to speak more accurately	And I mention, [referring to the notes] I, I notice that you mention a lot, you guys mention a lot about that, umm, the different cultural background. (P8, Task 2)
Correcting others	Participants correcting others' speech	We don't say "gut." We say "get." (P7, Task 2)
Message Reduction and Alteration Strategies: Participants' strategic behaviours or actions to avoid a communication breakdown by reducing an original message, using similar expressions, or simplifying utterances		
Individual Strategies	Definition	Example
Chunking	Participants chunking complicated sentences into simpler and shorter sentences	When I have problems with sentences, I chunk long sentences into short sentences. (P9, Task 1)
Message reduction and alteration	Participants reducing an original message in order to avoid a communication breakdown	I do not mean speaking, it is about skills, you know, communication skills. It is about, umm, it mentioned a lot, just, it is not just mention[ing] that, umm, speaking or listening or something, it is about how you can understand others' opinions, umm, based on their, umm, perspectives. (P8, Task 2)
Nonverbal Strategies: Participants' strategic behaviours or actions to use eye contact, gestures, or facial expressions to give hints or help the listener guess what they want to say		
Individual Strategies	Definition	Example
Eye contact	Participants making eye contact with others either to seek agreement or when they encounter problems	And the third point is about communication skill, yeah, quite similar like practicing oral English. It's a good way to learn authentic English, right? [having a glance at the interlocutor] Not, not like we speak our own Chinglish. (P9, Task 2)
Gesturing—to indicate meaning	Participants using gestures to present the meaning of certain words	When we use the computer, we will take a, umm, umm, [gesturing—to indicate headphone]. (P4, Task 2)

Gesturing—to indicate problems	Participants using gestures to indicate that they have encountered difficulties and are trying to solve the problems	And for the 1st thing you mentioned, I think, umm, umm, umm [gesturing], from Monday to Friday we study at school.
Gesturing—directing	Participants pointing or using certain gestures to speak to a specific person	What you said just now is a contradict[ion] to what he [directing] said just now. (P1, Task 2)
Facial expressions	Participants using facial expressions to indicate disagreement or difficulties either in understanding or expressing	[facial expression] Not all, you can't say all of them. (P 10, Task 2)
Message Abandonment Strategies: Participants' strategic behaviours or actions to give up their attempts to communicate		
Individual Strategies	Definition	Example
Avoidance	Participants giving up expressing their intended meaning, resulting in an avoidance	Even though no matter how nice they are, but this is like, umm, this, this is… Umm, if you, if the student does not pay their [his/her] rents, this won't happen. (P7, Task 2)
Translation: Participants' strategic behaviours to directly translate from first language to second language		
Individual Strategies	Definition	Example
Translating	Participants translating from Chinese to English directly without any modification	Sometimes I could only translate my understanding from Chinese to English. (P11, Task 1)

Appendix 7: Oral Communication Strategy Inventory Results

Participant/Item	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	Means	Standard Deviation
Social Affective Strategies													
1	3.00	4.00	3.50	3.50	4.00	5.00	3.00	4.00	4.00	4.00	5.00	3.91	.66
2	4.00	3.50	3.50	4.00	4.00	4.00	4.50	5.00	4.00	4.50	5.00	4.18	.51
3	4.00	4.50	3.50	4.00	5.00	5.00	2.50	5.00	5.00	4.00	5.00	4.32	.81
4	4.50	5.00	3.50	4.50	4.00	5.00	3.50	4.50	4.50	4.00	4.50	4.32	.51
5	3.00	3.50	3.50	3.50	4.00	4.50	4.50	3.50	4.00	4.00	4.00	3.82	.46
6	3.00	3.50	3.00	2.50	3.00	4.00	3.00	3.50	3.00	3.50	4.50	3.32	.56
Sum	21.50	24.00	20.50	22.00	24.00	27.50	21.00	25.50	24.50	24.00	28.00	23.86	2.49
Means	3.58	4.00	3.42	3.67	4.00	4.58	3.50	4.25	4.08	4.00	4.67	3.98	0.42
Fluency-oriented Strategies													
7	3.00	4.00	3.50	3.00	3.00	3.00	2.50	4.50	4.00	3.00	4.00	3.41	.63
8	4.00	4.00	4.00	4.00	4.00	4.00	3.50	4.50	5.00	3.00	5.00	4.09	.58
9	2.50	4.00	3.50	4.00	2.50	4.00	3.00	4.50	4.00	3.50	4.50	3.64	.71
10	3.50	4.50	3.00	3.50	3.00	4.00	4.50	4.00	4.50	3.00	4.50	3.82	.64
11	4.50	5.00	4.00	4.50	4.00	4.50	3.50	4.50	5.00	4.00	5.00	4.41	.49
12	3.00	4.00	4.00	3.50	4.00	4.00	5.00	5.00	4.50	3.00	5.00	4.09	.74
Sum	20.50	25.50	22.00	22.50	20.50	23.50	22.00	27.00	27.00	19.50	28.00	23.45	8.50
Means	3.42	4.25	3.67	3.75	3.42	3.92	3.67	4.50	4.50	3.25	4.67	3.91	1.42
Negotiation of Meaning Strategies													
13	3.50	4.00	3.50	3.00	3.50	4.50	3.50	4.00	4.00	3.00	4.50	3.73	.52
14	3.00	2.50	3.50	4.00	3.50	4.50	3.00	4.50	4.00	3.00	4.50	3.64	.71
15	3.50	4.50	4.00	4.00	4.00	4.00	3.50	4.00	4.00	3.50	4.00	3.91	.30

Participant/Item	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	Means	Standard Deviation
16	4.00	4.00	4.50	4.50	5.00	5.00	4.00	4.50	4.00	3.50	3.50	4.23	.52
Sum	14.00	15.00	15.50	15.50	16.00	18.00	14.00	17.00	16.00	13.00	16.50	15.50	1.45
Means	3.50	3.75	3.88	3.88	4.00	4.50	3.50	4.25	4.00	3.25	4.13	3.88	.36
Accuracy-oriented Strategies													
17	3.50	4.00	3.50	3.50	4.50	3.00	4.00	4.00	4.00	3.50	3.00	3.68	.46
18	3.00	4.50	4.00	4.00	4.00	2.50	3.50	3.50	4.00	4.00	3.50	3.68	.56
19	3.50	5.00	4.50	4.50	4.00	4.00	4.00	4.00	3.00	4.00	4.50	4.09	.54
Sum	10.00	13.50	12.00	12.00	12.50	9.50	11.50	11.50	11.00	11.50	11.00	11.45	1.11
Means	3.33	4.50	4.00	4.00	4.17	3.17	3.83	3.83	3.67	3.83	3.67	3.82	.37
Message Reduction and Alteration Strategies													
20	4.50	3.50	3.50	3.50	4.00	4.00	2.50	4.50	3.00	3.50	4.00	3.68	.60
21	4.50	4.50	5.00	4.50	4.50	4.00	4.00	4.00	4.00	4.00	5.00	4.36	.39
22	3.50	2.50	4.50	4.00	4.00	4.00	4.50	4.00	3.50	4.00	4.00	3.86	.55
Sum	12.50	10.50	13.00	12.00	12.50	12.00	11.00	12.50	10.50	11.50	13.00	11.91	.92
Means	4.17	3.50	4.33	4.00	4.17	4.00	3.67	4.17	3.50	3.83	4.33	3.97	.31
Nonverbal Strategies													
23	4.00	4.00	3.50	4.00	2.50	4.50	5.00	4.50	4.50	4.00	5.00	4.14	.71
24	3.50	4.00	4.00	3.00	3.50	4.50	4.50	5.00	4.50	4.00	4.00	4.05	.57
25	4.00	3.50	4.00	3.50	3.50	4.50	4.00	4.00	3.50	3.50	4.00	3.82	.34
Sum	11.50	11.50	11.50	10.50	9.50	13.50	13.50	13.50	12.50	11.50	13	12.00	1.32
Means	3.83	3.83	3.83	3.50	3.17	4.50	4.50	4.50	4.17	3.83	4.33	4.00	.44
Message Abandonment Strategies													
26	2.50	2.50	3.50	3.00	2.00	4.00	3.00	3.00	3.00	3.00	4.00	3.05	.61
27	2.50	1.50	4.00	3.00	1.50	2.00	3.00	3.00	3.00	2.50	3.50	2.68	.78
28	2.00	2.00	4.00	3.50	3.00	3.00	2.50	4.00	3.50	3.50	4.50	3.23	.82
Sum	7.00	6.00	11.50	9.50	6.50	9.00	8.50	10.00	9.50	9.00	12.00	8.95	1.90
Means	2.33	2.00	3.83	3.17	2.17	3.00	2.83	3.33	3.17	3.00	4.00	2.98	.63

Appendix 8: Identified Individual Strategies Used by the Participants

Individual strategy	Total	Means	Range	Standard Deviation	% in relation to strategy category	% in relation to total number of strategies used
Social affective						
Lowering your anxiety	6	.55	3.00	1.04	2.80%	0.31%
Self encouragement	7	.64	2.00	.81	3.27%	0.36%
Empathizing with others	56	5.09	13.00	4.32	26.17%	2.87%
Asking for assistance	7	.64	3.00	1.03	3.27%	0.36%
Turn-yielding	116	10.55	20.00	6.22	54.21%	5.96%
Turn-requesting	22	2.00	5.00	1.67	10.28%	1.13%
Sum	214	19.45	22.00	6.86	100%	10.99%
Fluency-oriented						
Using fillers	269	24.45	28.00	10.07	50.37%	13.82%
Rehearsing	6	.55	3.00	1.04	1.12%	0.31%
Referring to notes for fluency	235	21.36	36.00	10.89	44.01%	12.07%
Stalling	24	2.18	5.00	1.78	4.50%	1.23%
Sum	534	48.55	58.00	17.31	100%	27.43%
Negotiation of meaning						
Repeating	45	4.09	12.00	3.81	14.66%	2.31%
Exemplifying	84	7.64	11.00	4.13	27.36%	4.31%
Approximating	27	2.45	6.00	2.25	8.80%	1.39%
Analogy	7	.64	4.00	1.29	2.28%	0.36%
Elaborating	46	4.18	7.00	2.64	14.98%	2.36%
Clarifying stance	56	5.09	21.00	6.35	18.24%	2.88%
Seeking clarification	33	3.00	8.00	3.10	10.75%	1.70%
Clarifying meaning	9	.82	3.00	.98	2.93%	0.46%
Sum	307	27.91	49.00	14.05	100%	15.77%

Individual strategy	Total	Means	Range	Standard Deviation	% in relation to strategy category	% in relation to total number of strategies used
Accuracy-oriented						
Self-correction	269	24.45	40.00	13.47	53.06%	13.82%
Referring to notes for accuracy	235	21.36	36.00	10.89	46.35%	12.07%
Correcting others	3	.27	2.00	.65	0.59%	0.15%
Sum	507	46.09	65.00	21.46	100%	26.04%
Message reduction and alteration						
Chunking	3	.27	1.00	.47	9.09%	0.15%
Message reduction and alteration	30	2.73	8.00	2.45	90.91%	1.54%
Sum	33	3.00	8.00	2.32	100%	1.69%
Nonverbal						
Eye contact	157	14.27	26.00	8.15	53.40%	8.06%
Gesturing	130	11.82	27.00	8.40	44.22%	6.68%
Facial expression	7	.64	3.00	1.03	2.38%	0.36%
Sum	294	26.73	35.00	13.16	100%	15.10%
Message abandonment						
Abandoning	54	4.91	12.00	3.86	100%	2.77%
Sum	54	4.91	12.00	3.86	100%	2.77%
Translation						
Translating	4	.36	2.00	.67	100%	0.21%
Sum	4	.36	2.00	.67	100%	0.21%

Appendix 9: Identified Individual Strategy Use by the Advanced and High-intermediate Groups

Individual strategy	Total		*M*		Range		SD		% in relation to strategy category		% in relation to total number of strategies used	
	A	H-I	A	H-I	A	H-I	A	H-I	A	H-I	A	H-I
Social affective												
Lowering your anxiety	3.00	3.00	.60	.50	2.00	3.00	.89	1.22	2.5%	3.19%	0.15%	0.15%
Self-encouragement	2.00	5.00	.40	.83	1.00	2.00	.55	.98	1.67%	5.32%	0.10%	0.26%
Empathizing with others	25.00	31.00	5.00	5.17	11.00	11.00	4.80	4.36	20.83%	32.98%	1.28%	1.59%
Asking for assistance	4.00	3.00	.80	.50	2.00	3.00	.84	1.22	3.33%	3.19%	0.21%	0.15%
Turn-yielding	74.00	42.00	14.80	7.00	13.00	11.00	5.63	4.34	61.67%	44.68%	3.80%	2.16%
Turn-requesting	12.00	10.00	2.40	1.67	5.00	4.00	1.82	1.63	10%	10.64%	0.62%	0.52%
Sum	120	94	24.00	15.67	13.00	17.00	5.48	5.68	100%	100%	6.16%	4.83%
Fluency-oriented												
Using fillers	136.00	133.00	27.20	22.17	24.00	28.00	9.42	10.87	47.39%	53.85%	6.99%	6.83%
Rehearsing	3.00	3.00	.60	.50	3.00	2.00	1.34	.84	1.04%	1.21%	0.15%	0.15%
Referring to notes for fluency	133.00	102.00	26.60	17.00	20.00	31.00	7.83	11.75	46.34%	41.30%	6.83%	5.24%
Stalling	15.00	9.00	3.00	1.50	4.00	5.00	1.41	1.87	5.23%	3.64%	0.77%	0.46%
Sum	287	247	57.40	41.17	34.00	54.00	12.70	18.06	100%	100%	14.74%	12.68%
Negotiation of meaning												
Repeating	26.00	19.00	5.20	3.17	12.00	8.00	4.55	3.19	13.90%	15.83%	1.34%	0.98%
Exemplifying	45.00	39.00	9.00	6.50	10.00	10.00	4.36	3.94	24.06%	32.50%	2.31%	2.00%

Individual strategy	Total		*M*		Range		SD		% in relation to strategy category		% in relation to total number of strategies used	
	A	H-I	A	H-I	A	H-I	A	H-I	A	H-I	A	H-I
Approximating	16.00	11.00	3.20	1.83	6.00	4.00	2.68	1.83	8.56%	9.17%	0.82%	0.57%
Analogy	6.00	1.00	1.20	.17	4.00	1.00	1.79	.41	3.21%	0.83%	0.31%	0.05%
Elaborating	24.00	22.00	4.80	3.67	7.00	6.00	2.59	2.80	12.84%	18.33%	1.23%	1.13%
Clarifying stance	47.00	9.00	9.40	1.50	21.00	3.00	7.54	1.05	25.13%	7.50%	2.41%	0.46%
Seeking clarification	16.00	17.00	3.20	2.83	8.00	7.00	3.56	2.99	8.56%	14.17%	0.82%	0.87%
Clarifying meaning	7.00	2.00	1.40	.33	3.00	1.00	1.14	.52	3.74%	1.67%	0.36%	0.10%
Sum	187	120	37.40	20.00	27.00	31.00	11.46	11.17	100%	100%	9.60%	6.16%
Accuracy-oriented												
Self-correction	147.00	122.00	29.40	20.33	21.00	40.00	10.11	15.37	51.94%	54.46%	7.56%	6.27%
Referring to notes for accuracy	133.00	102.00	26.60	17.00	20.00	31.00	7.83	11.75	47.00%	45.54%	6.83%	5.24%
Correcting others	3.00	0.00	.60	0.00	2.00	0.00	.89	0.00	1.06%	0.00%	0.15%	0.00%
Sum	283	224	56.60	37.33	35.00	65.00	15.18	23.12	100%	100%	14.54%	11.51%
Message reduction and alteration												
Chunking	0.00	3.00	0.00	.50	0.00	1.00	0.00	.55	0.00%	30%	0.00%	0.15%
Message reduction and alteration	23.00	7.00	4.60	1.17	5.00	3.00	2.07	1.47	100%	70%	1.18%	0.36%
Sum	23	10	4.60	1.67	5.00	4.00	2.07	1.63	100%	100%	1.18%	0.51%
Nonverbal												
Eye contact	79.00	78.00	15.80	13.00	20.00	26.00	7.63	9.06	47.88%	60.46%	4.06%	4.01%
Gesturing	84.00	46.00	16.80	7.67	22.00	11.00	9.76	4.41	50.91%	35.66%	4.31%	2.36%
Facial expression	2.00	5.00	.40	.83	2.00	3.00	.89	1.17	1.21%	3.88%	0.10%	0.26%
Sum	165	129	33.00	21.50	32.00	31.00	13.91	10.93	100%	100%	8.47%	6.63%

Individual strategy	Total		*M*		Range		SD		% in relation to strategy category		% in relation to total number of strategies used	
	A	H-I	A	H-I	A	H-I	A	H-I	A	H-I	A	H-I
Message abandonment												
Abandoning	35.00	19.00	7.00	3.17	8.00	8.00	3.00	3.82	100%	100%	1.80%	0.98%
Sum	35.00	19.00	7.00	3.17	8.00	8.00	3.00	3.82	100%	100%	1.80%	0.98%
Translation												
Translating	0.00	4.00	0.00	.67	0.00	2.00	0.00	.82	100%	100%	0.00%	0.21%
Sum	0.00	4.00	0.00	.67	0.00	2.00	0.00	.82	100%	100%	0.00%	0.21%
Total	1100	847	220.00	141.17	NA	NA	NA	NA	NA	NA	56.49%	43.51%

Appendix 10: Identified Individual Strategy Use by the EE and Edu Groups

Individual strategy	Total		*M*		Range		SD		% in relation to strategy category		% in relation to total number of strategies used	
	EE	Edu	EE	Edu	EE	Edu	EE	Edu	EE	Edu	EE	Edu
Social affective												
Lowering your anxiety	3.00	3.00	.50	.60	3.00	2.00	1.22	.89	2.97%	2.66%	0.15%	0.15%
Self-encouragement	5.00	2.00	.83	.40	2.00	1.00	.98	.55	4.95%	1.77%	0.26%	0.10%
Empathizing with others	33.00	23.00	5.50	4.60	13.00	8.00	5.24	3.44	32.67%	20.35%	1.70%	1.18%
Asking for assistance	4.00	3.00	.67	.60	3.00	2.00	1.21	.89	3.96%	2.66%	0.21%	0.15%
Turn-yielding	47.00	69.00	7.83	13.80	11.00	17.00	4.36	6.98	46.54%	61.06%	2.41%	3.55%
Turn-requesting	9.00	13.00	1.50	2.60	5.00	4.00	1.76	1.52	8.91%	11.50%	0.46%	0.67%
Sum	101	113	16.83	22.60	17.00	14.00	6.43	6.58	100%	100%	5.19%	5.80%
Fluency-oriented												
Using fillers	161.00	108.00	26.83	21.60	28.00	24.00	9.75	10.78	54.03%	45.76%	8.27%	5.55%
Rehearsing	3.00	3.00	.50	.60	2.00	3.00	.84	1.34	1.01%	1.27%	0.15%	0.15%
Referring to notes for fluency	124.00	111.00	20.67	22.20	36.00	12.00	14.65	5.17	41.61%	47.04%	6.37%	5.70%
Stalling	10.00	14.00	1.67	2.80	5.00	4.00	1.97	1.48	3.35%	5.93%	0.52%	0.72%
Sum	298	236	49.67	47.20	58.00	27.00	22.68	10.08	100%	100%	15.31%	12.12%
Negotiation of meaning												
Repeating	22.00	23.00	3.67	4.60	8.00	11.00	3.72	4.28	14.19%	15.13%	1.13%	1.18%
Exemplifying	54.00	30.00	9.00	6.00	11.00	7.00	4.73	2.92	34.84%	19.74%	2.77%	1.54%

Individual strategy	Total		*M*		Range		SD		% in relation to strategy category		% in relation to total number of strategies used	
	EE	Edu	EE	Edu	EE	Edu	EE	Edu	EE	Edu	EE	Edu
Approximating	19.00	8.00	3.17	1.60	6.00	4.00	2.56	1.67	12.26%	5.26%	0.98%	0.41%
Analogy	4.00	3.00	.67	.60	4.00	2.00	1.63	.89	2.58%	1.97%	0.20%	0.15%
Elaborating	27.00	19.00	4.50	3.80	6.00	7.00	2.81	2.68	17.42%	12.50%	1.39%	0.98%
Clarifying stance	12.00	44.00	2.00	8.80	8.00	19.00	3.03	7.60	7.74%	28.95%	0.62%	2.26%
Seeking clarification	14.00	19.00	2.33	3.80	7.00	7.00	3.27	3.03	9.03%	12.50%	0.72%	0.98%
Clarifying meaning	3.00	6.00	.50	1.20	1.00	3.00	.56	1.30	1.94%	3.95%	0.15%	0.31%
Sum	155	152	25.83	30.40	37.00	40.00	14.05	15.26	100%	100%	7.96%	7.81%
Accuracy-oriented												
Self-correction	174.00	95.00	29.00	19.00	40.00	16.00	16.78	5.79	58.39%	45.45%	8.94%	4.88%
Referring to notes for accuracy	124.00	111.00	20.67	22.20	36.00	12.00	14.65	5.17	41.61%	53.11%	6.37%	5.70%
Correcting others	0.00	3.00	0.00	.60	0.00	2.00	0.00	.89	0.00%	1.44%	0.00%	0.15%
Sum	298	209	49.67	41.80	65.00	16.00	29.24	6.38	100.00%	100%	15.31%	10.73%
Message reduction and alteration												
Chunking	2.00	1.00	0.33	.20	1.00	1.00	0.52	.45	13.33%	5.56%	0.10%	0.05%
Message reduction and alteration	13.00	17.00	2.17	3.40	4.00	8.00	1.72	3.21	86.67%	94.44%	0.67%	0.87%
Sum	15.00	18.00	2.50	3.60	4.00	8.00	1.64	3.05	100%	100%	0.77%	0.92%
Nonverbal												
Eye contact	67.00	90.00	11.17	18.00	17.00	21.00	6.43	9.08	49.26%	56.96%	3.44%	4.62%
Gesturing	67.00	63.00	11.17	12.60	21.00	27.00	7.63	10.11	49.26%	39.87%	3.44%	3.24%
Facial expression	2.00	5.00	.33	1.00	1.00	3.00	.52	1.41	1.48%	3.17%	0.10%	0.26%
Sum	136	158	22.67	31.60	32.00	33.00	11.84	14.26	100%	100%	6.98%	8.12%

Individual strategy	Total		*M*		Range		SD		% in relation to strategy category		% in relation to total number of strategies used	
	EE	Edu	EE	Edu	EE	Edu	EE	Edu	EE	Edu	EE	Edu
Message abandonment												
Abandoning	20.00	34.00	3.33	6.80	8.00	11.00	3.27	3.96	100%	100%	1.03%	1.75%
Sum	20.00	34.00	3.33	6.80	8.00	11.00	3.27	3.96	100%	100%	1.03%	1.75%
Translation												
Translating	1.00	3.00	0.17	.60	1.00	2.00	.41	.89	100%	100%	0.05%	0.15%
Sum	1.00	3.00	0.17	.60	1.00	2.00	.41	.89	100%	100%	0.05%	0.15%
Total	1024	923	204.80	153.83	NA	NA	NA	NA	NA	NA	52.60%	47.40%