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The Relationship of Three L2 Learning Factors with Pronunciation Proficiency:
Language Aptitude, Strategy Use, and
Learning Context

Naomi Haslam

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Arts

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ABSTRACT

The Relationship of Three L2 Learning Factors with Pronunciation Proficiency:
Language Aptitude, Strategy Use, and
Learning Context

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Master of Arts

The purpose of this study was to determine whether language aptitude and the use of language strategies predict pronunciation gains in second language (L2) acquisition. A second goal was to determine whether these factors differed depending on whether learning occurred in an English as a second language (ESL) or English as a foreign language (EFL) learning context. Eighty-six ESL students in the United States and one hundred EFL students in China were asked to take the Pimsleur language aptitude test. The top 15 or 16 and lowest 15 or 16 scorers on this test from each group were asked to complete a test of pronunciation proficiency and a pronunciation strategies inventory at the beginning and end of a 10-week speaking class in which they were enrolled. The pre and post pronunciation tests were rated and pronunciation proficiency gains in global foreign accent, fluency, comprehensibility and accuracy were compared to both Pimsleur test scores and use of pronunciation strategies before and after training. Results indicated that general language aptitude did not predict pronunciation gains regardless of type of setting (ESL or EFL), but that auditory aptitude may be linked to pronunciation proficiency. Analyses revealed that specific pronunciation strategies were strong predictors of pronunciation gain for comprehensibility and accuracy gains. The findings for this study suggest that pronunciation strategies seem to play a bigger role in pronunciation improvement than language aptitude and are effective in both ESL and EFL settings.

Keywords: language aptitude, L2 strategies, pronunciation, proficiency, context, ESL,

EFL

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CHAPTER ONE

Introduction

With globalization and the development of technology and international communication, the pursuit of language acquisition has increased in significance and popularity. Increasingly more teachers, students, migrants and professionals are being pressed to learn and know a second language (L2) in order to function and work in society (Callahan, 2005; Carhill, Suarez-Orozco, and Paez, 2008; Dodge & Kendall, 2004; Kheimets & Epstein, 2001; Zhiming, 2003). The issue of teaching pronunciation in language learning has been debated during the past century as to whether or not pronunciation learning is an essential part of communication (Elliott, 1995; Elliott, 1997; Molholt, 1990) or if pronunciation could even be taught. More recently, and in concurrence with a more tightly knit global community, educators and scholars agree that pronunciation learning is an important aspect of L2 acquisition (O'Brien, 2004; Trofimovich & Gatbonton, 2006). Thus there has been a newfound emphasis on L2 pronunciation (A. Brown, 2008; van den Doel, 2007), particularly in English as it is the primary mode of international communication (Cincarek, Gruhn, Hacker, Noth, & Nakamura, 2009; Isaacs, 2008; Munro & Derwing, 2008).

With a shift in language learning from teacher-centered to student-centered classes, there has been a desire to bolster learner autonomy (Broady & Kenning, 1996). To satisfy this demand to aid the independent language learner, researchers have investigated several learning strategies to discover which strategies are most advantageous to L2 acquisition. Only within the past decade have pronunciation

strategies in particular emerged as a means of empowering language learners in their desires for effective communication (Derwing & Rossiter, 2002; Eckstein, 2007; Kawai & Hirose, 2000; Lord, 2005; Marchand & Damper, 2000; Osburne, 2003; Vitanova & Miller, 2002; Wei, 2006). A few studies regarding pronunciation strategies have yielded a moderate list of strategies with a variety of classifications, but there remains much to be learned regarding the effect of these strategies on pronunciation gains both in and out the classroom.

In addition to strategies use, two other factors considered significant in L2 acquisition are language aptitude and learning context. Language aptitude is the “prediction of how well, relative to other individuals, an individual can learn a foreign language in a given amount of time and under given conditions” (Carroll and Sapon, 2002). Language aptitude can be measured by factors such as verbal ability, auditory ability, motivation and grade point average (Pimsleur, Reed & Stansfield, 2004). Rubin (1975) deemed language aptitude, motivation (in terms of learning context) and opportunity (in terms of strategy use) as significant measures for determining who “good language learners” are. She also suggested that observing good language learners provides an ideal opportunity for extracting effective L2 learning strategies. Subsequent studies have demonstrated that aptitude and strategy use are key components of good L2 learners (Green & Oxford, 1995; Hummel, 2009; Oxford and Burry-Stock, 1995; Oxford, Park-Oh, Ito, and Sumrall, 1993; T. S. Parry & Stansfield, 1990; Sparks, Patton, Ganschow, & Humbach, 2009).

Learning context, which for the purposes of this study, will be defined as the physical, cultural and social environment surrounding students as they study a foreign

language, has also been found to significantly influence L2 learning success (Carhill, et al., 2008, Desmarais, Duquette, Renié, & Laurier, 1998; Lynch, Klee, & Tedick, 2001; McCafferty, 2002; K. Parry, 1996; Pica, 1984). There has been a distinct demarcation in learning English in English as a second language (ESL) versus English as a foreign language (EFL) learning contexts. ESL refers to learning English in a place where English is natively spoken. EFL refers to learning English in a foreign learning environment. A few studies have compared and contrasted the two to determine major influences on L2 learning and found that there are certain socio-cultural differences between the two contexts that play a considerable role (Doughty & Long, 2003; Jiang, 2009; Kolb, 1984; Liu, 2009; Saito & Ebsworth, 2004; Schauer, 2006; Taguchi, 2002).

Because aptitude is grounded in a learner's natural intelligence and strategies are a product of behavior, one purpose of this research was to assess the gap in understanding which of these two factors is more influential or a more important predictor of L2 learning ability. Although aptitude, learning strategies and learning context have been influential in predicting L2 proficiency, there are currently no known studies that have examined the simultaneous impact of aptitude and strategy use in relation to pronunciation gains and English learning context. In fact, the little research that has been done regarding L2 oral proficiency suggests that ESL learners have a greater advantage in acquiring these skills than EFL learners because of the native English learning context. If this is true, then more research needs to be done in EFL contexts to determine if context makes the difference and if it does, in what ways can L2 learning be improved in this context to better serve the vast international L2 English learning community.

Despite the implications of these three factors: learning strategies, language aptitude and learning context on successful L2 acquisition, not enough research has been done to show how strongly these factors relate to L2 learning. In fact, relating the combined value of these factors to L2 pronunciation learning specifically has yet to be explored. Therefore the aim of this study is to first, examine the effects of language aptitude on pronunciation gains in ESL and EFL contexts. The second purpose is to determine whether there is a difference in pronunciation strategy use between high and low aptitude or “good” and “poor” L2 learners in both ESL and EFL contexts. Finally, the third goal of this study was to determine if specific strategies used in these two contexts predict improvement in L2 pronunciation proficiency. In order to evaluate these relationships, this study will record ELF and ESL learners’ pronunciation gains in four particular dimensions of pronunciation: global foreign accent, fluency, comprehensibility, and accuracy. In particular, the following research questions guide this investigation:

Research Questions:

1. Does language aptitude predict pronunciation gains (for ESL and EFL contexts) for global foreign accent, fluency, comprehensibility, and accuracy?
2. Do learners with different aptitudes use different strategies?
3. Does pronunciation strategy use predict pronunciation gains (for ESL and EFL contexts) for global foreign accent, fluency, comprehensibility, and accuracy?

CHAPTER TWO

Review of the Literature

The purpose of this study is to examine the effects of language aptitude, second language (L2) pronunciation strategies, and L2 learning context on pronunciation proficiency. The overall objective of this chapter is to provide a foundation for why and how aptitude, L2 strategies, and learning context are important to L2 pronunciation learning. Specifically, this chapter will look at a historical perspective on pronunciation learning, followed by a review of what has been done in the areas of language aptitude, L2 strategies, and L2 learning context. The main goal of these three sections is to demonstrate why there is still a need to examine the relationship between these three factors and pronunciation proficiency.

Pronunciation Research in ESL

When it comes to communication, language specialists have declared that it is “the spoken medium that has primacy” (Brown, 2008). Because speaking is such an important aspect of communication, good L2 learners do not ignore pronunciation. There is often a social pressure that exists to achieve native-like pronunciation so as to fit in or not be discriminated against or not to offend, frustrate and upset local native speakers during verbal exchange (Lefkowitz & Hedgcock, 2002; Lybeck, 2002; Zhiming, 2003).

Pronunciation instruction in L2 learning has followed a U-shaped curve in popularity beginning in the 1940’s as an essential part of language acquisition (Richards & Rogers, 1986). Both the audio-lingual method (a system of language learning that focused on reinforcement through positive and negative feedback and a focus on drilling

with emphasis on correct grammar use) and World War II (because of the international nature of the war) brought L2 learning to the forefront and the world took a sudden interest in language-learning classroom dynamics. Because L2 learning at that time was based on the audio-lingual approach, drilling and imitation were important means of acquiring native-like pronunciation and the teacher was used as a model for students to imitate (Morely, 1991). From the 1960's-1980's, many began to question the importance of an instructional focus on pronunciation in the L2 classroom. Some believed that native-like pronunciation was unachievable in a second language (Preston, 1981). Many language programs reduced their pronunciation instruction or eliminated it altogether. In the late 1980's, there was a refocus on pronunciation (Morley, 1991). Instead of mimicry, people began to focus on suprasegmentals, or the stress, intonation, pitch, sound co-articulation and voice quality of learning a new language (Esling & Wong, 1983). The goal became achieving communicative competence, which is an L2 learner's ability to not only apply and use grammar rules, but to produce pragmatically correct utterances and use them appropriately in a given context. This new shift in pronunciation teaching promoted meaningful interaction, but included less emphasis on accurate pronunciation of specific sounds (vowels and consonants) (Morley, 1991; Pennington & Richards, 1986).

From the 1980's on, pronunciation, specifically second language English pronunciation, took on new meaning because of its usefulness to a broad group of international people in both ESL (English as a Second Language) and EFL (English as a Foreign Language) contexts (Anderson-Hsieh, 1989; H. D. Brown, 1991; Derwing & Munro, 2005; Ferrier, Reid, & Chenausky, 1999; Gatbonton, 2005; Morely, 1987;

Nozawa, 1997; Shimamune & Smith, 1995; von Schon, 1987). Immigrant residents, refugees, students, academic professionals, and other professionals around the globe were in need of pronunciation improvement as they left their native countries to reside in or visit English speaking countries in order to embrace cultural, economic, and financial opportunities (Celce-Murcia, 1991; Chaudhary, 2009; Derwing & Munro, 2009; B. Y. Wong, 1986). In fact, many of these L2 learners, particularly immigrants and international students in the U.S. and Canada, have had difficulty finding jobs as a result of their foreign accent (Ferrier, et al., 1999) and this has led to a greater demand for L2 pronunciation learning. As researchers, linguists, and teachers explored ways to meet L2 learners' pronunciation needs because of globalization and the need for international communication, new perspectives on pronunciation teaching and learning emerged.

During the 1990's, Morley (1991) analyzed the various perspectives on pronunciation teaching, and from them, synthesized pronunciation principles that are widely adhered to today. Some of these principles include a focus on pronunciation as an important part of communication, a focus on suprasegmentals and how they are used to communicate meaning, a focus on meaningful practice, and a focus on the uniqueness of each individual ESL learner. Learner centered speech awareness and self monitoring were also important principles in pronunciation learning.

Amidst the surge to meet the pronunciation demands of the globalizing world, there was a shift from the audio-lingual method of teaching language to a more learner-centered approach. Students went from learning with emphasis on oral drills and practice with the teacher at the center of the classroom to exploring meaning and content knowledge through inquiry and personal discovery (Gupta, 2000; Nakamura, 2005;

Otlowski, 1998; Swaffar, 1989). The focus in L2 learning began leaning more toward learner-centered classrooms which placed students at the center of classroom organization and gave priority to their learning needs, styles and strategies (K. L. Brown, 2003). In learner-centered classrooms, students work alone, in pairs, and in small groups on particular projects and tasks. In this way the focus of learning has moved from the teacher playing the primary role in the learning process to the student fulfilling that role (Brown, 2003; Hoven, 1999; Oxford, 2003; Pica, 1994).

During the past decade many have turned to technology as an aid to English pronunciation learning (Neri, Cucchiarini, & Strik, 2008; Chaudhary, 2009; van den Doel, 2007). Media, computer programs, and cell phones are becoming more widely integrated into language learning classrooms as tools for practicing and improving English pronunciation. Ferrier (1999) suggested that a Computer Assisted Accent Modification program (CAAM) can be used by untrained speech professionals to successfully help ESL students improve English pronunciation. This computer-based program provides L2 learners speech practice through drills and different types of pronunciation feedback. Similarly, Jobe (2007) found positive L2 classroom results by using mobile phones and the internet in pronunciation learning. In this study, L2 high school language teachers used Google Voice, a telecommunications service for inbound and outbound calls, to help engage and motivate students to practice oral communication. As part of a quantitative analysis of the study, a question that asked students how often they practiced their Spanish pronunciation before calling Google Voice revealed that 89% of the 21 students responded, that they practiced “repeatedly.”

Though methods for and theories about L2 pronunciation learning have changed throughout the past several decades, one common interest is to understand how individual learners acquire an L2 most effectively. Many have thought it best to look at good L2 learners to see how they learn. The belief is that by uncovering the processes and methods employed by good L2 learners, teachers and language specialists will be better equipped to facilitate the language learning process.

The Good Language Learner

One question that dominates L2 research is what is a good L2 learner and what can such learners teach us about L2 learning (Ding, 2007, Lalonde, 1987; Norton & Toohey, 2001; Nunan, 2005; Reiss, 1985; Sewell, 2003). Because there are so many factors and variables that influence L2 learning, researchers for years have found it challenging to come up with standard attributes that typify a good L2 learner (Ellis, 1994; Griffiths, 2008; Naiman, Frohlich, Stern, & Todesco, 1976; Naiman, Frohlich, Stern, & Todesco, 1978; O'Malley & Chamot, 1990; Oxford, 1990; Rivers, 2001).

Perhaps, there are several factors that contribute to creating a good language learner, but for the purpose of this study we will focus on three: language aptitude, L2 learning context and the use of L2 strategies. Rubin (1975) initiated a surge of interest in L2 acquisition when she focused on the good language learner as a model for examining L2 learning. She posited that the three components of a good language learner include: aptitude (a person's innate ability to learn or do something), motivation (as defined by whether the learner is in a native or foreign speaking context), and opportunity (in terms of strategy use). Some are born with an innate predisposition to L2 learning. Although aptitude is the least likely to change, aptitude testing can be helpful in predicting natural

ability. Other studies echo the significance of aptitude testing as an important predictor of language ability (Hummel, 2009; Parry & Stansfield, 1990; Sparks, Patton, Ganschow, & Humbach, 2009).

Rubin (1975), however, stressed that although aptitude is viewed as a mostly static trait, motivation and opportunity are highly subject to change. She pointed out that context, or whether learning takes place inside the classroom or on the street, is one of the key factors in determining motivation. While most people agree that L2 learning is more effective in the country where the language is spoken, this emphasizes the importance of L2 context in stimulating the “need factor” in the learning process. Learners who study an L2 where it is spoken are motivated by this need to communicate.

L2 context is a factor that is often vaguely noted but has been looked at particularly by some researchers as an indicator of good L2 learning (Doughty & Long, 2003; Gu, 2003; Gudykunst & Kim, 1992; Paige, Jorstad, Siaya, Klein, & Colby, 1999). The definition of learning context used in the current study is the “socio-culturo-political environment where learning takes place” (Gu, 2003). Though definitions of learning context vary from physical place settings to social situations and interactions, many researchers agree that learning context seems to have a definite effect on language proficiency (Collentine, 2004; Naiman, 1996; Paez, 2008; Segalowitz & Freed, 2004; Yashima & Zenuk-Nishide, 2008).

Unlike aptitude and context, strategies are behavioral evidence of the opportunities good L2 learners take to become successful. Rubin purports 7 that are most effective: good L2 learners should (1) have the desire to guess often; (2) have strong motivation to communicate; (3) be uninhibited and not be afraid to look foolish; (4)

attend to form; (5) practice; (6) monitor their own speech and the speech of others; and (7) pay close attention to meaning. As Rubin spent time observing L2 classrooms, inquiring of L2 teachers and eliciting feedback from good L2 learners, she also found six main factors that determine the use of the strategies above: the task, the learning stage, age of the learner, the context, individual styles, and cultural differences in cognitive learning styles. Because of the variation that takes place in learning, there is a need to better understand these factors and how and why they affect the use of strategies.

To better understand strategy use as an important factor for successful language learning, Qingquan, Chatupote, and Teo (2008) evaluated frequency of strategy use between successful and unsuccessful EFL university freshmen in China. They found that the successful students employed a wider range of strategies and that the strategies used most often by successful students were different than those used most often by unsuccessful students. This study not only helps us see what we can learn from successful and unsuccessful L2 learners, but provides strategy data in an EFL context which merits a closer look as to how L2 learning context influences strategy use.

Gan, Humphreys and Hamp-Lyons (2004) conducted a study aimed at understanding successful and unsuccessful EFL students in China-an EFL context. Information was gathered through diaries, interviews, and follow-up e-mail correspondence. The study used 9 successful and 9 unsuccessful second-year EFL students at 2 Chinese mainland universities. Despite the variables that affected learner attitudes toward L2 learning, the primary factors that positively shaped the successful L2 learners in the study included motivation, language aptitude, strategy usage, and proficiency. One of the most pertinent findings of this study is that language aptitude and

the use of language learning strategies are both important in predicting a good language learner. Because aptitude is grounded in a learner's natural abilities and strategies are a product of behavior, one purpose of this research was to assess the gap in understanding which of these two factors is more influential or a more important predictor of L2 learning ability.

Thus successful L2 learners can teach us much about influential factors that contribute to L2 learning and what it is that makes a good or successful L2 learner. Knowing these factors is one thing, but identifying which are most important and finding ways to measure them is a challenge. Moreover, people often focus on only one factor without accounting for other important or equally influential factors during the course of the study. The current study examines three particular factors simultaneously: language aptitude, L2 learning strategies, and L2 learning context. Based on the results of previous studies cited above, these three factors seem to be three of the strongest predictors of successful L2 learning. Each of these will be discussed in turn below.

Language Aptitude

Language aptitude refers to a learner's innate ability to learn a language. For many years, language learning aptitude has been viewed as a largely static, generally fixed ability for L2 learning. While many traditionally see it as not "susceptible to training and independent of previous language learning experience" (Skehan, 1998), others researchers disagree. MacLaughlin (1990) argues that with experience even a novice can become an expert, or that aptitude increases with experience. Gringorenko, Sternberg, and Ehrman (2000) claim that aptitude is not an entity that is fixed at birth, but is instead a "form of developing expertise." Robinson (2001, 2005) has proposed that

language aptitude be viewed as a dynamic construct that consists primarily of cognitive resources that combine into high-order abilities which are directly involved in a variety of learning tasks. Unfortunately, research supporting either the static or fluid notion of aptitude remains inconclusive (Eisenstein, 1980; Harley & Hart, 1997; Politzer & Weiss, 1969; Safar & Kormos, 2008; Sawyer 1992; Sparks, Ganshow, Fluharty & Little, 1996).

During the 1950s and 1960s, John Carroll (1962) carried out studies on L2 learning and discovered that learning an L2 appeared to be a particular talent, or group of talents, independent of performance on general intelligence tests. This conclusion was later confirmed by other researchers (i.e., Gardner & Lambert, 1965) and for many years this construct became the foundation for language aptitude tests. Using factor analytic studies, Carroll (1962, 1981, 1990) distinguished four independent variables he found to be most significant to L2 learning: (1) phonetic coding—the ability to identify speech sounds and connect those sounds to associated symbols (2) grammatical sensitivity—the ability to recognize the grammatical function of words in sentence structures (3) inductive language learning ability—the ability to infer rules given a sample of the unknown language and (4) rote memory—the ability to learn and memorize new words. However, in light of studies conducted during the past thirty years in learner strategies, many feel that this construct should be expanded to include factors such as individual differences and personality (Gringorenko, et al., 2000; Oxford & Ehrman, 1995; Parry & Stansfield, 1990).

Over the past 40 years, researchers have found generally consistent results: L2 achievement is positively related to L2 aptitude, particularly in adults (Ehrman & Oxford, 1995; Horwitz, 1988; Parry & Child, 1990; Sparks & Ganschow, 2001). L2 aptitude tests

have consistently shown high correlations with performance in L2 courses (Skehan, 2002). Some object to this by claiming that the ability to analyze language as measured by language aptitude plays a minimal role in the communicative classroom (Ranta, 2002; Robinson, 1992, 2000). A few recent studies involving language aptitude reinforce its usefulness in predicting L2 proficiency and are summarized below.

Most accept that language aptitude or intelligence is a relatively unchanging ability. A study of Hungarian high school students exemplifies this. Safar and Kormos (2008) pre and post tested 72, 15-16 year-old beginning level students enrolled in a bilingual English-Hungarian school in Hungary for language proficiency and language aptitude at the beginning and end of a school year (September and June). The results demonstrate that the strength of relationship between the total aptitude scores and proficiency scores were the same with a correlation of .36. These findings also indicate that because of the consistent relationship between aptitude and proficiency throughout the duration of the study, pre- testing alone would be sufficient for diagnosing language aptitude.

Abrahamsson and Hyltenstam (2008) tested DeKeyser's (2000) hypothesis that late learners with high analytical verbal abilities will achieve native like L2 proficiency. They did so by studying 42 (33 women and 9 men) L2 Swedish learners with Spanish as their L1. These learners considered themselves near native in Swedish proficiency and were recorded performing various speech acts. Fifteen native controls were also recorded in the same way. Ten native judges were asked to listen to the recordings and distinguish the L1 from the L2 speakers. Afterward, all subjects underwent a series of language testing and speech elicitation including the Swansea Language Aptitude Test (Meara and

Milton, 2003) a Swedish language aptitude test based on the work of Carroll (1973). The test consisted of 5 subsets measuring phonetic memory, lexical-morphological analytical skills, grammatical inferencing skills, aural memory, and the ability to form sound-symbol associations. Results of the study found that high language aptitude is highly predictive of L2 proficiency, particularly in normal, everyday verbal interaction. Thus it seems important to include an assessment of spontaneous speech when correlating aptitude with oral proficiency.

Few studies, however, have attempted to link language aptitude with L2 proficiency. One exception to this is Hummel (2009), who attempted to examine the relationship between aptitude, phonological memory (PM), and L2 proficiency. Seventy two L1 French speakers were enrolled in a Teaching English as a Second Language (TESL) program in Quebec. They were all advanced L2 English learners having had at least 7 years of formal classroom instruction. During their first month in the program, they were given a 75-minute language proficiency test and later a PM task (recorded for later rating) and a language aptitude test that consisted of three subsets: spelling clues (students must read a phonetically transcribed word and choose which word has the most similar meaning to the word given), words in sentences (students recognize a word with the same grammatical function of the underlined word), and paired associates (students memorize words in a given time and then recognize them in a multiple choice task. A multiple regression analysis showed that aptitude and PM were significantly related to L2 oral proficiency. While these tests show that language aptitude is highly linked to L2 proficiency, and particularly oral proficiency, no known study has attempted to link aptitude with pronunciation proficiency. The current study fills this gap by attempting to

verify whether aptitude predicts pronunciation ability specifically in the same way it seems to predict L2 proficiency in general.

Since the study of language aptitude began in the mid twentieth century, several standard language aptitude tests have been developed and are widely used in measuring language aptitude. They include The Modern Language Aptitude Test (MLAT; Carroll & Sapon, 1959), The Elementary Form of the Modern Language Aptitude Test (Carroll & Sapon, 1967), the Pimsleur Language Aptitude Battery (PLAB; Pimsleur, 1966), the Defense Language Aptitude Battery (DLAB, Peterson & Al-Haik, 1976), the VORD (Parry & Child, 1990), and the Cognitive Ability for Novelty in Acquisition of Language (foreign)-CANAL-F (Grigorenko, et al., 2000). While all of these tests have been found to test L2 aptitude, the current study uses the PLAB. A more detailed description of this test is given below.

The Pimsleur Language Aptitude Battery

The PLAB, along with the MLAT, are the two most frequently used aptitude tests in research and educational testing. Their combined predictive power regarding correlations with achievement measures has been established as ranging from 0.40 to 0.65 (Carroll & Sapon, 2008). The PLAB, developed by Paul Pimsleur (1966), is the product of eight years of research involving linguistic and psychological factors involved in language learning. The test was designed to test what Pimsleur and his associates found to be the three most important factors in predicting L2 learning success: verbal intelligence or familiarity with words in an L1 and the ability to infer grammar using language materials, motivation to learn an L2, and auditory ability which includes sound discrimination and sound symbol associations. According to Pimsleur (1963), the PLAB

was the first test to introduce auditory ability as an essential aspect of L2 learning. Subsequent research has validated the effectiveness of auditory ability as a predictor of L2 proficiency (Brutten, Angelis, & Perkins, 1985; Enomoto, 1992; Scott, 1994; Sparks, Patton, Ganschow, & Humbach, 2009). Unlike other aptitude tests, the PLAB includes motivation which is contrary to a generally accepted belief that motivation and aptitude are separate learner variables (Rysiewicz, 2008). In the initial stages of the PLAB, the motivation test consisted of 22 questions, but Pimsleur (1966) found through ensuing studies that reducing this section to one question produced an equally significant prediction of language ability. He justifies his use of motivation by stating that verbal ability and motivation were the two primary factors in his research that pointed to L2 success. Recent research confirms motivation as a significant correlate of L2 learning (Dornyei, 1994; Green & Oxford, 1995; Vandergrift, 2005; Yu, 2008). The debate over motivation can also be connected to the issue of whether aptitude is related to general intelligence or distinct from it (Carroll, 1981; Oller & Perkins, 1978; Pimleur, 1966).

One subsection of the PLAB includes an accounting of learners' L1 achievement in four different subjects: Native Language, History, Math, and Science. Including this measure in the PLAB can be supported by studies that reinforce the idea that various aspects of L1 proficiency correlate highly with L2 learning success (Dufva & Voeten, 1999; Elston-Guttler, Paulmann, & Kotz, 2005; Janopoulos, 1986; Perani, et al., 1998; Sparks, Ganschow & Pohlman, 1989). With the explicit purpose of determining the best predictors of L1 oral and written proficiency, Sparks, Patton, Ganschow, Humbach, and Javorsky (2006) tracked 54 students in the U.S. over a ten year period. By the end of tenth grade, after taking at least 2 years of an L2 (either Spanish, French or German), and

after having been tested at five specific intervals over the ten years, results show that L1 written language measures were the best predictors of L2 proficiency at all five intervals. Reading and spelling skills also contributed significantly to L2 proficiency showing strong support for verbal intelligence as a predictor of L2 achievement. Findings also demonstrated that as students progressed through school, their L1 written and oral performance became more strongly linked to L2 aptitude. Thus considering the number of subjects, time frame, and quantity and validity of the testing measures used in this study, the results convincingly reinforce the idea that L1 achievement is strongly linked to L2 proficiency.

Although the MLAT is the most widely used language aptitude test, it has been criticized because it was written for native English speakers and was created years ago based on outdated research. As a solution to this problem, researchers have begun to develop their own aptitude tests based on reliable measures from various aptitude tests as well as their own piloted measures. One of the most recently developed aptitude tests is the Hungarian Language Aptitude Test (HUNLAT; Otto, 2002). While three of the four parts of this test were modeled after subtests of the MLAT, part three, Language Analysis, was taken from the PLAB because it measures inductive language learning ability, an area of aptitude only weakly included in the MLAT (Rysiewicz, 2008). The Canadian Public Service Commission uses parts V and VI of the PLAB in conjunction with the MLAT to provide language training to government employees every year. This aspect of auditory ability again is insubstantially accounted for in the MLAT (Parry & Stansfield, 1990). From this review of language aptitude literature, it is apparent that, although no one test measures aptitude perfectly, the MLAT and PLAB have proven to

be highly reliable tools in predicting L2 proficiency. For the purpose of the current study the PLAB was chosen in place of the MLAT because it includes a more in-depth analysis of auditory aptitude, a seemingly important aspect in predicting pronunciation ability. Because of the international importance attached to L2 learning, it would also be important to examine language aptitude in a variety of L2 learning contexts.

Language Learning Context

L2 learning context is made up of variables such as culture, social interaction, students' educational background, classroom/ non-classroom, independent versus group activities, and teaching style. Other specific variables included in L2 context consist of the setting, the teacher, the learner, instructional methods, instructional materials, and assessment approaches (Paige, et al., 1999). A primary theme regarding contexts is the idea that structures of meaning (an organized framework for understanding contexts) are associated with time, place, person and circumstance. Gudykunst and Kim (1992) posit that external contexts (locations or settings where interaction occurs as well as the meanings attached to them) and internal contexts (meanings that individuals bring into an encounter based on perspective, background, and experience) are important in intercultural interactions. Some factors that have been found to affect L2 context include cultural norms, implicit or explicit learning, input and interaction, instructed or classroom learning, and L1 or L2 environment (Doughty and Long, 2003).

One primary aspect of context is whether the L2 learning takes place in the learner's native language environment (NL) or a foreign language environment (FL) (Kramsch, 1993; Lafford, 2004; Lee & Schallert, 1997; Rubin, 1975; Schauer, 2006; Segalowitz & Freed, 2004; Sparks & Ganschow, 1991). In the case of second language

learners of English, EFL (English as a foreign language) refers to learning English in an environment where English is not the native language spoken and ESL (English as a second language) refers to learning English in an environment where English is the native language spoken. Whether the learning takes place in an ESL or EFL context affects overall L2 learning experience.

Both ESL and EFL Contexts

Some studies have looked at different aspects of L2 learning in both ESL and EFL contexts. Variables such as pronunciation proficiency, aptitude and use of strategies have been examined and findings from these studies warrant a deeper look into how L2 context influences L2 pronunciation learning.

Both ESL and EFL contexts demand a sufficient focus on pronunciation so as to ensure intelligible interaction. The need to focus on prosodic or suprasegmental aspects of pronunciation is one area in L2 English pronunciation that has recently been emphasized in both contexts (Chela-Flores, 2001; Jenkins 1998; Hahn, 2004). However, in spite of this universal yearning for more and better pronunciation teaching and learning, it seems that ESL and EFL contexts provide unequal opportunities for pronunciation growth. For example, many believe that ESL contexts provide a richer environment for authentic language interaction and practice. Derwing, Thompson, and Munro (2006) found evidence of this in a study of Mandarin and Slavic ESL learners in the U.S. They found that pronunciation gains in accent and fluency for both groups correlated with voluntary contact with native speakers, an option extremely limited in EFL contexts. The fact that Slavic speakers had much higher fluency gains than the

Mandarin speakers may have been a direct result of having more contact with native speakers.

Many EFL learners, particularly Asian learners, are further disadvantaged as a result of little exposure to English sounds and a phonetic alphabet. Lu (2002) asserts that Chinese EFL learners would greatly benefit from using a phonetic system in their curriculum to distinguish L1 from L2 pronunciation. This notion was reinforced by Lin (2006) who found that using phonetic symbols created an awareness of pronunciation mistakes and was linked to pronunciation gains in accuracy and fluency. While a greater awareness of phonetic transcription is lacking in many EFL contexts, Morgan (1998) demonstrates that ESL contexts provide an ideal setting for obtaining an awareness of sentence-level intonation. This awareness of intonation allows learners of varied L1 backgrounds to distinguish biases based on gender and ethnicity.

Returning to what studies have discovered about EFL contexts, a survey of 593 college students in Taiwan revealed that “the entire EFL environment, including its physical, instructional, and social aspects, was found to be an obstacle to students’ learning” (Wu, 2009). Qualitative interviews with students and administrators in this study reinforced the quantitative data and further denoted students’ passivity, teacher’s ignorance of new methodologies, and a lack of learning goals in a Taiwanese EFL environment. These studies depict a definite contrast between ESL and EFL contexts, a contrast that portrays pronunciation learning as better and more effective in ESL contexts. If this is true, then more research is needed to understand how and why this is the case and what can be done to augment the L2 learning process in EFL contexts.

Strategy use has also been examined in both ESL and EFL contexts. Comparing quantity of cognitive strategies used by monolinguals and ESL learners in the US, Knight, Padron & Waxman (1985) found that ESL students only use one half the number of cognitive reading strategies employed by their native speaking counterparts. Other studies have looked particularly at reading strategies. Brown & Perry (1991) found three specific ESL vocabulary learning strategies to be effective for reading. Variables of frequency and type of strategy use among three different levels of ESL learners in the U.S. according to gender were examined by Hong-Nam & Leavell (2006). Results from their study provided insight into how a variety of variables interact with strategy use in an ESL context. For example, females used affective and social strategies social strategies more often than males while intermediate students generally used more strategies than students at beginning and advanced levels and overall ESL students preferred metacognitive strategies.

By contrast, L2 strategy research carried out in EFL contexts has called attention to several aspects of L2 learning. One of these is a strong need for explicit strategy instruction (Soler, 2005; Saito, 2007). In addition, other studies have demonstrated that frequent use of reading strategies among Chinese EFL learners (Dandan, 2002), cultural beliefs, values and traditional education are linked to strategy use (Rao, 2006). Moreover, strategy awareness and use are linked to culture, and frequency and type of strategy use are connected to proficiency (Lee & Oxford, 2008). Though findings from strategy use in both ESL and EFL contexts are varied, the greater quantity of studies done in ESL contexts far outweighs those done in EFL contexts, demanding a need for a more balanced perspective. This point is emphasized in regard to pronunciation strategies,

since the few studies that have been done were carried out exclusively in ESL contexts (Eckstein, 2007; Derwing & Rossiter, 2002; Osburne, 2003; Vitanova & Miller 2002). This emphasizes a need to particularly investigate pronunciation strategies in EFL contexts. Additionally, despite the fact that many studies have investigated strategies in both contexts, a comparison of strategies used in each context has been sparsely examined.

There could be several reasons why these two contexts influence L2 English learning differently. As Rubin (1975) implied, learning in a context where you need to know the language in order to survive and function in society adds importance and urgency to the learning process. It could also be that historical and cultural influences such as L1 education and background instill certain values and priorities that may either accelerate or impede the L2 learning process. Another contextual difference, especially in regard to pronunciation learning, would be the opportunities for English exposure and interaction. Most agree that study abroad programs are a great way to learn a language because they give learners the chance for L2 exposure beyond the learning by way of media, social interactions and every day activities that require interaction.

Very few studies have looked at ESL and EFL contexts in relation to one another, but the ones that have, give us a better idea of the strengths and weaknesses that accompany L2 learning in each context. It is generally assumed that oral fluency is obtained more quickly in ESL versus EFL contexts. This was true in the case of four Japanese ESL students enrolled in an intensive ESL program in Canada. Four intermediate level male (2) and female (2) students in their early twenties were tested once a month over a sixth month period for oral fluency. Using 10 minute film clips,

students had to retell each film after which the speech samples were recorded, transcribe and measured for speech rate, articulation rate, total speech time spent pausing, the length or runs for speech between pauses, and the ratio between lengths of runs and formulaic speech in each sample. Although the amount and quality of language contact could not be controlled for, results showed a mean increase of about 20% in fluency by the end of six months. Despite the fact that the paths to fluency taken by each individual varied greatly, the end result was increased fluency. The researcher implies in this study based on teaching experience in an EFL context that ESL context was a primary influence in increased oral fluency (Wood, 2007). In an investigation of online reading strategies between ESL and EFL learners, Anderson (2003) found that although EFL learners utilized problem strategies more than ESL learners, the disparity in strategy use between the two groups was less than expected, possibly due to learners' prominent English exposure through the media. These results support the idea that while ESL and EFL contexts may not differ much, they do still differ. It may also be that pronunciation and reading skills are affected differently by context because pronunciation is an oral skill dependent on interaction while reading is primarily individual.

The studies above point out that there is indeed a difference in L2 learning in both ESL and EFL contexts and that further investigation is needed in order to meet the different learner needs in each context. There also seems to more advantages to learning in an ESL context. If that is the case, then more research needs to be done to find ways for improving L2 learning in EFL contexts. While the few studies that discuss at least one of the three variables examined in the current study (learner strategies, language aptitude and learning context) and its effect on oral proficiency have been mentioned in the

Language Aptitude and Language Learning Strategies sections of this review, there are no studies to date that consider all three in light of pronunciation proficiency specifically. An interesting finding from this overview of EFL and ESL context research is that the majority of EFL studies have taken place in Asian countries among Asian EFL learners. This implies a high demand for EFL learning in Asia and a greater need to understand the role of learner variables in this context.

Language Learning Strategies

According to Anderson (2005), L2 learning strategies are “the conscious actions that learners take to improve their language learning” (p. 757). There has been an enthusiasm over the last 40 years to study L2 learning strategies. During this time a variety of strategy classifications have arisen, creating multiple ways of identifying and understanding how strategies are used. One taxonomy created three classes of strategies: *metacognitive, socio-affective, and cognitive* (Chamot, 1990). Metacognitive strategies are those strategies that think about learning before, during, and after learning. An example of a metacognitive strategy would be taking time after a language activity to evaluate progress. Cognitive strategies are strategies that promote the comprehension and retention of knowledge through the use of strategies that acknowledge the brain's limitations of capacity and processing. An example of this would be taking notes during a lecture to remember information. Socio-affective strategies are strategies that stimulate learning by establishing a level of empathy between the instructor and student, usually including emotional and attitudinal factors. An example of this would be asking questions to clarify what someone said.

Other researchers (i.e., Cohen, 1990) group L2 learning strategies according to language skills: speaking to communicate, reading for comprehension, writing as a process and product, vocabulary learning, and attending (a process in which a learner focuses on different aspects of L2 learning).

The most commonly used inventory of L2 learning strategies is the Strategy Inventory for Language Learning (SILL). It was created through factor analyses of strategy use by ESL learners in the U.S. (Ehrman & Oxford, 1989) and was designed to identify types and frequency of strategies used for L2 learning. The SILL is a self-report survey created to determine how often people use specific L2 learning strategies (Oxford, 1990). It identifies five factors of learning: general study habits (strategies that include all-purpose techniques, such as studying hard or using time well), functional practice (strategies requiring language practice, such as imitating native speakers), speaking and communicating meaning (strategies that elicit conversational input, such as asking for pronunciation correction), studying and practicing independently (strategies that involve memorizing foreign language material or using metacognitive actions, such as listing related words or planning), and mnemonic devices (strategies using structural knowledge, such as analyzing words or revising rules) (Oxford, 1996). A sixth grouping to this classification was added that includes compensatory strategies or strategies used to supplement limited knowledge, such as guessing the meaning of a word (Green & Oxford, 1995).

Despite the variety of classifications and theories, research strongly supports the notion that frequent use of language learning strategies is connected to achievement (Green & Oxford, 1995; Oxford & Burry-Stock, 1995; Oxford, Park-Oh, Ito, & Sumrall,

1993). Bruen (2001) used oral proficiency measures to observe changes in the use of strategies of a group of 18 L2 German learners throughout the course of their undergraduate degree. In years 2 and 4, the SILL was administered after which students were given oral proficiency exams and then grouped into higher and lower proficiency groups based on their results from those exams and a comparative analysis of their strategic behavior was analyzed. The results over the course of the study demonstrated that the frequency of strategies increased within all SILL categories except for affective and compensatory strategies. The results of this study also indicated that the more students used strategies the greater their L2 proficiency.

Research by Griffiths (2003) found that not only do learners of higher proficiency use L2 strategies more frequently, but that the types of strategies they used also changed over time. This study focused on the dynamic of how course level corresponded to frequency of strategy use among ESL learners enrolled in an English school in Australia. Using the SILL for speakers of other languages and the Oxford Placement Test that contains proficiency measures for listening and speaking, this study found that higher level students used more complex strategies such as interaction, management of feelings and learning, and utilization of available resources. Similar findings were recorded by Grenfell & Harris (1998) who concluded that strategies follow a developmental process and seem to be simplistic initially and then move into more interactive and reflective strategies at the higher levels. These studies underscore that as level and proficiency increase, so too do the number and quality of strategies used.

Not only has L2 achievement been extensively linked with L2 strategy use, other factors may also be linked to strategy use. Poole (2009), seeking to know if males and

females significantly varied in their use of reading strategies, found that females use L2 strategies with greater frequency than males, a notion that has been reinforced regarding general strategy use a number of times in L2 strategy literature (Lee & Oxford, 2008; McMullen, 2009; Oxford & Niykos, 1989; Oxford & Green, 1995; Peacock & Ho, 2003; Sheorey, 1999). K. O. Lee (2003) found that length of time and types of strategies used are other factors of importance, a finding that Yamamori, Isoda, Hiromi, and Oxford (2003) confirm. Magogwe and Oliver (2007), in hopes of finding a relationship between language strategies, age, proficiency, and self efficacy beliefs, collected data from 480 students in Botswana during a three year period. Students from primary, secondary and tertiary government schools were given a modified version of the SILL after which the data was analyzed. Not only did results confirm that higher proficiency students used more strategies but also that L2 culture and ethnicity may play an important role in types of strategies used. In addition to pointing out factors of influence in L2 learning such as gender, length of time, type and quantity of strategy use, as well as culture, the fact that each of these studies took place in different L2 contexts indicates a need to examine the effect of context on L2 strategy use and learning.

Although it may seem that only good language learners use strategies, this isn't necessarily the case. Researchers also study good and poor L2 learners to better understand learner styles or learner differences (i.e., individual characteristics of a learner). Particularly focusing on individual differences in strategy use, Anderson (1991) observed 21 Spanish L1 adult ESL learners while they carried out two reading tasks: reading academic texts and taking a standardized reading test. His findings indicate that both good and poor learners use the same strategies, but that good learners appear to

apply strategies more efficiently and effectively. This highlights the fact that while strategy counts are indicative of good L2 learning, there may be individual factors that influence L2 learning. Other studies have reinforced this assumption (Cohen, 1998; Ford & Chen, 2000; Gardner & MacIntyre, 2008; Riding & Rayner, 1998; Vann & Abraham, 1990). These findings indicate a further need to examine good L2 learners so as to better understand how and why are more successful than other learners and if aptitude is a primary instigator of these differences.

Griffiths (2003) discovered in a longitudinal follow-up of a former study that successful students, the ones with the most rapid progress, are frequently characterized by a large number of strategies: ones that monitor one's own learning (metacognitive), vocabulary strategies, ones to improve grammar knowledge, ones that involve the use of resources, and others that involve the four language skills (reading, writing, grammar and listening). These and other studies have emphasized the importance of looking at individual differences. In this way, it may be that those who are naturally inclined to L2 learning, those with greater aptitude, are marked by distinct strategy use. This emphasizes there is much to be learned about strategy use by examining and understanding good language learners. However, although a significant effort has been made in the area of learning strategies, researchers have only recently begun to examine pronunciation strategies in particular.

Pronunciation Strategies

While substantial research has been done on pronunciation learning and learner strategies, there has been a lack of focus on pronunciation strategies, especially compared to other areas of language learning. Despite researchers' efforts to classify pronunciation

strategies and determine which ones are effective, there remains a need for further study in this area. In fact, in the past few years there have been several taxonomies of pronunciation strategies. The following is a summary of the types of pronunciation strategies that have been found.

Peterson (2000) gathered information regarding pronunciation strategies through interviews and diaries for 11 adult Spanish learners. Her study yielded 12 basic pronunciation strategies: representing sounds in memory, practicing naturalistically, formal practice with sounds, analyzing the sound system, using proximal articulations, finding out about the target language pronunciation, setting goals and objectives, planning for a language task, self-evaluation, using humor to lower anxiety, asking for help, cooperating with peers, representing sounds in memory. While she did not attempt to organize or classify the strategies, she noted that all twelve strategies were given the same names or similar names to strategies that exist in Oxford's (1990) classification system. Using reflections of adult ESL graduate students enrolled in pronunciation classes in order to identify their beliefs and concerns about pronunciation learning, Vitanova and Miller (2002) identified two pronunciation strategies used by L2 learners: self-correction of poor pronunciation and active listening to native pronunciation. Derwing and Rossiter (2002) focused on the perceptions of 100 adult immigrant ESL learners representing 19 native languages and discovered seven pronunciation strategy areas: self repetition, paraphrase, volume, write, spell, slow rate, clear speech and other. Osburne (2003) used oral protocols to study L2 pronunciation of adult ESL learners and found eight pronunciation strategies categories: global articulatory gesture, local articulatory gesture or single sound, focus on individual syllables, focus on sounds below

the syllable-level, focus on prosodic structure, focus on individual words, focus on paralinguistics, and focus on memory or imitation.

In order to consolidate this extensive list of pronunciation strategies so as to evaluate type and frequency of strategy use as well as the relationship between strategy use and pronunciation proficiency, Eckstein (2007) created a new taxonomy for pronunciation strategies based on his Pronunciation Acquisition Construct which states that pronunciation is acquired through a four-stage learning process that includes: 1) input/ practice 2) feedback/noticing 3) hypothesis forming and 4) hypothesis testing. This construct was modeled after Kolb's (1984) experiential learning cycle. In his study, Eckstein (2007) conducted a survey where he asked 183 university ESL students to reflect on their pronunciation strategy use, in terms of both frequency and type. He also wanted to see the effect of the pronunciation strategy use on pronunciation proficiency. A primary goal of the study was to see if the strategies naturally group together in categories according to the stages in the pronunciation construct. This study enabled Eckstein to compile a list of pronunciation strategies used by the students and combine them with those from previous studies to produce the most extensive taxonomy that can be found on pronunciation strategies. This study not only provides an extensive list of pronunciation strategies, but also a framework from which we can understand and classify these strategies. For the purpose of this study, this taxonomy of strategies as found in Eckstein's (2007) Strategic Pronunciation Learning Survey will be used to measure strategies use and compare the use of these strategies with language aptitude, L2 learning context, and pronunciation proficiency.

Much research remains to be done regarding L2 pronunciation strategies, but from the studies cited, a core of strategies has been given from which to research further. One thing we have yet to learn is the most effective way to categorize these strategies and which ones have the greatest impact on successful language learning (Eckstein, Graham, Anderson, & Baker, 2010). As Rubin (1975) pointed out, if we are to better understand what makes a good L2 learner, we must examine the three main factors of good language learning: language aptitude, L2 context, and learning strategies. As we endeavor to examine these variables simultaneously, not only can we better understand good L2 learning, but we will see whether behavioral factors (L2 learning strategies) or natural intelligence (language aptitude) are better predictors of successful L2 learning.

Gap in the Research

Although there have been a vast number of studies done regarding L2 learning strategies, the numbers of L2 English strategies investigated in EFL contexts pales in comparison to those done in ESL environment. This denotes a gap in our understanding of English learning strategies used in EFL contexts. As evidenced by the growing number of studies done in Asia over the last 20 years, it is apparent that some EFL contexts may be more suited for examining English L2 strategy use than others because of population size and demand for English competency. The People's Republic of China is one such country. The educational and economic goals of the country have caused an English learning frenzy across big and small Chinese cities. Consequently, more EFL research is required to meet the demand of this particular country in order to help foster learner autonomy and possibly more effective and efficient L2 English learning.

Zhang (2003) gives an overview of the language learning strategy research that has been done in the People's Republic of China (PRC). The findings are difficult to compare because different measures were used than in other strategy studies to investigate the research questions as well as different classificatory systems for coding strategies. Though one valuable insight gained from his study is the identification of areas that call for more strategy research in China: reading, writing, and oral communication strategies. Within oral communication strategies is a specific lack of pronunciation strategy research. With a high demand for English learning in China and a competitive edge toward achieving native-like pronunciation, research into pronunciation strategies used by Chinese learners would shed more light on learner strategies in China and a native L2 learner context. Thus the purpose of this study is to help meet the increasing demand of L2 teachers, learners, and language professionals to discover the effects of language aptitude, pronunciation strategy use, and L2 context (EFL and ESL) on pronunciation proficiency. This study is designed to answer the following questions so as to facilitate the creation of better L2 programs, assessments, and tools for L2 learning.

1. Does language aptitude predict pronunciation gains (for ESL and EFL contexts) for global foreign accent, accuracy, fluency, comprehensibility?
2. Do learners with different aptitudes use different strategies?
3. Does pronunciation strategy use predict pronunciation gains (for ESL and EFL contexts) for global foreign accent, accuracy, fluency, comprehensibility?

CHAPTER THREE

Methodology

Introduction

The specific objectives of this study were to first distinguish high and low aptitude learners in EFL and ESL contexts. Secondly, the goal was to evaluate pre- and post tests for strategy use and pronunciation gain to see how pronunciation proficiency gains related to language aptitude, pronunciation strategies and learning context (ESL or EFL). Another aim of this study is to examine language aptitude and strategies use as two distinct factors, the first measuring a learner's general ability for L2 learning and the second measuring things a learner can do to improve L2 learning.

In this chapter, the methods used to recruit participants, collect data, and analyze the data will be explained. Participants at three English-teaching schools were recruited to take part in the study. An initial aptitude test was administered, which was then used to select participants for a survey of pronunciation strategies use (the Strategic Pronunciation Learning Survey) and pronunciation proficiency evaluation. The data from these tests was then analyzed and interpreted.

Data Collection

Subjects. Because this study examined the effect of L2 learning context on language pronunciation gains, two groups participated in this study: EFL participants enrolled in two intensive English-language schools in Beijing, China and ESL participants from Brigham Young University's English Language Center (ELC) in Provo, Utah. Participants from each group participated in programs where oral English is one of the focal skill areas.

Each participant's English level was used as the principal criterion for selecting participants in this study, the motive being that all of the testing materials were in English. Therefore, it was necessary to recruit participants whose English abilities were sufficient to understand those materials. Consequently, participants from intermediate to high English proficiency levels were recruited to participate.

Standardized English Levels. Each school employed its own system of proficiency levels based on participants' overall English proficiency. To standardize the participants' English level across all three schools, the researcher divided the levels for each school into three groups (novice, intermediate and advanced, based loosely on the ACTFL guidelines) and sought out participants at the intermediate and high levels from each school to take the PLAB. Brigham Young University's ELC (where the ESL participants were recruited) uses a 5 level system. In reference to the ACTFL guidelines for foreign language proficiency, the ELC level 5 is the equivalent of an advanced low while level one relates to a novice high level. English First (where EFL participants were recruited) uses a 7 level system (the levels are 1, 3, 5, 7, 9, 11, and 13 because English First (EF) also has an online counterpart for its program in which the levels are designated by even numbers) and level one is the equivalent of a novice low level while level 13 relates to an advanced mid level. New Oriental (where more EFL participants were recruited) uses a 12 level system with level one the equivalent of a novice low ACTFL level and level 12 relates to an advanced mid level. A standardized English level scale was created by the researcher, after consulting with BYU ELC instructors professionally trained in English oral proficiency assessment, in order to compare the three groups of participants, to ensure that participants with lower English abilities did

not participate in the study, and to allow for similar numbers of participants at each of the higher English levels in the EFL and ESL contexts. The standardized scale was based on the 5-level system at the ELC because it is the one with which the researcher was most familiar. To standardize the other two schools' English level systems, the researcher randomly interacted informally with learners at the different English levels at the two Chinese schools and then matched their level according to their oral proficiency with the ELC level. This allowed for participants with comparable English ability across all three schools to be tested in Stage One of the research (see Table 3-1).

Standardized ACTFL Levels	ELC	English First	New Oriental
Novice High	1	1	1
			2
Intermediate Low	2	3	3
			4
Intermediate Mid	3	5	5
			6
Intermediate High	4	7	7
			8
Advanced Low	5	9	9
			10
		11	11
			12
13			

Table 3-1: Standardized levels and levels at each school

In Stage One, the target number of participants was set at 100 participants to take the language aptitude test from each of the ESL and EFL contexts. The purpose for this was to obtain a sufficient pool of participants from which to differentiate high and low aptitude groups. Then the top 15 (or 16) and the bottom 15 (or 16) participants from each group were selected to participate in the Stage Two testing. For ESL, 16 participants were

asked to participate in the high aptitude group because two participants tied with the same score for spot fifteen. For EFL, 16 participants were asked to participate in the low aptitude group for the same reason. Because participation in the study was purely voluntary, 110 EFL participants and only 86 ESL participants participated in Stage One testing and 31 from each context were selected to participate in Stage Two testing. The total aptitude score possible on the PLAB is 118. For the ESL context, the high aptitude group's average PLAB score was 88.7, while the low aptitude group was 56.6. For the EFL context, the high aptitude group achieved an average PLAB score of 92.5 and the low aptitude group achieved a score of 57.2.

To recruit the participants, the researcher first received approval from Brigham Young University's Institutional Review Board (IRB) to conduct this research at Brigham Young University's English Language Center as well as in Beijing, China. After permission was granted from each of the institutions, intermediate to advanced proficiency level participants were then approached during their oral English classes and the study's goals and methods were explained. Participants were then voluntarily invited to participate. In Beijing, the EFL participants attended two schools: 88 from English First (EF) and 17 from New oriental's Elite program. These schools were chosen because they are well-known for their intensive English language programs and are both large schools, which provided the best opportunity for selecting the desired number of participants within the given amount of time. These two schools also had very similar programs as far as curriculum design. All of the participants in Beijing spoke Mandarin Chinese as their native language (see Table 3-2) and 67% were female and 33% were male (see Table 3-2). Unaccounted percentages were the result of data the participants left incomplete. The

average age of the EFL participants was 25.0 years old, with a standard deviation of 4.7 years (see Table 3-2). Forty-two percent of the EFL participants had a standardized English level of 4 (or intermediate high; see above for a discussion of standardized English levels), 21% at Level 3 (intermediate mid) and 27% at Level 5 (advanced low). The factors that were controlled for in Stage One testing were age, proficiency level and gender. For proficiency level, the researchers aimed at recruiting equal numbers of participants from each level in both ESL and EFL contexts. Table 3-2 provides the demographics for Stage One participants.

Context	BOTH	ESL	EFL	EFL	New
School	All	BYU	All EFL	English	Oriental
		ELC		First	
Number of Participants	196	86	110	88	17
Gender	Male	31%	29%	33%	29%
	Female	66%	70%	64%	53%
Age	Mean	26.01	26.30	25.03	23.86
	St. Dev.	6.24	6.70	4.70	5.15
	Youngest	15	17	15	18
	Oldest	49	49	35	34

Table 3-2: Gender and age statistics for Stage One testing participants

In Provo, a total of 86 participants participated in the study. All of the participants attended Brigham Young University's English Language Center (ELC). Seventy percent of the ESL participants were female. The participants came from several different native language backgrounds: 30% spoke Spanish, 28% Korean, 14% Mandarin, 12% Portuguese, with the remainder speaking Cantonese, French, Japanese, Malagasy, Mongolian, and Russian as their L1. One of the limitations of comparing EFL and ESL

contexts was finding enough native Mandarin speakers in the ESL context. In the end, this proved impossible due to the cultural background of the participants at BYU's ELC. However, an attempt was made to recruit participants whose cultural and linguistic backgrounds were as similar to the EFL participants as possible.

By using equal numbers of ESL and EFL participants from similar intensive English language programs, we were able to compare for differences in the pronunciation strategies used according to language learning context and the pronunciation gains associated with them.

For Stage Two testing, i.e., those who actually participated in the main study discussed here, the EFL participants were 78% female, while the ESL participants were only 62% female. More females were recruited in the EFL context because the percentage of participants at English First was over 4/5 female. The average age of the Stage Two participants in both contexts was nearly identical: 25.4 years old for EFL with a range from 15 to 35 years old and 25.8 years old for ESL with a range from 17 to 49 years old. The age distribution was wider for the ESL context (standard deviation of about 7 years), whereas the EFL age distribution was much narrower (standard deviation of 4.6 years).

The EFL and ESL groups were similar in their percent of participants at level 4 (intermediate high) with nearly half of each group at a level 4. However, the proportions of participants at levels 3 and 5 were mirror images. For the EFL group, over 20% were at level 3 and 30% were at level 5. For the ESL group, nearly 30% were at level 3 and over 20% were at level 5. This difference is not problematic, however, since in actual numbers this comes out to 6 participants at level 3 and 8 at level 5 in the EFL group,

while in the ESL group, those numbers are reversed. The actual difference at each level, therefore, is only 2 (See Table 3-3).

<u>Context</u>	<u>BOTH</u>	<u>ESL</u>		<u>EFL</u>	
School	All	BYU ELC	All EFL	English First	New Oriental
Number of Participants	56	29	27	21	6
Gender	Male	30%	38%	22%	33%
	Female	70%	62%	78%	67%
Age	Mean	25.60	25.79	25.41	24.83
	St. Dev.	5.90	6.99	4.63	4.88
	Youngest	15	17	15	21
	Oldest	49	49	35	34

Table 3-3: Gender and age statistics for Stage Two testing participants

All EFL Stage Two participants were native Mandarin speakers. The ESL group was more diverse. Thirty four percent were native Korean speakers, 28% were native Spanish speakers, and 14% were native Mandarin speakers. The remaining 24% were native speakers of Japanese, Portuguese, and Russian. In total, 60% of the ESL stage two participants and 100% of the EFL stage two participants were Asian L1 speakers. Despite the L1 disparity between ESL and EFL groups, the fact that many of the ESL participants were of Asian descent perhaps mitigates this disparity to some degree.

Instruments

Three instruments were used in this study. The first, the Pimsleur Language Aptitude Battery (PLAB), was used to measure language ability and motivation. The second, the modified Eckstein (2007) Strategic Pronunciation Learning Survey (SPLS), was used to measure the frequency and duration of use of various pronunciation strategies. Finally, a pronunciation proficiency test, composed of both read and spontaneous material, was used to measure pronunciation gains. Each of these instruments will be discussed in turn.

Pimsleur Language Aptitude Battery. The Pimsleur Language Aptitude Battery (PLAB) test was developed by Paul Pimsleur and his associates in 1966. It was designed to predict participant success in second language learning based on language ability and motivation. One of the most popular language aptitude tests, it has been proven a useful and effective test in predicting language learning ability (Curtin, Avner, & Smith, 1983; Ehrman & Oxford, 1995; Spolsky, 2000; Vandergrift, 2006). The test is broken into six sections. Each section tests four predictive factors of language aptitude (verbal intelligence, motivation, auditory ability, and grade point average): Vocabulary, Language Analysis, Sound Discrimination, and Sound Symbols, Grade Point Average, and Motivation. For this study, this test was chosen in place of other aptitude tests because of its success in predicting language aptitude (Cenoz & Lecumberri, 1999; Currall & Kirk, 1986; Erlam, 2005; Kiss & Nikolov, 2005; Otto, 2002; Pimsleur, 1966; Robinson, 2001;) and was specifically chosen in place of MLAT because of its inclusion of predictive ability in measuring auditory ability and motivation as factors in determining language aptitude.

The PLAB is divided into six parts, but these six parts can be grouped into three types of assessment. The first two sections gather information about L1 proficiency and motivation that is self-reported by the learner. The next two sections (3 and 4) involve language analysis and are multiple-choice. The last two parts (5 and 6) measure auditory ability and include listening samples in conjunction with a multiple choice measure.

Part One asks participants to self-report on a scale of one to five how well they have done most recently in each of the following four subjects: native language, history, math, and science. **Part Two** consists of only one question, which measures motivation by asking participants to record their interest in learning a foreign language by choosing a number from one to five, five being highly interested and one not interested at all.

Parts Three and Four measure the test-takers' verbal ability. In particular, part three measures verbal ability by testing the participant's word knowledge in English. Twenty four words are listed and participants must choose the correct synonym of the word given out of four choices. For example, one word given is *prolonged*, and the four choices are: a. *prompt*, b. *difficult*, c. *decreased*, or d. *extended*. Part Four tests the participant's ability to reason logically in terms of a foreign language. In this part participants are given a table with a list of word combinations from a fictitious language matched up with their English equivalents. Participants are then asked to use the table to translate English sentences into the new language. For example one question provides the following grammar: *gade* means *father, a father*; *shi* means *horse, a horse*; and *be* means *carries*. The participant then is asked to translate the sentence, "Father carried a horse" into the new language. The multiple choice options are (a) gade shir be, (b) gade shir ba,

(c) shir gader be or (d) shir gader ba. There are fifteen multiple choice questions for this section.

Parts Five and Six measure the auditory ability of the participant. In Part Five there are thirty multiple choice questions that test one's ability to learn phonetic distinctions and distinguish them in different contexts. Listening to a recorded audio CD, participants hear and are asked to learn three vocabulary words from an obscure foreign language. After three minutes of practice listening, the speaker says a sentence containing one of the three words and the listeners must choose the correct word of the three words learned. Part Six specifically tests sound-symbol discrimination. Participants listen to twenty four fictitious words made up of English phonemes and are given two seconds to identify the correct spelling for the word out of four choices before the next word is pronounced. For example, when the speaker says the word, "tarpdel," the listeners have two seconds to choose from one of the following four options: trapled, tarpdel, and trapdel.

Strategic Pronunciation Learning Scale. The Strategic Pronunciation Learning Scale (SPLS) used in this study was developed by Eckstein (2007). Eckstein based his strategy survey after a strategic learning model created by Tseng, Dörnyei and Schmitt (2006). The questions in the survey include statements that relate directly to pronunciation strategies that have been identified in the literature and are summarized in chapter two. How often the participant currently used each pronunciation strategy was measured by a six-point Likert scale with six categories that identify the frequency of strategy use: several times a day, about once a day, about once a week, about once a month, less than once a month, and never. Participants were asked to select the category

that best described their learning experience. Figure 3-1 provides an example item from Eckstein's pronunciation learning scale.

<u>Learning Experience</u>	<u>Several</u>	<u>About</u>	<u>About</u>	<u>About</u>	<u>Less</u>	<u>Never</u>	<u>0 - 6</u>	<u>7-12</u>	<u>1 - 2</u>	<u>3 or</u>
	<u>times a</u> <u>day</u>	<u>once a</u> <u>day</u>	<u>once a</u> <u>week</u>	<u>once a</u> <u>month</u>	<u>than</u> <u>once a</u> <u>month</u>		<u>months</u>	<u>months</u>	<u>years</u>	<u>years</u>
1. I use English media such as television, movies, and the radio to learn and practice new English sounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 3-1: Sample from Eckstein's Strategic Pronunciation Learning Scale

Eckstein's survey was modified for this study to include the duration of strategy use in addition to frequency. In particular, another set of four categories were added to the original survey (See Fig. 3-1) to include information for how long the participant had been using the particular pronunciation activity or skill: 0-6 months, 7-12 months, 1-2 years, and 3 or more years. This change was made to evaluate whether duration of pronunciation strategies use is a factor in predicting pronunciation proficiency. See Appendix A for the complete Eckstein Strategic Pronunciation Learning Scale. See Appendix B for the modified Strategic Pronunciation Learning Scale.

In the Strategic Pronunciation Learning Scale, there are five types of survey questions, the first four of which correspond to the four steps in Kolb's (1984) learning cycle. Kolb's learning cycle highlights four areas of learning: 1) concrete experience, 2) reflection, 3) abstract conceptualization, 4) acting upon the new conceptualization. In regard to pronunciation learning, a concrete experience might be exemplified by the learner learning a new word, sound, or other specific aspect of pronunciation such as rhythm, intonation, or stress. For example, after the initial experience of learning a new

L2 sound (i.e., concrete experience), the learner might ponder how he or she produced the L2 sound (reflection). This reflection stage would then lead the learner to compare that pronunciation with other words or phrases in the target language that have the same L2 sound (abstract conceptualization). This abstract conceptualization stage would then be followed by the fourth stage, acting upon the new conceptualization by practicing the L2 sound in other words and other phrases. As the new L2 sound is produced effectively or ineffectively, the learner uses feedback from others as a new concrete experience which initiates a new cycle. This cycle can be directly applied to pronunciation learning by using Eckstein's Pronunciation Acquisition construct (Eckstein, 2007). Therefore pronunciation strategies that fit into these four areas of learning seem to be significant strategies to the pronunciation learning process. The last type of survey items addresses motivation (which was found to be another important aspect of L2 strategy use) (Lalonde & Gardner, 1985; Guilloteaux & Dornyei, 2008; Matthews, 2008). A few of the survey items relating to motivation were reworded for clarity by the researcher after the pilot study feedback indicated ambiguity in those questions. A list of the five types of items, as well as example questions for each, is given in Table 3-4.

5 Types of Strategy Questions	Sample Questions
1. Input/Practice	I use English media such as television, movies, and the radio to learn and practice new English sounds.
2. Feedback/ Noticing	I notice when people speaking English make mistakes.
3. Hypothesis Testing	I am willing to guess the pronunciation of words I do not know how to pronounce.
4. Hypothesis Formation	I immediately correct my pronunciation if people don't understand my English pronunciation.
5. Motivation	I look for a good learning environment, when I study English pronunciation.

Table 3-4: Types of Pronunciation Strategies

Pronunciation Proficiency Test. In order to test pronunciation abilities, the researcher designed a pronunciation test based on research in pronunciation teaching (Avery & Erlich, 1992; Celce-Murcia, Brinton, & Goodwin, 1996) that focuses on testing pronunciation segmentals and suprasegmentals. This test was developed to specifically test pronunciation based on current trends in pronunciation analysis that test segmentals, such as difficult phonemes in English such as /θ/ in *tooth* and /l/ in *smile* as well as suprasegmentals which include intonation, pausing, and word and syllable stress (Anderson-Hsieh & Venkatagiri, 1994; Hahn, 2004; Levis, 1999; Riney, Takada, & Ota, 2000; Tanner & Landon, 2009). To do this, the test was composed of two parts: 1) ten sentences that consisted of English phonemes that have been shown to be difficult for non-native English speakers to acquire, and 2) two open-ended questions that allow participants to produce spontaneous speech. Using both a read and spontaneously

produced passage allowed for both specific segmental as well as suprasegmentals to be evaluated.

In part one, the sentences were chosen from an English pronunciation text by Dale and Poms (1994). The participants were asked to read the sentences aloud as naturally as possible. After analyzing the recordings of these sentences, the researcher chose three of the ten sentences that demonstrated the greatest disparity of pronunciation among the participants in terms of pronunciation segmentals and suprasegmentals. These were then clipped as sound files. The three sentences were also chosen from the ten to reduce the time required for double rating. Table 3-5 shows the sentences and questions used from the Pronunciation Proficiency Test. Commonly mispronounced phonemes in American English include: **tense versus lax vowels** /i/ and /ɪ/ as in ‘beat’ and ‘bit’, /ey/ and /ɛ/ as in ‘bait’ and ‘bet’, and /uw/ and /ʊ/ as in ‘boot’ and ‘book.’; **voiceless stops** /p/ as in ‘plot’, /t/ as in ‘time’, and /k/ as in ‘cat’; **voicing fricatives** /v/ as in ‘vote’, /ð/ as in ‘breathe,’ /z/ as in ‘zoo,’ and /ʒ/ as in ‘beige;’ **voicing final stop consonants** /b/ as in ‘dab,’ /d/ as in ‘did,’ and /g/ as in ‘bag;’ **initial consonant clusters** such as the *br* in ‘brew,’ the *pl* in ‘play,’ or the *str* in ‘strap;’ **final consonant clusters** /kt/ as in ‘worked,’ /t/ as in ‘washed,’ or /ld/ as in ‘filed;’ /θ/ and /ð/ as in ‘think’ and ‘this;’ and **the English /r/** as in ‘rain’ or ‘fire’ (Avery and Erlich, 2008).

Recited Sentences

1. We would like to see the Seven Wonders of the World. We will just have to wait awhile.
2. Year after year, millions of people visit New York. Young and old enjoy familiar sights.
- 3.* **Dad had a bad cold. He stayed in bed all day Monday and Tuesday.**
- 4.* **Mother washed, cooked and cleaned. After she finished, she rested.**
- 5.* **Is there a threat of World War Three? After a third war, many think there will be nothing left on earth. We must be thankful for peace.**
6. The United States started with 13 small states. Now there are fifty states spread from east to west.
7. Please believe that sweet peas and beans are good to eat. Eat them at least twice a week.
8. Nurses do worthy work. They certainly deserve a word of praise.
9. The North Pole is close to the Arctic Ocean. It's known for polar bears, snow, and severe cold.
10. Eyesight is vital to normal life. I prize mine highly.

Open-ended Questions

- 1a. What are your plans for the rest of the day?
- 1b. What are your plans for tomorrow?
- 2.* **Please tell me about one of your favorite movies and why you like it.**

** these items were graded by pronunciation raters*

Table 3-5: Pronunciation Proficiency Test items

In part two, the participants were asked the same two questions and given one minute to respond to each. Approximately thirty seconds from the same question on both pre and post tests that participants seemed to respond to most easily and naturally were saved as sound files to be rated. The questions for part two are sample questions from the ACTFL Oral Proficiency Interview (OPI), a global assessment of functional speaking ability (Liskin-Gasparro, 2003). This pronunciation test was administered twice, at the beginning and end of ten weeks. The participants were recorded and later rated by two trained raters. Two versions, part A for the pretest and part B for the post test, were used; the difference being that question one from part two was slightly altered (see Table 3-5). The alteration was that the pre-test form of the question referred to that day and the post-

test form asked about the next day. For question two from part two, the same questions were used for both the pre and post test in order to compare speech samples that would be the same or very similar. Ideally, this would allow for a better comparison of pronunciation over the testing period. See Appendix B for the entire Pronunciation Proficiency Test Part A and Appendix C for the entire Pronunciation Proficiency Test Part B.

The pronunciation task was graded by two raters, both trained in ESL and pronunciation. The raters used four distinct rating scales in their evaluation of the participants' pronunciation. Interrater reliability was calculated by using Cronbach's alpha. Cronbach's Alpha for each was Global Foreign Accent = 0.79, Fluency = 0.84, Comprehensibility = 0.76, and Accuracy = 0.72. Each of the sound files from pre and post tests were rated on a scale from 1 to 7 with 7 being high (near native English proficiency) and 1 low (very difficult to understand). Scales were used because they have been proven to be an acceptable "means of assessing the level of a particular communicative performance... on a scale of competence ranging from excellence to failure" (Nunn, 2000). Other English pronunciation studies have found scales to be a reliable measure (Derwing & Munro 1997; Derwing, Munro, & Wiebe, 1998; Munro & Derwing 1995). The four areas rated included: comprehensibility (how clearly understood was the speech), accuracy (how precisely produced was the speech according to individual phonemes), fluency (what was the flow or rate of speech in conjunction with accuracy and comprehensibility), and global foreign accent (what is the overall speech pronunciation in terms of native pronunciation ability or how accented is the speech) (Derwing, Munro, and Thompson, 2007). These four rating systems were chosen

because they include an assessment of segmental and suprasegmental aspects of pronunciation as well as key elements involved in oral production that affect pronunciation. Research regarding pronunciation assessment has also found that using specific ratings along with overall ratings “leads to a better understanding of the relation between human and automatic pronunciation assessment” (Cucchiarini, Strik & Boves, 2000).

Procedure

Before research began, a pilot study was carried out in May 2008 to test two of the instruments that would be used in the study (Strategic Pronunciation Learning Survey and the PLAB). The testing in China was carried out from mid June to the end of August 2008. During class time, participants from each of the two schools in Beijing were solicited to participate as volunteers in the study. Those who volunteered signed up for a specific time and day to take the PLAB. During the second week in June all PLAB tests were administered in China. The testing took place in classrooms from the participating schools outside of class time. Either the researcher or the researcher’s aid administered the PLAB to groups of 3-15 participants at a time. The week after PLAB testing in China, the top and bottom scorers on the PLAB were invited to participate in Stage Two testing. These participants were contacted by phone or e-mail and times and dates for testing were set up. The pre Pronunciation Proficiency test was scheduled during 10 minute time slots in one of the classrooms in the schools and participants were asked to fill out the SPLS either before or after their scheduled time slot. The researcher or researcher’s aid administered the tests to participants individually. Ten weeks later the post tests were carried out in the same manner. From mid-September to early December this testing

process was duplicated at Brigham Young University's ELC. During the latter part of December the speech samples from the pre and post tests from both China and the U.S. were double-rated according to the four pronunciation classifications. In January 2009, the data from the study was statistically analyzed and conclusions were drawn. See Table 3-6 for a time table of this study's procedures.

Time Period	Location	Event
May 19 – May 23, 2008	Provo, Utah (BYU ELC)	Pilot Study (pilot study participants recruited, test administered)
May 26 – May 30, 2008	Provo, Utah	IRB Approval (approval from IRB obtained, approval from participating schools obtained)
June 9 – June 14, 2008	Beijing, China (English First & New Oriental)	EFL Stage One Testing (stage one participants recruited, participant contact information obtained, participant consent obtained, PLAB administered)
June 16 – June 21, 2008	Beijing, China (English First & New Oriental)	EFL Stage Two Pre-Testing (stage two participants selected, pronunciation strategy survey administered, pre-test speech samples recorded)
August 25 – August 30, 2008	Beijing, China (English First & New Oriental)	EFL Stage Two Post-Testing (pronunciation strategy survey re-administered, post-test speech samples recorded)
September 15 – September 19, 2008	Provo, Utah (BYU ELC)	ESL Stage One Testing (stage one participants recruited, participant contact information obtained, participant consent obtained, PLAB administered)
September 22 – September 26, 2008	Provo, Utah (BYU ELC)	ESL Stage Two Pre-Testing (stage two participants selected, pronunciation strategy survey administered, pre-test speech samples recorded)
December 1 – December 5, 2008	Provo, Utah (BYU ELC)	ESL Stage Two Post-Testing (pronunciation strategy survey re-administered, post-test speech samples recorded)
December 15 – December 19, 2008	Provo, Utah	Rating of Speech Samples (speech samples anonymized and graded by two raters)
January 12 January 16, 2009	Provo, Utah	Data Analysis

Table 3-6: Study Timeline

Pilot Study. A pilot study was conducted prior to carrying out the full-scale research design in order to receive feedback on Eckstein's Strategic Pronunciation Learning Scale (SPLS) and the Pimsleur Language Aptitude Battery (PLAB). Sixteen volunteer participants were given the SPLS during the final 15 minutes of a level 5 (advanced low) content class at BYU's English Language Center. Immediately after taking the survey, feedback was elicited from participants regarding the clarity of questions in the survey. Based on the feedback from the participants, a few of the questions regarding motivational strategies were reworded. A few other advanced low participants (participants in Level 5 of the BYU ELC) joined the group to make 11 participants: 3 Mandarin speakers, 3 Portuguese Speakers, 4 Hispanic speakers and 1 Russian speaker. Immediately after the PLAB, feedback was again elicited. Results from the PLAB pilot caused us to add two more minutes to the vocabulary section (Part 3) and one more minute to the grammar section (Part 4) while administering the PLAB during the study in China and the U.S.

Data Analysis

After the data were collected, the following analyses were conducted:

Independent Variables. The independent variables in this study are language aptitude, pronunciation strategies use (frequency and length), and language learning context (EFL and ESL).

Dependent Variable. The dependent variable in this study is pronunciation gain as measured by the difference in pronunciation scores from pre to post pronunciation tests in the following areas: global foreign accent, comprehensibility, fluency, and accuracy.

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Statistical Procedures. To find the significance of the effects of the three factors examined in this study, two statistical procedures were used. First, to answer question one, does language aptitude influence language pronunciation gains in both an ESL and EFL context, the pronunciation gains for the top scorers of the aptitude test for both the ESL and EFL contexts were compared to the bottom scorers in a series of multivariate ANOVAs where language gains from pre test to post test on global foreign accent, accuracy, comprehensibility, and fluency pronunciation scores were the dependent variables, while group (high or low aptitude scorers) and context (ESL or EFL) were the independent variables.

To answer the second question, whether language aptitude predicts use of specific pronunciation strategies, lists of the top strategies (according to frequency and duration of use) employed by each of four groups divided according to context (EFL or ESL) and to learning aptitude (high or low aptitude scores) were compared. Any difference in the average use frequency and the average use duration of each strategy by each of four groups was calculated.

To answer the third question, whether language strategy use predicted language gain in ESL and EFL contexts, a series of linear step-wise multiple regression analyses

were run on the data. In these analyses, the dependent variables were again the language gains from pre test to post test in global foreign accent, accuracy, comprehensibility, and fluency pronunciation scores and the predictor variables were participants' scores on the pronunciation strategy survey. Also included in these analyses as predictor variables were the learners' aptitude scores, language context (ESL or EFL) and other demographic variables (age, amount of time learning English, etc.). A more descriptive and detailed explanation of the statistical analyses used to evaluate the data is presented in Ch. 4.

CHAPTER FOUR

Results

This study was designed to examine the relationships between language aptitude, pronunciation strategies, and pronunciation gains in both ESL and EFL contexts.

Specifically, this study seeks to answer three questions:

1. Does language aptitude predict pronunciation gains (for ESL and EFL contexts) in global foreign accent, accuracy, fluency, and comprehensibility?
2. Do learners with different aptitudes use different strategies?
3. Does pronunciation strategy use predict pronunciation gains (for ESL and EFL contexts) in global foreign accent, accuracy, fluency, and comprehensibility?

This chapter will discuss the statistical analyses used to answer each of the above questions as well as the resulting statistical findings.

Question One: Does language aptitude predict pronunciation gains (for ESL and EFL contexts) for global, accuracy, fluency, and comprehensibility?

In order to answer question one, each participant's language aptitude and pronunciation gain (over a 10-week time period) were measured. As previously discussed, in the Stage One testing period, the Pimsleur Language Aptitude Battery (PLAB) was used to measure the participant's aptitude for language acquisition. The PLAB data is initially separated into six parts: grades, motivation, vocabulary, language analysis, sound discrimination, and sound symbols, each with their own score. The vocabulary and language analysis parts were grouped into a verbal score, and sound

discrimination and sound symbols parts were grouped into an auditory score. All six parts were totaled to create an overall PLAB score with a total possible score of 118. The data was continuous.

After taking the PLAB, 62 participants were selected to participate in Stage Two testing. As part of that stage, participants recorded a pre-test speech sample and a post-test sample. In order to determine pronunciation gain, two raters rated the pronunciation of each participant's pre-test and post-test speech samples. Second, for each participant, both raters' pre-test ratings were averaged, as were both of their post-test ratings. Finally, the averaged pre-test rating was subtracted from the averaged post-rating to arrive at the pronunciation gain for each participant. This process was repeated for all four dimensions of pronunciation: global foreign accent, accuracy, fluency, and comprehensibility. The scores for all four dimensions were then averaged to calculate an overall score. Each score was on a scale of 1 to 7, "7" indicating the highest native-like proficiency. The data were continuous.

After the above data were acquired, all participants were categorized according to their learning context (ESL or EFL). Within each context, the participants were further divided into two equally sized groups (15-16 participants per group) according to their language aptitude as measured by the PLAB total score. The participants who scored among the top 15 on the PLAB (using the total score) were grouped together as were those who scored among the bottom 15. As a result, they were classified into four groups: ESL high aptitude (16), ESL low aptitude (15), EFL high aptitude (15), and EFL low aptitude (16).

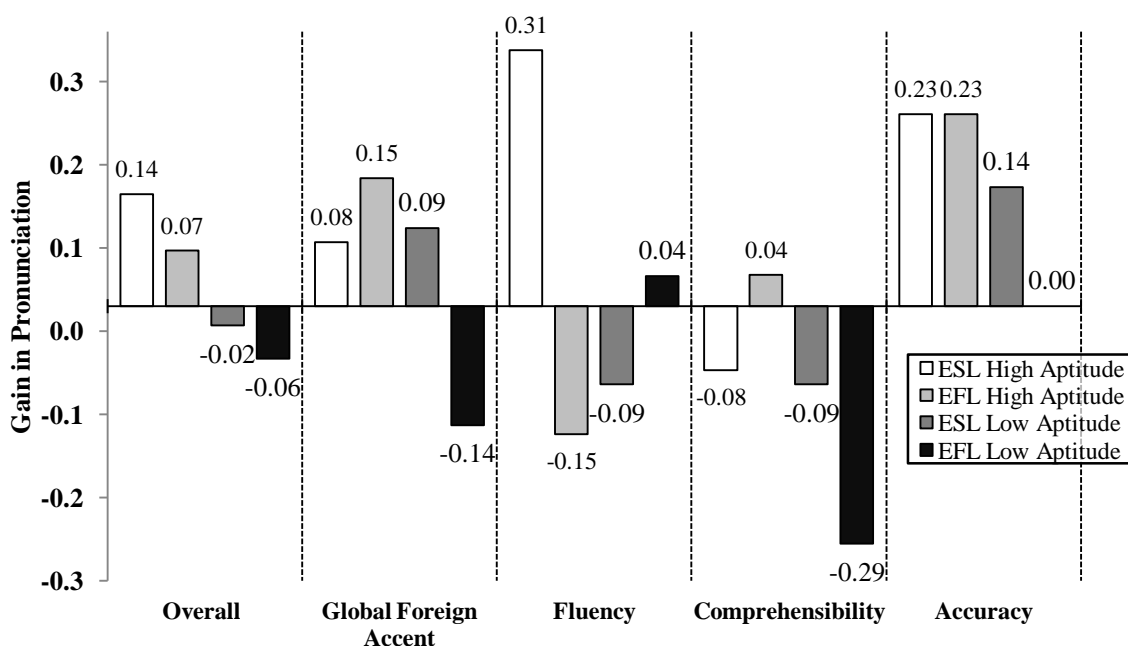
Table 4-1 gives the group overall pronunciation score and the average rating for each of the pronunciation dimensions for each of the four groups described above, both pre- and post-test. The overall pronunciation score was calculated by taking the average of the four pronunciation dimensions. The average rating for each dimension was calculated by taking the average of both rater's ratings.

		ESL High Aptitude	EFL High Aptitude	ESL Low Aptitude	EFL Low Aptitude
Overall	Pre-Test	4.7	3.8	3.7	2.9
	Post-Test	4.8	3.8	3.6	2.8
Global Foreign Accent	Pre-Test	4.7	3.7	3.5	2.9
	Post-Test	4.8	3.9	3.6	2.7
Fluency	Pre-Test	4.8	4.0	3.9	2.6
	Post-Test	5.2	3.8	3.8	2.7
Comprehensibility	Pre-Test	4.8	3.9	3.8	3.1
	Post-Test	4.8	3.9	3.7	2.8
Accuracy	Pre-Test	4.2	3.4	3.4	2.9
	Post-Test	4.4	3.7	3.4	3.0

Table 4-1: Average pronunciation rating for overall pronunciation and each pronunciation dimension according to context and aptitude

Figure 4-1 shows each of the four group's gain in overall pronunciation and in each of the four pronunciation dimensions. These results were calculated by taking the individual average gains in that dimension for all members of that group. The average gain in each dimension for each individual participant was calculated by taking the difference between each rater's post- and pre-test grades and then averaging both raters' results. The overall score for each individual was subsequently calculated by averaging the gains in all four dimensions for that individual. As shown in Figure 4-1, in each of the four dimensions (global foreign accent, fluency, comprehensibility, and accuracy) either the ESL high aptitude or EFL high aptitude group achieved the greatest gain among the

four groups. In every dimension but one (fluency), the EFL low aptitude group had the lowest gain. Some anomalies were found in the fluency and comprehensibility dimensions. In fluency, the ESL high aptitude group achieved much higher gains than the other groups, while the EFL high aptitude group achieved negative gains, the lowest of all four groups. In comprehensibility, the EFL high aptitude group was the only group to achieve positive gains.



NOTE: The “gain in pronunciation” represents the difference between pre- and post-test pronunciation ratings, given on a scale from 1 to 7.

Figure 4-1: Pronunciation gains according to learning context and language aptitude

In order to determine whether there was a relationship between language aptitude and pronunciation gain for the ESL and EFL contexts, first a series of 5 two-way (group (ESL vs. EFL) x aptitude (high vs. low) ANOVAs was conducted, one for each of the five pronunciation rating scores (global foreign accent, fluency, comprehensibility, and accuracy). That is, the dependent variable was each participant’s language gain score (pre-

test subtracted from post-test) for each of the five pronunciation measurements. The independent variables for each ANOVA were language context and language aptitude.

The results of the series of ANOVAs revealed, for each of the pronunciation scores, no significant relationship with context (all F 's (1,56) < .285, all p 's > .595, no significant effect of aptitude (all F 's (1,56) < .415, all p 's > .522, nor a context x aptitude relationship (all F 's (1,1) < .904, all p 's > .346). See Table 4-2 for specifics about each analysis. The results of this series of ANOVAs indicated that for none of the analyses were there significant differences between any of the groups, neither in terms of language learning context (ESL vs. EFL), nor in terms of language aptitude (high vs. low).

	Overall	Global	Accuracy	Compre- hensibility	Fluency
learning context	$F(1,56) = 0.058,$ $p = 0.810$	$F(1,56) = .078,$ $p = .782$	$F(1,56) = .069,$ $p = .794$	$F(1,56) = .021,$ $p = .886$	$F(1,56) = .285,$ $p = .595$
language aptitude	$F(1, 56) = 0.345,$ $p = .559$	$F(1, 56) = .238,$ $p = .628$	$F(1, 56) = .344,$ $p = .560$	$F(1, 56) = .415,$ $p = .522$	$F(1, 56) = .116,$ $p = .735$
context x aptitude	$F(1,1) = .004,$ $p = .951$	$F(1,1) = .299,$ $p = .587$	$F(1,1) = .069,$ $p = .794$	$F(1,1) = .337,$ $p = .564$	$F(1,1) = .904,$ $p = .346$

Table 4-2: ANOVA Results for Pronunciation Gains according to learning context and language aptitude

In summary, the findings show that there were no significant differences between any of the groups for any of the measures examined. Although the high aptitude groups typically outgained the low aptitude groups, the results were not significant. Therefore, based on these analyses, there were no meaningful differences between the groups. Language aptitude, as measured by the PLAB total score, did not predict gains in pronunciation.

Although the above analyses suggest that neither language context nor language aptitude influence pronunciation gains in a second language, there was some concern that

one reason why aptitude did not play a significant role was a result of measuring language aptitude using the overall PLAB score. It is possible that certain parts of language aptitude do not predict pronunciation, specifically grades, motivation and verbal ability, whereas other parts, namely auditory processing, do predict pronunciation gains.

The rationale for this hypothesis is that these “non-predictive” PLAB sections are not directly related to speaking ability. The grades section measures L1 achievement in certain school subjects. The motivation section measures the degree to which the participant wants to learn another language. The PLAB’s verbal ability score is the sum of the vocabulary and language analysis sections. The vocabulary section tests the participant’s actual knowledge of certain English words, and the language analysis section tests the participant’s ability to learn and apply the grammatical structure of a new language.

This rationale led us to hypothesize that auditory ability increases pronunciation proficiency. The PLAB’s auditory ability score is the sum of the sound discrimination and sound symbol analysis sections. The sound discrimination section tests the participant’s ability to hear subtle differences between similar sounds in a new language, whereas the sound symbol section tests their ability to connect a spoken word to its corresponding written spelling. Sound discrimination aptitude specifically and auditory ability generally seem most likely to influence pronunciation gain.

To test whether this was the case, an analysis was conducted to determine whether there was a relationship between pronunciation gain and the scores on the PLAB sound discrimination and auditory sections. First, the participants were grouped together according to overall gain in pronunciation. Participants with pronunciation gains in the

top 50%, 15 learners, were placed into the high gainers group and the participants with scores in the bottom 50%, 16 learners, were placed in the low gainers group. Second, for both groups the mean scores were calculated for the sound discrimination and auditory sections of the PLAB.

This analysis found that the high gainers group achieved higher mean scores on both the sound discrimination and the auditory sections than did the low gainers group (see Figure 4-2).

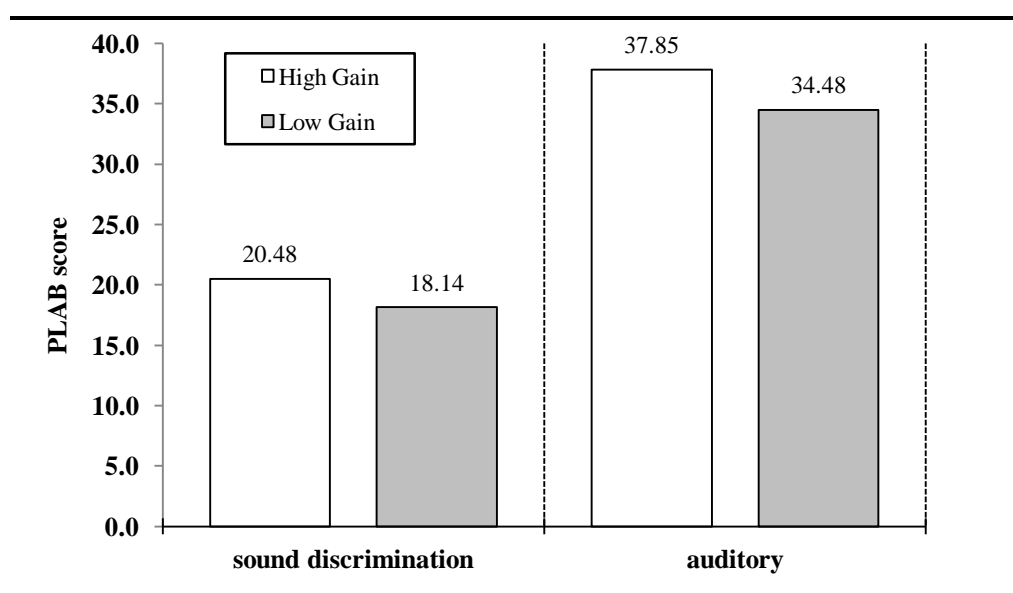


Figure 4-2: Sound discrimination and auditory aptitude according to pronunciation gain

This analysis was again conducted, but this time, the participants achieving pronunciation gains in the top 50% of their learning context (ESL or EFL), 15 learners in each group, were placed in the high gainers group for that context. The same was done for the low gainers. This resulted in four groups: ESL high gainers, ESL low gainers, EFL high gainers, and EFL low gainers. Again for all four groups the mean scores were taken on both the sound discrimination and the Auditory Sections. Both of the high gain groups achieved higher mean scores on both PLAB sections than did both low gain

groups. In addition, both EFL groups achieved higher scores on both PLAB sections than did either of the ESL groups. The EFL high gain group only scored only slightly higher than the ESL high gain group on both sections, while the EFL low gain group was substantially higher than the ESL low gain group. However, when a two-way ANOVA (group (high vs. low gainers) x context (ESL vs. EFL)) was run on the data, a statistically significant effect of group was not found ($F(2,61) = 2.86, p = .09$). See Figure 4-3.

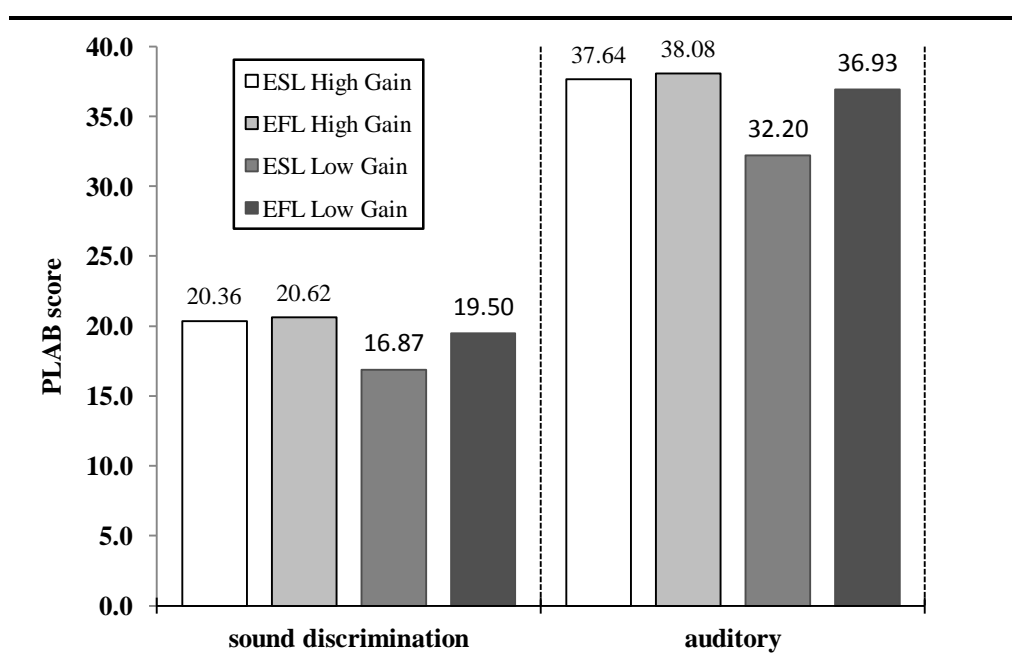


Figure 4-3: *Sound discrimination and auditory aptitude according to pronunciation gain and learning context*

This question asked whether language aptitude predicted pronunciation gain. After conducting an analysis on the data, it was found that overall language aptitude (as measured by the PLAB total score) did not predict pronunciation gain. It was found, however, that sound discrimination aptitude and auditory ability (as measured by the

PLAB sound discrimination and auditory scores) did in part predict pronunciation gains (although this difference was not statistically significant). See Figure 4-3.

Question Two: Do learners with different aptitudes use different strategies?

Question two asks whether learners with different language aptitudes use different pronunciation strategies. In order to answer this question, the participants were first grouped together according to their overall language aptitude score on the PLAB. Participants with an overall score in the top 50% were put into the high aptitude group and the participants with scores in the bottom 50% were in the low gainers group.

The EFL high aptitude group had a mean overall score of 92.46 on the PLAB, the highest of the four groups, while the ESL high aptitude group had a mean score of 88.69. The EFL low aptitude group had a mean score of 57.21 and the ESL low aptitude group had a score of 56.40, the lowest of the four groups.

Second, for all of the groups the mean scores were calculated for each of the pronunciation strategies and each of the pronunciation strategy types (Practicing, Noticing, Hypothesis Forming, Hypothesis testing, and Motivation). Table 4-3 shows the most frequently used strategies by each of the sound discrimination groups (EFL high aptitude group, ESL high aptitude group, EFL low aptitude group, and ESL low aptitude group). For strategy frequency, “1” represents the highest frequency and “6” the lowest frequency according to how Eckstein’s Strategic Pronunciation Learning Survey reads from left to right. Therefore, the lower the mean score, the higher the frequency.

As shown in Table 4-3, many of the most frequently used strategies were shared among the four groups. Three strategies were shared by all four groups: *I try to sound*

like an English speaker when speaking to a native speaker (Strategy Frequency #14), I am willing to guess the pronunciation of words I do not know how to pronounce (Strategy Frequency #16), and I change my speed of speech if people don't understand my English pronunciation (Strategy Frequency #22). The EFL high aptitude, ESL high aptitude, and the EFL low aptitude groups shared one strategy: I notice when people speaking English make mistakes (Strategy Frequency #3). The high aptitude groups and the ESL low aptitude group shared two strategies: I listen for new sounds when listening to people speak English (Strategy Frequency #4) and I immediately correct my pronunciation if people don't understand my English pronunciation (Strategy Frequency #19). The ESL high aptitude and both low aptitude groups shared one strategy: I concentrate on word stress to improve my pronunciation (Strategy Frequency #10). In all, seven different strategies were shared by three or more groups.

Strategy Ranking	EFL high aptitude		ESL high aptitude		EFL low aptitude		ESL low aptitude	
	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean
1	16 (HF)	2.00	16 (HF)	1.23	16 (HF)	1.46	19 (HT)	1.62
2	5 (P)	2.15	19 (HT)	1.31	28 (M)	1.54	2 (P)	2.15
3	3 (P)	2.23	20 (HT)	1.46	14 (HF)	1.58	4 (P)	2.15
4	22 (HT)	2.23	28 (M)	1.50	23 (M)	1.58	21 (HT)	2.23
5	4 (P)	2.31	14 (HF)	1.62	3 (P)	1.85	22 (HT)	2.23
6	10 (N)	2.31	22 (HT)	1.75	10 (N)	1.85	27 (M)	2.23
7	15 (HF)	2.42	27 (M)	1.83	17 (HF)	1.92	10 (N)	2.31
8	20 (HT)	2.46	3 (P)	1.92	6 (P)	1.92	14 (HF)	2.31
9	19 (HT)	2.50	4 (P)	1.92	22 (HT)	1.92	16 (HF)	2.38
10	14 (HF)	2.54	13 (N)	2.08		0.00	23 (M)	2.46
Top 10		2.31		1.66		1.76		2.21

"P" = Practicing, "N" = Noticing, "HF" = Hypothesis Forming

"HT" = Hypothesis Testing, "M" = Motivation

*The "mean" represents the average response for use of that strategy for that group on a scale of 1 to 6.

Table 4-3: Top 10 most frequently used pronunciation strategies by overall aptitude and learning context groups

As shown in Table 4-3, the ESL high aptitude group had the highest average frequency for its Top 10 strategies and for all strategies. As shown in Table 4-4, the ESL high aptitude had the highest average frequency for three of the five types of strategies (practicing, noticing, and hypothesis testing) and had the second highest frequency for the other two types (hypothesis forming and motivation). It would be tempting to conclude that these high average frequencies are predicted by the ESL top group's high sound discrimination aptitude. However, the EFL high aptitude group, who had the highest average overall language aptitude, had the lowest average frequency on all five types of strategies. Both of the low aptitude groups had higher average frequency of strategy use than the EFL high groups. Therefore, language aptitude did not seem to predict the frequency of strategy use.

	EFL High	ESL High	EFL Low	ESL Low
Practicing	2.78	2.23	2.29	2.64
Noticing	3.25	2.48	2.63	2.95
Hypothesis Forming	3.43	2.58	2.21	2.71
Hypothesis Testing	2.72	1.75	2.25	2.17
Motivation	2.82	2.16	1.94	2.79

*The numbers represent the average response for use of that strategy for that group on a scale of 1 to 6.

Table 4-4: Frequency of strategy type use by sound discrimination aptitude + learning context groups

The top strategies used the longest for each of the four overall language aptitude groups (EFL high aptitude group, ESL high aptitude group, EFL low aptitude group, and

ESL low aptitude group) is shown in Table 4-5. For each mean duration score, “4” represents the longest length of use and “1” represents the shortest length of use.

As shown in Table 4-5, none of the strategies appeared on the list of each of the four groups and only a couple of the strategies were shared by three of four groups, meaning those strategies appeared on the lists of three of the four groups. The EFL high, ESL high, and ESL low aptitude groups shared two strategies: *I use English media such as television, movies, and the radio to learn and practice new English sounds* (Strategy Duration #1), and *I memorize words that are difficult for me to pronounce* (Strategy Duration #7). In all, two different strategies were shared by at least three of four groups.

Some of the strategies were shared by either both low aptitude groups or by both high aptitude groups. Two strategies appeared on the lists of longest used strategies (shown in Table 4-5) of both low aptitude groups and not on those of either of the high aptitude groups: *I put together the sounds of individual letters to sound out words I don't know how to pronounce* (Strategy Duration #17) and *I find ways to avoid the sound that caused problems if people don't understand my English pronunciation* (Strategy Duration #20). A closer look at the entire list of strategies, however, reveals that both top scoring groups actually had higher mean scores for those strategies, even though they did not appear in Table 4-5.

Two strategies appeared on the lists in Table 4-5 for both the EFL and ESL top scoring groups and not on those of either of the two bottom scoring groups: *I concentrate on word stress to improve my pronunciation* (Strategy Duration #10) and *I immediately reduce stress when I feel stressed about learning English pronunciation* (Strategy Duration #25).

Strategy Ranking	EFL high aptitude		ESL high aptitude		EFL low aptitude		ESL aptitude	
	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean
1	16 (HF)	3.38	1 (P)	2.92	17 (HF)	2.50	1 (P)	2.23
2	10 (N)	3.25	25 (M)	2.82	23 (M)	2.00	17 (HF)	2.10
3	24 (M)	3.23	18 (HF)	2.80	6 (P)	1.77	19 (HT)	2.00
4	19 (HT)	3.23	7 (P)	2.77	16 (HF)	1.77	20 (HT)	2.00
5	1 (P)	3.23	28 (M)	2.67	20 (HT)	1.77	21 (HT)	2.00
6	25 (M)	3.15	2 (P)	2.62	27 (M)	1.77	7 (P)	1.92
7	15 (HF)	3.00	10 (N)	2.58	28 (M)	1.77	12 (N)	1.92
8	7 (P)	3.00	12 (N)	2.58			14 (HF)	1.92
9	5 (P)	3.00						
Top 7		3.16		2.72		1.91		2.01

"P" = Practicing, "N" = Noticing, "HF" = Hypothesis Forming
 "HT" = Hypothesis Testing, "M" = Motivation

*The "mean" represents the average response for use of that strategy for that group on a scale of 1 to 4.

Table 4-5: Top 7 longest used pronunciation strategies by sound discrimination aptitude and learning context groups

An analysis of the discrepancy in mean scores for each strategy and strategy type between the high and low aptitude groups was conducted. The discrepancy was calculated by averaging the mean length of use for both the EFL high and ESL high aptitude groups. The same calculation was repeated for the EFL low and ESL low aptitude groups. The average for the high aptitude groups and the average for the low aptitude groups were then subtracted to arrive at the discrepancy.

As shown in Table 4-6, the EFL high aptitude group had the highest average score for all five of the strategy types (practicing, noticing, hypothesis forming, hypothesis testing, and motivation), and therefore had used each of the strategy types for the longest period of time. Also, the ESL high aptitude group had the second highest average score for all five types of strategies. These findings are supported by Table 4-5 which shows

that the EFL high aptitude had the highest average score across all strategies and that the ESL high aptitude group had the second highest average. These findings strongly suggest that sound discrimination aptitude predicts the length of time for which participants have used pronunciation strategies.

	EFL High	ESL High	EFL Low	ESL Low
Practicing	2.80	2.47	1.58	1.73
Noticing	2.63	2.52	1.65	1.79
Hypothesis Forming	2.80	2.51	1.78	1.86
Hypothesis Testing	2.77	2.45	1.65	1.94
Motivation	2.81	2.27	1.73	1.68

*The numbers represent the average response for use of that strategy for that group on a scale of 1 to 6.

Table 4-6: Duration of strategy type use by overall aptitude + learning context groups

The analysis revealed, shown in Table 4-7, that the high aptitude groups had a higher (and therefore longer) average use of each of the pronunciation strategies. The largest discrepancy was for *I immediately reduce stress when I feel stressed about learning English pronunciation* (Strategy Duration #25), which had a discrepancy of +1.41, which, since the range of possible answers was 1 to 4, the high aptitude group had a much higher score for this strategy and therefore had used it much longer. The other top 5 strategies with the highest duration discrepancy were *I concentrate on word stress to improve my pronunciation* (Strategy Duration #10), *I am willing to guess the*

pronunciation of words I do not know how to pronounce (Strategy Duration #16), I use English media such as television, movies, and the radio to learn and practice new English sounds (Strategy Duration #1), and I repeat their words silently as I listen to people speak English (Strategy Duration #5).

The results for this question suggest that language aptitude does not have a significant relationship with strategy frequency, but indicate instead, that length of time of strategy use does seem to be linked to language aptitude. Practicing and noticing strategies were also the two types of strategies that had the greatest disparity between high and low aptitude groups in length of time used.

Strategy Ranking	Strategy Number	EFL high aptitude Mean Use	ESL high aptitude Mean Use	EFL low aptitude Mean Use	ESL low aptitude Mean Use	Use Discrepancy
1	#25 (M)	3.15	2.82	1.54	1.62	1.41
2	#10 (N)	3.25	2.58	1.69	1.69	1.22
3	#16 (HF)	3.38	2.54	1.77	1.77	1.19
4	#1 (P)	3.23	2.92	1.54	2.23	1.19
5	#5 (P)	3.00	2.46	1.69	1.42	1.18
6	#7 (P)	3.00	2.77	1.54	1.92	1.15
7	#24 (M)	3.23	2.31	1.69	1.54	1.15
8	#15 (HF)	3.00	2.54	1.69	1.62	1.12
9	#19 (HT)	3.23	2.54	1.62	2.00	1.08
10	#2 (P)	2.62	2.62	1.54	1.62	1.04
Top 10 Averages		3.11	2.61	1.63	1.74	1.17

"P" = Practicing, "N" = Noticing, "HF" = Hypothesis Forming

"HT" = Hypothesis Testing, "M" = Motivation

Table 4-7: Top 10 largest discrepancies in duration of use by overall aptitude

Question Three: Does pronunciation strategy use predict pronunciation gains (for ESL and EFL contexts) in global foreign accent, accuracy, fluency, and comprehensibility?

The third question of this study is whether pronunciation strategy use predicts pronunciation gains (for ESL and EFL contexts) for global foreign accent, accuracy, fluency, and comprehensibility. In order to answer this question, participants were given the Pronunciation Strategies Survey and were asked about the frequency of their use of various pronunciation strategies, as well as the duration of the strategy use. The data from each of the participant's pronunciation gains was taken as described above.

The participants were again divided into groups according to context (EFL vs. ESL) and overall pronunciation gain (High vs. Low). This was done because overall language aptitude, as determined by the analysis in question one, was not found to be a predictor of pronunciation. It was decided to create groups based on pronunciation gain, instead of aptitude, in order to see more clearly any link between strategies and pronunciation gain. Each of the group member's responses for each strategy (on the Pronunciation Strategy Survey) was averaged together to create a group mean for each strategy. The most frequently used strategies have been listed in Table 4-8, along with the strategy category, and the mean response. The responses for frequency of strategy use were marked on a scale, in which "1" was the highest frequency (daily use of the strategy) and "6" was lowest frequency (no use of the strategy).

Both Frequency (amount of regular use of strategies) and Duration (the amount of weeks that these strategies have been used) were examined for each of the 4 groups (ESL high pronunciation gain, EFL high pronunciation gain, ESL low pronunciation gain, EFL low pronunciation gain). In Table 4-8, the frequency of use of each of the strategies for

each of the 4 groups is given. Upon examination of the data, it can be seen that the average use of the top 10 strategies by each of the high gain groups is higher than that of their low gain counterparts. The data also reveal that four strategies were in all four groups' top ten: *I use English media such as television, movies, and the radio to learn and practice new English sounds* (Strategy Frequency #1), *I am willing to guess the pronunciation of words I do not know how to pronounce* (Strategy Frequency #16), *I change my speed of speech if people don't understand my English pronunciation* (Strategy Frequency #22), and *I look for a good learning environment, when I study English pronunciation* (Strategy Frequency #27).

In addition, three strategies were in three of four groups' top ten lists (represented in Table 4-8). The EFL high gain, ESL high gain, and EFL low gain groups shared one strategy in their top ten lists: *I notice when people speaking English make mistakes* (Strategy Frequency #3). The EFL high gain, EFL low gain, and ESL low gain groups also shared one strategy: *I listen for new sounds when listening to people speak English* (Strategy Frequency #4). The EFL high gain, ESL high gain and ESL low gain groups shared one strategy: *I try to sound like an English speaker when speaking to a native speaker* (Strategy Frequency #14). Therefore, seven of the top ten most frequently used strategies were used for all four groups or three of four groups showing significant overlap of these strategies among all four groups.

Some strategies were shared by two groups sharing a common attribute. For example, *I identify sounds that are difficult for me to produce* (Strategy Frequency # 2) and *I immediately correct my pronunciation if people don't understand my English pronunciation* (Strategy Frequency #19) were shared by both ESL groups, but absent in

the EFL groups. This finding suggests that context may influence the use of these strategies. Because ESL learners are surrounded by and constantly interact with native English speakers, it seems logical that these two strategies would be of greater value and use in an ESL context. *I change my speed of speech if people don't understand my English pronunciation* (Strategy Frequency #23) was shared by both low gain groups, but absent in the high gain groups.

Strategy Ranking	EFL High Gain		ESL High Gain		EFL Low Gain		EFL Low Gain	
	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean
1	#3 (P)	1.77	#16 (HF)	1.75	#16 (HF)	2.07	#19 (HT)	1.87
2	#16 (HF)	1.81	#28 (M)	1.82	#22 (HT)	2.11	#27 (M)	1.90
3	#5 (P)	1.88	#19 (HT)	1.89	#27 (M)	2.11	#4 (P)	2.00
4	#6 (P)	2.04	#14 (HF)	1.93	#1 (P)	2.16	#5 (P)	2.03
5	#22 (HT)	2.15	#27 (M)	1.96	#15 (HF)	2.18	#14 (HF)	2.03
6	#10 (N)	2.19	#3 (P)	2.21	#3 (P)	2.25	#16 (HF)	2.07
7	#14 (HF)	2.27	#20 (HT)	2.21	#28 (M)	2.29	#1 (P)	2.23
8	#4 (P)	2.31	#1 (P)	2.29	#23 (M)	2.32	#22 (HT)	2.23
9	#27 (M)	2.31	#22 (HT)	2.29	#24 (M)	2.32	#2 (P)	2.30
10	#1 (P)	2.35	#2 (P)	2.32	#4 (P)	2.36	#23 (M)	2.33
Top 10		2.11		2.07		2.22		2.10

"P" = Practicing; "N" = Noticing; "HF" = Hypothesis Forming;

"HT" = Hypothesis Testing; "M" = Motivation

*The "mean" represents the average response for use of that strategy for that group on a scale of 1 to 6.

Table 4-8: Top 10 most frequently used pronunciation strategies by pronunciation gain groups

Next examined was how the four groups differed in the duration of these strategies, that is, the differences between the four groups' length of time using each strategy. The longest used strategies have been listed in Table 4-9, along with the strategy category, and the mean response. The responses for duration of strategy use were according to a scale in which "1" was the shortest duration and "4" was the longest

duration. Upon examination of the data in Table 4-9, it was found that the EFL low gain group had the highest average (for all 10 strategies) than the other three groups, meaning that they were the group who had used these strategies for the longest amount of time. It also found that, while none of the strategies were common across all four groups, six strategies were shared by three of four groups in their top ten lists for duration. The high gain groups and the EFL low gain group shared four strategies: *I concentrate on word stress to improve my pronunciation* (Strategy Duration #10), *I am willing to guess the pronunciation of words I do not know how to pronounce* (Strategy Duration #16), *I put together the sounds of individual letters to sound out words I don't know how to pronounce* (Strategy Duration #17), and *I immediately reduce stress when I feel stressed about learning English pronunciation* (Strategy Duration #25). The ESL high gain, EFL low gain, and ESL low gain groups shared two strategies: *I use English media such as television, movies, and the radio to learn and practice new English sounds* (Strategy Duration #1) and *I memorize words that are difficult for me to pronounce* (Strategy Duration #7). These six strategies were among the strategies used longest by a majority of the groups.

I memorize words that are difficult for me to pronounce (Strategy #1) and *I am willing to guess the pronunciation of words I do not know how to pronounce* (Strategy #16) appeared in both Tables 4-8 and 4-9. Both of these strategies appeared on the frequency top ten lists (Table 4-8) of all four groups and the duration top ten list (Table 4-9) of three of four groups. This means that both of these strategies are used frequently and have been used for a long period of time, which implies that they may be a typical part of L2 English learning or a technique typically taught at English schools.

As with the frequency data, the data represented in Table 4-9 showed that several strategies were shared by two groups sharing a common attribute. *I know how to reduce stress when I feel stressed about learning English pronunciation* (Strategy Duration #24) was shared only by the two EFL groups. *I pronounce words I don't know how to pronounce using my native pronunciation system* (Strategy Duration 18) and *I find ways to avoid the sound that caused problems if people don't understand my English pronunciation* (Strategy Duration 20) were shared only by both ESL groups. *I keep working until I reach the pronunciation goals that I make for myself* (Strategy Duration 28) was shared by both high gain groups, while *I immediately correct my pronunciation if people don't understand my English pronunciation* (Strategy Duration 19) was shared by both low groups.

Strategy Ranking	EFL High Gain		ESL High Gain		EFL Low Gain		EFL Low Gain	
	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean	Strategy #	Mean
1	#16 (HF)	2.38	#1 (P)	2.79	#19 (HT)	2.86	#1 (P)	2.40
2	#23 (M)	2.31	#25 (M)	2.79	#17 (HF)	2.77	#14 (HF)	2.33
3	#28 (M)	2.31	#7 (P)	2.64	#1 (P)	2.64	#13 (N)	2.27
4	#17 (HF)	2.25	#28 (M)	2.57	#7 (P)	2.64	#19 (HT)	2.27
5	#4 (P)	2.23	#18 (HF)	2.55	#16 (HF)	2.64	#12 (N)	2.21
6	#10 (N)	2.23	#10 (N)	2.50	#11 (N)	2.57	#18 (HF)	2.21
7	#24 (M)	2.23	#20 (HT)	2.50	#24 (M)	2.57	#21 (HT)	2.21
8	#5 (P)	2.15	#3 (P)	2.43	#10 (N)	2.54	#4 (P)	2.13
9	#25 (M)	2.15	#16 (HF)	2.43	#9 (N)	2.50	#7 (P)	2.13
10			#17 (HF)	2.40	#25 (M)	2.50	#20 (HT)	2.13
Top 10		2.25		2.56		2.62		2.23

"P" = Practicing; "N" = Noticing; "HF" = Hypothesis Forming;

"HT" = Hypothesis Testing; "M" = Motivation

*The "mean" represents the average response for use of that strategy for that group on a scale of 1 to 4.

Table 4-9: Top 10 longest used pronunciation strategies by pronunciation gain groups

To determine whether the use of specific pronunciation strategies is linked to pronunciation gains, a series of 5 step-wise linear multiple regression analyses were applied to the data. In this case, the pronunciation strategies (both frequency of strategy use and duration of use) were the predictor variables and the gains in overall, global foreign accent, fluency, comprehensibility, and accuracy in pronunciation were the dependent variables, respectively. The results for each of these pronunciation scores are given in turn below.

Accuracy: The regression analysis for accuracy in pronunciation found that four of the 28 strategies accounted for a majority of the variation (see Table 4-10): *I am willing to guess the pronunciation of words I don't know how to pronounce* (Strategy Frequency #16), *I adjust the muscles in my face for new sounds* (Strategy Frequency #8), *I find ways to avoid the sound that caused problems if people don't understand my English pronunciation* (Strategy Duration #20), and *I practice new sounds to improve my English pronunciation* (Strategy Duration #6).

<u>Pronunciation Strategy</u>		<u>Statistics</u>		
Strategy #	Wording of Strategy	R ²	F	P
16 frequency	I am willing to guess the pronunciation of words I don't know how to pronounce	0.36	6.86	0.01
8 frequency	I adjust the muscles in my face for new sounds.	0.16		
20 duration	I find ways to avoid the sound that caused problems if people don't understand my English pronunciation	0.32	4.14	
6 duration	I practice new sounds to improve my English pronunciation.	0.15		

Table 4-10 Pronunciation Strategies as Predictors for Accuracy Gain

The first two strategies, (Strategy Frequency #16 and Strategy Frequency #8), taken together accounted for nearly 52% of the variation. The p-value for this result was .01, and is therefore significant. The second pair of strategies (Strategy Duration #6 and Strategy Duration #20) combined together predicted 47% of the total variation. The p-value for this analysis was 0.011 and is as a result is significant (see Table 4-9).

Comprehensibility: The analysis conducted for comprehensibility in pronunciation found that of the 28 strategies, two in particular: *I put together sounds of individual letters of word to sound-out words I don't know how to pronounce* (Strategy Frequency #17) and *If I change my speed of speech if people don't understand my pronunciation* (Strategy Frequency #22) predicted nearly 47% of the variation in the comprehensibility factor. Although they did not account for a majority of the variation, the prediction of 47% was more than six times greater than the 7.14% that would be expected if every strategy predicted an equal proportion of the variation. The p-value for this finding is 0.04 and is therefore significant (see table 4-11).

<u>Pronunciation Strategy</u>		<u>Statistics</u>		
Strategy #	Wording of Strategy	R ²	F	P
17 frequency	I put together sounds of individual letters to sound out words I don't know how to pronounce	0.3	4.46	0.04
22 frequency	I change my speed of speech if people don't understand my pronunciation.	0.17		

Table 4-11: Pronunciation Strategies as Predictors for Comprehensibility Gain

There was significant overlap between the groups in terms of what strategies were used. As a result, the majority of the strategies were not significant in predicting the participants' pronunciation gains in any of the dimensions. These findings are supported by the lists represented in Tables 4-7 and 4-8. The differences in pronunciation gain

between the groups could not be attributed to strategies that were either not used much by any of the groups (and therefore did not appear on the lists) or were used by all the groups. However, the frequency of two strategies predicted nearly half of the variation in accuracy gain, and the frequency of two other strategies and the duration of two different strategies predicted the majority of the variation in comprehensibility gain.

The analysis did not find any other relationship between strategy use and pronunciation. For accuracy and comprehensibility gains, there were not any other strategies that predicted such gains with significance. As for overall, global foreign accent, and fluency, none of the strategies predicted significant gains.

In summary, some strategies were found to predict gains in accuracy and other strategies were found to predict gains in comprehensibility. On the other hand, no strategies were found to predict global foreign accent, fluency, or overall pronunciation gains.

Conclusion

The study examined the relationships among language aptitude, pronunciation strategies, and pronunciation gain. Specifically, three research questions examined whether language aptitude predicted pronunciation gain, whether aptitude predicted strategy use and whether pronunciation strategy use predicted pronunciation gain.

The results of various analyses showed that for question one, while overall language aptitude did not seem predictive of pronunciation gain, a student's sound discrimination aptitude and general auditory aptitude did seem to relate to pronunciation gains. For question two, it was found that the frequency of use of four strategies and the duration of use of two strategies accounted for at least half of the variation in accuracy

and in comprehensibility gain scores. For question three, the analyses found that overall aptitude did not predict strategies use, but sound discrimination aptitude could have some kind of relationship with the length of time in which strategies are used.

CHAPTER FIVE

Conclusions

Introduction

The purpose of this study was to examine the relationship between language aptitude, pronunciation strategies, and pronunciation gain and also specifically sought to determine whether learning contexts (ESL and EFL) had an impact on these variables. The objective of this chapter is to answer the research questions of this study, to draw conclusions based on the findings in chapter four, to link these findings to earlier research, and to explain the importance of these findings to language learning theory and practice. In this chapter the limitations of this study and suggestions for future research will also be discussed.

To reiterate, the specific research questions for this study are:

1. Does language aptitude predict pronunciation gains (for ESL and EFL contexts) in global foreign accent, accuracy, fluency, and comprehensibility?
2. Do learners with different aptitudes use different strategies?
3. Does pronunciation strategy use predict pronunciation gains (for ESL and EFL contexts) in global foreign accent, accuracy, fluency, and comprehensibility?

Discussion of Results

Research Question One:

The first research question examined whether language aptitude predicts pronunciation gain (for ESL and EFL contexts) in global foreign accent, accuracy, fluency, and comprehensibility. Initial analysis of the data for this question showed that there was not a significant relationship between overall language aptitude (as measured

by the total score on the PLAB) and pronunciation gain. The research did find, however, after careful analysis of the individual aptitude components that sound discrimination and auditory aptitude in general, when taken separately, could have a relationship with overall pronunciation gain. Findings for this question therefore show that while overall language aptitude does not seem to predict pronunciation gain, sound discrimination and auditory aptitude, a major portion of the aptitude measure, could be linked to L2 pronunciation gain.

To better understand why overall aptitude did not predict pronunciation gain, a more careful examination of what is being measured and how it relates to pronunciation is needed. Although most research points to high aptitude as a predictor of general L2 proficiency, only a handful of studies have noted a positive relationship between aptitude and oral proficiency (Dai, 2008; Sparks, Patton, Ganschow, Humbach, & Javorsky, 2009; Sparks, Patton, Ganschow, & Humbach, 2006). More importantly, no known studies in the literature have been made to establish a relationship between aptitude and pronunciation specifically. While it may be that people with greater ability for language learning do not necessarily improve L2 pronunciation more than those with less ability, there seems to be a connection between particular abilities for learning, such as auditory discrimination that are linked to pronunciation proficiency. (Murphy, 1991). Thus this study is the first to suggest a relationship between language aptitude and pronunciation ability. Another point may be that just as pronunciation is viewed as a component of oral proficiency, perhaps it should be measured against an equivalent component of language aptitude, something more directly related, for example, to pronunciation aptitude. It may be that the components of the PLAB do not measure aptitude that is directly related to

pronunciation. If that is true, then more investigation into the aptitude components related to pronunciation should be made.

It may be that some L2 learners don't aspire to achieve native-like pronunciation because their goal is centered on intelligibility and basic communication (Bent & Barlow, 2003; Jenkins, 2004). One affective factor that we can assume did not contribute to this interference is motivation as measured by the PLAB. Because PLAB motivation scores did not reflect significantly on pronunciation ratings, this lack of influence from motivation might indicate that affective factors were not the cause of unpredictable overall aptitude scores. The limited time between pre and post tests likely was insufficient for acquiring pronunciation gains (Bongaerts, Summeren, Planken, & Schills, 1997; Derwing, Munro, & Thompson, 2007).

Returning to the second conclusion, it is important to understand why aptitude in sound discrimination and auditory ability seem to be linked to pronunciation gain. This is most likely due to the nature of these abilities. They are centered in listening. Sound discrimination, for example, involves the subject listening to similar sounding words, both in isolation and in groups with other words, and being able to differentiate between subtleties in sounds. It is generally accepted in language acquisition that perception comes before production (Berko & Brown, 1960; Flege, 1992). In fact, Flege (1992), found evidence to support the hypothesis that production accuracy or pronunciation is limited by a learner's perception. In order for L2 learners to improve L2 pronunciation to produce near-native pronunciation, they must be able to accurately perceive what native speakers say and how they say it. The better a learner can hear the subtleties of the speech, the more likely that person will be to reproduce those sounds in their own speech.

Murphy (1991) emphasizes the importance of aural discrimination by arguing that “because micro listening includes the aural discrimination of sound patterns within streams of speech, it is central to the teaching of accurate pronunciation.” (p. 57). He also claims that in terms of L2 oral proficiency, listening, speaking and pronunciation skills are interdependent and should be treated as such when focusing on oral proficiency gain. Other studies have reinforced a strong link between listening and pronunciation or aural discrimination and oral proficiency (Brutten, et al., 1985; Goh, 1999; Rosenman, 1987; White, 2008; Xiaoyu, 2009). Sparks et al. (2006) indirectly provides support of this conclusion by stating that phonological processing skills are important for oral proficiency in an L2, pronunciation being a part of oral proficiency. Sparks et al. (2009) further showed in another study that L2 aptitude significantly predicted L2 written and oral proficiency. Although L2 prediction models have changed over the last 20 years (Ehrman & Oxford, 1995; Lett & O Mara, 1990; Onwuegbuzie, Bailey, & Daley, 2001; Skehan, 1989; Sparks, Patton, Ganschow & Javorsky, 1998; Spolsky, 1995), incorporating different types of variables, L2 aptitude along with other language variables has been the strongest predictor of L2 proficiency and achievement (Skehan, 2002). It stands to reason that, despite the insignificance of overall aptitude on pronunciation gains in this study, components of the language aptitude score which are related to sound discrimination may predict pronunciation gains.

The findings in question one demonstrate that there may be a link between auditory aptitude and pronunciation ability. This carries with it implications for L2 educators across all language fields as well as language researchers and speech related professionals. Having a frame of reference for how pronunciation learning is linked to

our natural learning abilities may inspire the production of better tools and measures for individual pronunciation assessment. The results of this study also suggest that connections between auditory aptitude and variables associated with pronunciation such as segmental and suprasegmental features should be examined more carefully in future research.

Research Question Two

Despite the findings that general language aptitude does not predict strategy use, further results from this study show two interesting conclusions regarding aural aptitude and pronunciation strategies use. Higher aptitude learners have used pronunciation much strategies longer than lower aptitude groups and practicing and noticing strategies are the two types of strategies that show the greatest difference in length of time used.

This question examined whether L2 students with higher language aptitude use different pronunciation strategies than those with lower aptitude. The research found that participants with higher aptitude did in fact use a greater variety of strategies than those with lower aptitude, but did not use any particular strategy significantly more than those with lower aptitude. The analysis also suggested that learners with higher pronunciation gains used pronunciation strategies for a longer period of time than those with lower auditory aptitude scores, particularly EFL learners. EFL high aptitude learners had the highest means in aptitude scores and an equally high relationship to length of time using strategies. This suggests that either learners with high aptitude may naturally tend to use strategies longer due to a natural inclination toward language learning or it might be that the duration of strategy use itself improves a learner's aptitude. Although some studies support the theory that aptitude can change over time, and that practices (such as strategy

use) can alter it, there exists more support for the notion that language aptitude is static. If so, it is then more likely that aptitude creates an inclination to and an interest in language learning, which may in turn lead a learner to adopt pronunciation strategies earlier and therefore use those strategies for a longer period of time. However, a longitudinal study is needed to determine with more certainty which of the two possibilities is the case.

Findings from previous research have shown that learners with higher language aptitude used learner strategies more significantly than those with lower language aptitude (Griffiths, 2003; Macaro, 2006). These findings are consistent with the findings in this study. It is possible those with generally higher language aptitude are more interested in language and seek ways to improve their language ability, including their pronunciation (Gardner, 2007; Moyer, 1995). Other possible explanations are that because students with higher language aptitude are more conscious of language learning, they adopt new strategies faster or spend more time studying language and are exposed to more strategies. This might also justify why those with higher auditory aptitude were also shown to use pronunciation strategies for longer.

The findings from this question have implications for researchers, teachers and L2 learners. They suggest that auditory aptitude might serve as a reliable means of correlating pronunciation related skills. For researchers, these findings may have important implications as to whether aptitude determines length of strategy use (a unidirectional effect) or whether strategy use also has a reciprocal effect on aptitude. While findings from this study generally support aptitude as a static ability, the link between length of strategy use and aptitude suggests a possibility that strategies may have

a stronger relationship with pronunciation proficiency than language aptitude. As for learning context, because both high and low aptitude groups used many of the same strategies in both ESL and EFL contexts, this may indicate as Anderson (2003) found in his study with ESL and EFL reading strategies that the dichotomy between ESL and EFL contexts is fading in respect to pronunciation strategies as well. The difference in gains scores could also be found in how effectively and efficiently strategies were used by high and low aptitude groups. As for teachers and L2 learners, these findings could be useful in determining a student's L2 learning potential and the possible challenges that students may face in pronunciation improvement.

Research Question Three

The third research question examined whether the use of certain pronunciation strategies predicts pronunciation gains (for ESL and EFL contexts) in global foreign accent, accuracy, fluency, and comprehensibility. Although use of particular strategies did not seem to predict pronunciation gains in global foreign accent or fluency, some of the strategies did seem to predict gains in accuracy and comprehensibility. In the following paragraphs, the possibilities as to why gains did not appear in the areas of global foreign accent (GFA) and fluency, but were found in accuracy and comprehensibility will be discussed.

Global Foreign Accent: The Critical Period Hypothesis (CPH) is one explanation for no gains in GFA. The CPH is a period of time, that many believe occurs during puberty, which limits a person's ability to acquire an L2 effectively (Krashen, 1975; Flege, Yeni-Kompshian, & Liu, 1999). This idea rests on the assumption that maturational changes in brain structures cause L2 processing to slow down or become

less “plastic” (Scovel, 1988). Many studies have found that those who acquire an L2 after childhood will likely exhibit an accent and that the strength of the accent may depend on the age the learner began L2 acquisition (see Piske, MacKay, & Flege, 2001). Global foreign accent, then, is seen by some as so ingrained in adult learners that pronunciation ceases to improve despite the use of L2 strategies (Scovel, 2000). Many assert that learners after a certain age never gain native-like pronunciation in an L2 (Bongaerts, 1999). However, a more recent wave of researchers claim that the effects of age are hinged more upon the state of L1 development than neurological processes (Bialystok, 1997; DeKeyser, 2003; Flege, 1987, 1988; Flege, Munro, & MacKay, 1995b; Oyama, 1979) and that there is “modest evidence of native like attainment among late learners” (Birdsong & Molis, 2001).

Fluency: Several reasons why no strategies were significantly related to pronunciation gains in the area of fluency might be the L2 learners reasons for L2 learning. If the goal for oral production is pronunciation, then it is reasonable that pronunciation strategies, in and of themselves, are a priority to these L2 learners. Because the idea of pronunciation strategies carries with it historical connotation of a ‘focus on form’ and fluency measures aspects that affect pronunciation (such as speech rate, number of pauses and general flow of speech) that do not seem to focus on form, it may be that the use of strategies are employed with a specific purpose for increasing form and not fluency, therefore yielding no correlation between pronunciation strategy use and fluency gains. If the goal of oral production is communication and not pronunciation, it may be that the L2 learners are less focused on pronunciation and in turn place less emphasis on pronunciation strategies in general, resulting in less reported strategy use.

Additionally, it may be that learners with poor pronunciation are successfully intelligible, while learners with higher pronunciation proficiency have greater trouble with intelligibility due to grammar and syntax (Bent & Bradlow, 2003; Derwing & Munro, 1997; Derwing & Munro, 2005; Munro & Derwing, 1995). If this occurred among learners in this study, then this finding might demonstrate that frequency and duration of practicing the L2 to be more influential factors, giving credence for insignificant gains in fluency and GFA and positive gains in accuracy and comprehensibility.

Accuracy: Unlike GFA and fluency, four specific learning strategies had a significant relationship to accuracy gains. The strategies that were the most important for this pronunciation skill were *I am willing to guess the pronunciation of words I don't know how to pronounce*, (strategy #16) and *I practice new sounds to improve my English pronunciation* (strategy #6). These two strategies seem to be naturally connected and appear to be important in improving the accuracy with which L2 learners pronounce words in the foreign language. A person cannot pronounce words accurately if that word contains sounds that are not a part of the learner's L1. It would seem that through repeatedly pronouncing or at least attempting to pronounce new words and sounds over time the learner can increase the breadth of sounds they are able to pronounce. This in turn would make it possible to pronounce with more accuracy. These strategies seem to fit nicely into Eckstein's Pronunciation Learning Construct (Eckstein, 2007) modeled after Kolb's (1984) learning cycle. This construct follows a four stage cycle that represents how a learner acquires pronunciation: Stage 1) input/ practice-learner hears an utterance or unfamiliar pronunciation, Stage 2) feedback/noticing-the learner understands and processes an utterance and determines how accurate or acceptable it is, Stage 3)

hypothesis forming-learner mentally tries to bridge the gap between actual pronunciation and target pronunciation and, Stage 4) hypothesis testing-learner attempts to produce the target pronunciation. From the view of this construct, it would appear that before an unfamiliar sound could be produced, learners would need to hypothesize (Stage 3) about the new sound first, and then verbally practice it or test the hypothesis (Stage 4) until they become satisfied that it has been produced acceptably. These two strategies fit nicely into stage 3 and 4 of this pronunciation learning construct.

Seemingly contrary to this is the finding that *I find ways to avoid the sound that caused problems if people don't understand my English pronunciation* (strategy #20) also predicts gains in pronunciation accuracy. It appears that when a student is conscious of a particular problematic sound and acts to minimize or completely refrain from using that sound, the pronunciation will sound more accurate. Accuracy is measured by exactness and precision of the oral production, including segmental and suprasegmental aspects of pronunciation. This strategy reflects accuracy because the production given tends to be more accurate as problem features are eliminated. While results of this strategy use are significant in assessment measures like the ones used in this study where learners are given limited opportunity for speech production, evidence of pronunciation in spontaneous, However, it is more likely that this increase in accuracy is due to a lack of sounds the student is unable to pronounce well than to greater pronunciation ability

I adjust the muscles in my face for new sounds (strategy #8) also appears to correlate with pronunciation accuracy. Every native language manipulates facial muscles differently. Which muscles learners are accustomed to using depends upon the L1 of the speaker. Therefore, as L2 learners manipulate their facial muscles to better

pronounce a new language, this helps them shape their mouths in a way that produces clearer, more accurate sounds. Based on the analyses of English and Japanese articulatory settings (the disposition of the vocal tract according to particular articulations in a language), a set of facial exercises was designed to help Japanese ESL learners articulate English sounds so as to communicate more effectively. Some of these exercises include making the face as big as possible and then scrunching it up as tightly as possible, giving a loud yawn, or smiling broadly and then wiping the smile off and throwing it at someone else who then repeats the same process (Sethna, 2007). This strategy and strategy #20 *I find ways to avoid the sound that caused problems if people don't understand my English pronunciation* (strategy #20) also fit nicely into Stage 4 (Hypothesis Testing) of Eckstein's (2007) Pronunciation Acquisition Construct in that they exemplify taking strategic action to make changes in their pronunciation. Pronunciation research supports the use of using articulatory settings as a technique for improving pronunciation (Honikman 1964; Jenner, 1992; Sethna, 2007; Wessels & Lawrence, 1992).

Comprehensibility: Two strategies showed significance in predicting comprehensibility. The first of these strategies, *I put together sounds of individual letters of words to sound out words I don't know how to pronounce* (strategy #17), is a matter of phonetic processing. For most L2 learners, the ability of learning to pronounce new words in the L1 is acquired through the sound symbol association that is learned as learners begin to read phonetically in their L1. Therefore this skill or strategy of sounding out words naturally transfers to L2 in pronunciation learning. The skill of being able to phonetically process sounds given written symbols associated to those sounds has been

an important part of L1 pronunciation learning for many years and this type of sound-symbol systematic phonics instruction has proven to be effective (Ehri & Nunes, 2002).

On the contrary, the other strategy that predicted comprehensibility gains, *I change my speed of speech if people don't understand my pronunciation* (strategy #22), seems a logical way to improve one's comprehensibility. If an L2 learner speaks too quickly, listeners may not be able to distinguish individual words that are spoken. In this case, slowing down the speech may improve their comprehensibility. On the other hand, if an L2 student speaks too slowly, the listener may get distracted and not understand the overall meaning being conveyed. In this way our research supports the notion that suprasegmental features such as speaking rate play an important role in pronunciation learning (Morely, 1991; Ehsani & Knodt, 1998; Celce-Murcia, et al., 1996; Hansen Edwards & Zampini, 2008; Jenkins, 2004).

Of the top ten strategies measuring frequency and duration, there were some strategies were shared by two groups sharing a common attribute emphasizing the role of context and proficiency in relation to pronunciation strategies. *I identify sounds that are difficult for me to produce* (#2) and *I immediately correct my pronunciation if people don't understand my English pronunciation* (#19) were often used by both ESL groups, but absent in the EFL groups. This finding suggests that context may influence the use these strategies. Because ESL learners are surrounded by and constantly interact with native English speakers, it seems logical that these two strategies would be of greater value and use in an ESL context. These findings that context may predict the types of strategies used is consistent with strategies research regarding culture and context (Brown and Perry, 1991; Dandan, 2002; Day, Omura, & Hiramatsu, 1991; Hong-Nam & Leavell,

2006; Lee & Oxford, 2008; Rao, 2006). *I keep working until I reach the pronunciation goals that I make for myself* (#28) was a strategy that had been used for a while (1-3 years) by both high gain groups. Because this strategy is a motivational strategy, it suggests that motivation may be linked to pronunciation proficiency. This finding is consistent with L2 research in motivation (Ehrman, 1990; Guilloteaux and Dornyei, 2008; Lalonde & Gardner, 1985; Lee & Oxford, 2008; Oxford & Nyikos, 1989; Yu, 2008) and more particularly studies regarding pronunciation proficiency (Jenkins, 2005; Levis, 2005; Smit & Dalton, 2000). Also, since it was not used by either of the low gain groups, it carries implications for explicit instruction among unsuccessful pronunciation learners.

As for the other strategies that were not found to be significant in predicting gains, a fairly even spread of strategy use among all four stages of the Pronunciation Acquisition Construct among both high and low gainers in both contexts seems to support that these five factors of pronunciation learning are equally important or at least generally balanced stages in pronunciation acquisition. Additionally, because both low and high gainers were found to use mostly the same strategies, it may not be the type of strategy as much as how effectively and efficiently those strategies were used (Anderson, 1991). There is also the possibility that searching for particular strategies that lead to successful pronunciation is a misguided feat. It may be that using more strategies for longer periods of time or more frequently is the key to L2 pronunciation success.

To conclude this discussion of question three, findings show pronunciation strategies use does predict pronunciation gains. While no apparent relationship between strategies and gains in global foreign accent or fluency occurred, utilization of particular

strategies seemed to yield significant gains in pronunciation accuracy and comprehensibility. Moreover, particular strategies may also indicate that strategy use is influenced by context and pronunciation proficiency. Findings from this question also confirm previous research in L2 oral proficiency by more specifically showing that those with higher gains use more strategies than those with lower gain scores. The implications of this question have merit to teachers, L2 learners, and speech specialists. L2 English educators may help their students improve their pronunciation by explicitly teaching them particular pronunciation strategies. L2 learners can increase their awareness of strategies and more efficiently put them into practice. Speech specialists can also benefit from this by prioritizing strategies according to the needs of their clients.

Limitations

Research testing in China was administered during the summer and necessarily limited to a 10 week time period. The testing in the United States necessarily reproduced the length of the testing period in China in order to preserve comparability. It would have been more ideal to have had a longer testing period, because improvement in pronunciation is typically a slow process which requires more time to become apparent (Bongaerts, et al., 1997; Derwing & Munro 1997; Derwing, Munro & Thompson, 2008; Derwing, Munro, & Weibe, 1998; Munro & Derwing 1995), but given the circumstances, ten weeks was a substantial amount of time to provide enough data to draw conclusions. Furthermore, several L2 studies of similar length have shown significant findings (Cotterall 1999; Ely, 1986; Kember, Jamieson, Pomfret, & Wong, 1995; Leh, 2001; Zimmerman, 1997). Despite the claim proponents of the Critical Period Hypothesis make regarding pronunciation, several L2 studies and language programs have noted ten weeks

to be sufficient time for pronunciation improvement (Carter & Edwards, 2004; Hincks, 2003; Koster, 1986; Ragsdale, 1968).

Another limitation of the study was the differences between the English programs in China and in the United States. In China, the English programs at English First and at New Oriental's Elite program, being typical of private English schools in China, had more of an *à la carte* approach to English learning. Learners pre-paid for a specific number of classes per week. They were free to choose whichever (and whenever) classes they wanted to take. The learners at BYU's ELC were assigned to a specific set of courses with comparatively little ability to choose what classes they wanted to take. Despite the differences in course curriculum and learning approaches, learners from all of the schools involved generally received the same hours of in-class oral instruction every week. Because pronunciation improvement was the focus of this study, this regulation of oral training throughout the testing period served as a reliable standard for evaluating pronunciation gains.

Another limitation was that the learners in the EFL context came from the same language background (Mandarin), while the learners in the ESL context came from diverse language backgrounds (Spanish, Mandarin, Korean, Portuguese, etc.). This difference in language background could potentially skew the results or obscure any relationship

Another limitation was the size of the Stage Two test groups—or the four groups statistically analyzed. While China's Stage One test group was larger than the U.S. group (110 in China, 86 in the U.S.), they were both adequate sizes from which to select Stage Two participants. Stage Two groups would have yielded better results with more learners.

Notwithstanding, the 14-16 learners in each group proved a large enough sampling to provide rich enough data to analyze. Although using more participants always increases the validity of a study, 30 participants is a statistically valid number.

Suggestions for Future Research

This study is the first to investigate the effects of language aptitude, L2 context, and the use of pronunciation strategies on pronunciation proficiency. It has initiated the discovery of better, more efficient pronunciation strategies as well as more productive ways to measure and assess pronunciation. Being that L2 English learning is continually increasing across the globe in various contexts, the need to evaluate the effect of L2 context on English pronunciation learning and the use of pronunciation strategies must be addressed. Further connections to pronunciation strategies must also be established so as to facilitate better use of these strategies by learners and educators.

L2 Aptitude

The findings of this study indicated that auditory aptitude may be a predictive measure for gains in pronunciation proficiency. Future research should investigate the correlation between auditory aptitude and pronunciation proficiency. To further increase the understanding of the relationship between auditory aptitude and pronunciation proficiency would be useful to teachers and ESL schools in assessing students' ability and potential and in establishing more appropriate goals for pronunciation improvement.

Going along with the above research suggestion, more future research should examine the particular effects of auditory aptitude on strategy use. Such a study could lead to better understanding to bridge the gap of how pronunciation is acquired. It could

also indicate whether strategies require different levels of aptitude in order to be effectively employed.

Pronunciation Strategies

Future research should study the effectiveness of each pronunciation strategy at different levels of aptitude or proficiency. For example, it is possible that some strategies are more effective in helping to improve the pronunciation of learners with high auditory aptitude, while other strategies are more effective for learners with lower auditory aptitude. This would be useful to teachers in recommending most appropriate set of strategies to their individual students.

Another study could investigate the effect of other variables such as individual differences, affective factors, or cultural influences on the use of pronunciation strategies. This could further help teachers in making individualized recommendations about strategy use.

While motivation was not looked at particularly in this study, there were some indications that it may have been an important factor relating to pronunciation strategies. The fact that one of the five categories of strategies measured were motivational strategies signals an important connection to pronunciation strategies use. It would also be interesting to see how motivation relates to pronunciation gains.

L2 Context

Another interesting area that could be further explored would be the effect of learning context on the gains in pronunciation proficiency or strategy use. This study could be replicated using a variety of EFL or ESL contexts. The study might replicate in other EFL environments (i.e. in a Latin American country) or in other ESL environments

(i.e. in a city of an English-speaking country where non-English languages are still commonly spoken). This research could determine the effect of learning context on the learner's improvement in pronunciation.

Future research could examine the effect of other context variables that effect L2 pronunciation learning. These other variables might include teaching styles and techniques, culture (traditional views and perspectives for learning), and other social variables. This could help teachers understand how their teaching styles/techniques and the culture affect their students' pronunciation learning. This awareness would make it possible for teachers to adjust and use the most effect teaching methods for their students. Also, because the type and frequency of strategies used seemed to be fairly consistent in both ESL and EFF contexts and previous research has indicated that the dichotomy between the two contexts might be fading (Anderson, 2003), further research examining this dichotomy in relation to how technology and media influence various L2 factors should be considered.

Conclusion

This study sought to understand the relationship between language aptitude, pronunciation strategies, and pronunciation proficiency gains. To examine these relationships, their language aptitude, their use of pronunciation strategies, and gains in their pronunciation proficiency were tested.

After analysis of the data and an examination of the results, it was found that there was reason to believe that sound discrimination aptitude and auditory ability quite possibly predict gain in pronunciation proficiency. This predictive effect is likely due to

the fact these aptitudes are centered on discriminative listening, which is an important aspect the ability to reproduce native pronunciation.

This study further found that learners' language aptitude likely predicts the length of time for which learners have employed pronunciation strategies. This finding is possibly due to a causal chain in which learners with higher aptitude begin L2 learning earlier, and then adopt pronunciation strategies earlier. Consequently, those learners would have used those strategies longer.

Finally, this study found that certain strategies account for higher gains in the accuracy and comprehensibility dimensions of pronunciation proficiency. These findings suggest that strategies may help learners improve specific dimensions of pronunciation.

Overall, this study showed that language aptitude may predict pronunciation proficiency gain as well as the use of pronunciation strategies. It also showed that certain strategies predict gains in some dimensions pronunciation proficiency. All of this indicates that the three variables examined in this study (aptitude, strategies, and context) have a strong, yet complex, relationship with pronunciation gains and that higher aptitude and strategy use positively affect those gains. This study also demonstrates that further research into these relationships is merited.

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APPENDIX B

Modified Strategic Pronunciation Learning Scale

	How often do you use the pronunciation activity or skill?					How long have you used the pronunciation activity or skill?				
	<u>Several times a day</u>	<u>About once a day</u>	<u>About once a week</u>	<u>About once a month</u>	<u>Less than once a month</u>	<u>Never</u>	<u>0 - 6 months</u>	<u>7-12 months</u>	<u>1 - 2 years</u>	<u>3 or more years</u>
1	I use English media such as television, movies, and the radio to learn and practice new English sounds.									
2	I identify sounds that are difficult for me to produce.									
3	I notice when people speaking English make mistakes.									
4	I listen for new sounds when listening to people speak English.									
5	I repeat their words silently as I listen to people speak English.									
6	I practice new sounds to improve my English pronunciation.									
7	I memorize words that are difficult for me to pronounce.									
8	I adjust the muscles in my face for new sounds, like opening my mouth wide.									
9	I think about the differences between my native language and English to improve my pronunciation.									

APPENDIX C**Pronunciation Proficiency Test A
(Pre-Test Version)**

Please read the following sentences out loud as naturally as possible.

1. We would like to see the Seven Wonders of the World. We will just have to wait awhile.
2. Year after year, millions of people visit New York. Young and old enjoy familiar sights.
3. Dad had a bad cold. He stayed in bed all day Monday and Tuesday.
4. Mother washed, cooked, and cleaned. After she finished, she rested.
5. Is there a threat of World War Three? After a third war, many think there will be nothing left on earth. We must be thankful for peace.
6. The United States started with 13 small states. Now there are fifty states spread from east to west.
7. Please believe that sweet peas and beans are good to eat. Eat them at least twice a week.
8. Nurses do worthy work. They certainly deserve a word of praise.
9. The North Pole is close to the Arctic Ocean. It's known for polar bears, snow, and severe cold.
10. Eyesight is vital to normal life. I prize mine highly.

Please take one minute per question to answer the following two questions.

1. What are your plans for the rest of the day?
2. Please tell me about one of your favorite movies and why you like it.

APPENDIX D**Pronunciation Proficiency Test B
(Post-Test Version)**

Please read the following sentences out loud as naturally as possible.

1. We would like to see the Seven Wonders of the World. We will just have to wait awhile.
2. Year after year, millions of people visit New York. Young and old enjoy familiar sights.
3. Dad had a bad cold. He stayed in bed all day Monday and Tuesday.
4. Mother washed, cooked, and cleaned. After she finished, she rested.
5. Is there a threat of World War Three? After a third war, many think there will be nothing left on earth. We must be thankful for peace.
6. The United States started with 13 small states. Now there are fifty states spread from east to west.
7. Please believe that sweet peas and beans are good to eat. Eat them at least twice a week.
8. Nurses do worthy work. They certainly deserve a word of praise.
9. The North Pole is close to the Arctic Ocean. It's known for polar bears, snow, and severe cold.
10. Eyesight is vital to normal life. I prize mine highly.

Please take one minute per question to answer the following two questions.

1. What are your plans for tomorrow?
2. Please tell me about one of your favorite movies and why you like it.

APPENDIX E
Demographic Survey

English Name: _____ Pinyin Name: _____

Age: _____ English School: _____

What city are you from: _____

Why are you studying English? Number your answers according to your reasons for studying English. Number "1" is your most important reason and "2" is the next, etc.

Write as many reasons as apply to you.

_____ Be more successful at my job

_____ Earn more money

_____ Communicate better with foreigners for social reasons

_____ Get a better job

_____ Impress or please someone else (family members, friends, boss, etc.)

_____ personal growth

_____ I really enjoy it

_____ other reason: (_____)

What is your educational background? Mark an X for all that you have completed.

_____ High School

_____ College

_____ Technical School

_____ Graduate School

_____ Some college

_____ Post Graduate School

