SPEECH PRODUCTION AND SOCIOLINGUISTIC PERCEPTION IN A 'NON-NATIVE' SECOND LANGUAGE CONTEXT:
A SOCIOPHONETIC STUDY OF KOREAN LEARNERS OF ENGLISH IN THE PHILIPPINES

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DECLARATION PAGE

"Declaration

I hereby declare that this thesis is my original work and it has been written by me in its entirety. I have duly acknowledged all the sources of information which have been used in the thesis.

This thesis has also not been submitted for any degree in any university previously."

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ROWLAND ANTHONY S. IMPERIAL
9 December 2016

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ABSTRACT

Foreign nationals studying English as a Second Language (ESL) in the Philippines encounter and learn Philippine English (**PhilE**), a *norm-developing*, Outer Circle variety of English (Bolton, 2008; Kachru, 1992) that has undergone various indigenization and nativization processes (Borlongan, 2011; Schneider, 2003), most notably in its phonology. Recent contributions to Philippine-based ESL and Second Language Acquisition research have particularly paid attention to language teaching and pedagogy, language ideologies, and foreign learners' perceptions of and attitudes towards PhilE. In this study, I attempt to advance research by studying L1 and L2 speech production patterns and sociolinguistic perceptions of PhilE among Korean ESL learners. Koreans account for one of the largest number of foreign students enrolled in Philippine education institutions (D.-Y. Kim, 2015; Miralao, 2007), making them an ideal case to study. This thesis presents perhaps the first study that analyzes sociophonetic variation in second language acquisition in the Philippines.

PhilE is a 'non-native' variety of English with a distinctive two-way stop system characterized by negative-to-short Voice Onset Time (**VOT**). This type of phonation feature is not common among native Korean speakers, whose L1 involves a three-way stop system combined with a significant degree of tonal/vocalic interaction (to achieve maximal phonemic contrast). Because the two stop systems are quite dissimilar from one another in terms of consonantal and tonal/vocalic contrast, Korean students who exhibit varying lengths and/or degrees of linguistic exposure to PhilE, and encounter different linguistic

experiences during their L2 learning, would be expected to exhibit varying degrees of or changes to their categorical assimilation of L1 and L2 sounds (Flege, 1987, 1995) and phonetic drift patterns (Chang, 2012) in their interlanguage.

The present analysis of variation in L1 and L2 speech production focuses on two acoustic features: VOT and Fundamental Frequency at the onset of the following vowel (***f_0* onset**). VOT and f_0 onset results reveal that Philippine-based Korean (**PHKor**) students are (1) categorically assimilating phonetic features of the PhilE stop system across segmental and subsegmental levels; (2) exhibiting L1-to-L2 interference, evidenced by L2 stops that appear to assimilate towards Korean production norms in certain phonological environments; and (3) producing dissimilatory phonetic drift patterns in their L1 sound system, indicating bi-directional sound change and development.

Moreover, PHKor students who are more aware of or better at identifying and/or perceiving (Standard) PhilE are less likely to assimilate to non-native L2 production norms during their L2 speech acquisition. This highlights the importance of sociolinguistic perception and perceptual accuracy to L2 speech acquisition.

The study also reveals that PHKor students now show more neutral-to-positive attitudes towards PhilE as a medium of learning and instruction (cf. Castro & Roh, 2013; Roh, 2010), but remain reluctant to acquire PhilE accent features in their speech production. Even though Koreans are putting more economic and social value into Philippine-based ESL education, many of them continue to regard PhilE as a less prestigious, 'non-native' variety of English, and still aspire to achieve 'native-like' English norms in speech.

LIST OF ABBREVIATIONS

AmE	American English
BEP	Bilingual Education Policy
BrE	British English
DepEd	Philippine Department of Education
DOT	Philippine Department of Tourism
ESL	English as a Second Language
f_0	Fundamental frequency
f_0 **onset**	f_0 at the onset of a following vowel
F1	First formant
F2	Second formant
FIL	Filipino (student participant)
Hz	Hertz
IELTS	International English Language Testing System
IVE	Indigenized Variety of English
L1	First language
L2	Second language
LCB	Later childhood bilingual
LOR	Length of residence (in years)
LOS	Length of study (in years)
LT	Long-term
ms	millisecond
MT	Mother Tongue
MTB-MLE	Mother Tongue-Based Multilingual Education
NUS	National University of Singapore
PAM-L2	Perceptual Assimilation Model – L2
PhilE	Philippine English
PHKor	Philippine-based Korean (student participant)
SgE	Singapore English
SGKor	Singapore-based Korean (student participant)
SLA	Second Language Acquisition
SLM	Speech Learning Model
SSP	Special Study Permit
ST	Short-term
TOEIC	Test of English for International Communication
UB	University of Baguio
UG	Universal Grammar
VARBRUL	Variable rule analysis
VOT	Voice Onset Time

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CHAPTER 1

INTRODUCTION

The study of non-native or indigenized varieties of English (IVEs) has come a long way since Sridhar and Sridhar (1986) had first drawn scholarly attention to the apparent neglect of IVE studies in Second Language Acquisition (SLA) research. We have seen the scholarship on non-native English varieties flourish with the dawn of Kachruvian approaches to the study of World Englishes. Some paradigms, however, remain relatively unexplored and understudied. This has certainly been the case for Philippine English (**PhilE**), a *norm-developing*, Outer Circle variety of English (Bolton, 2008; Kachru, 1992) that has undergone various indigenization and nativization processes (Borlongan, 2011; Schneider, 2003), most notably in its phonology.

Foreign nationals studying English as a Second Language (ESL) in the Philippines encounter and learn a particular, distinct variety of English – PhilE – through the very educational institutions they are enrolled in, the people they interact with, and through their exposure to other types of ambient linguistic settings outside the domain of formal learning. Recently, there have been significant contributions to Philippine-based ESL and SLA research; these studies have particularly paid attention to language teaching and pedagogy, language ideologies, and foreign learners' perceptions of and attitudes towards PhilE. In this study, I attempt to advance research in those key areas by providing a descriptive and statistical analysis of first language (**L1**) and second language (**L2**) speech production, as well as L2 sociolinguistic perception patterns among Philippine-based ESL learners. I focus on South Korean

nationals, who currently comprise one of the largest foreign student populations in the country (Choe, 2016; D.-Y. Kim, 2015). This is perhaps the first study that analyzes sociolinguistic variation in second language acquisition in the Philippines.

PhilE is a 'non-native' variety of English with a distinctive two-way consonantal stop system characterized by negative-to-short Voice Onset Time (**VOT**). This type of voicing (or phonation) feature is not common among native Korean speakers, whose L1 involves a three-way consonantal stop system combined with a significant degree of tonal/vocalic interaction (to achieve maximal phonemic contrast). Because the two stop systems are quite dissimilar from one another, Philippine-based Korean (**PHKor**) learners of English who exhibit varying lengths and/or degrees of linguistic exposure to PhilE and encounter different linguistic experiences during their L2 learning, would be expected to exhibit varying degrees of or changes to their categorical assimilation of L1 and L2 sounds (Flege, 1987, 1995) and phonetic drift patterns (Chang, 2012) in their interlanguage.

The present study is thus narrowed down to (1) the sociophonetic analysis of both L1 and L2 consonantal stop production, focusing on patterns of variation in VOT and Fundamental Frequency at the onset of the following vowel (**f_0 onset**), and (2) the sociolinguistic analysis of learner perceptions towards PhilE. By doing so, I hope to shed light on important issues surrounding L2 speech acquisition, language ideologies, and potential implications on language learning, teaching, and pedagogy in the Philippines.

1.1 Language situation in the Philippines

The Philippines, an archipelago of at least 1,700 islands in Southeast Asia, is

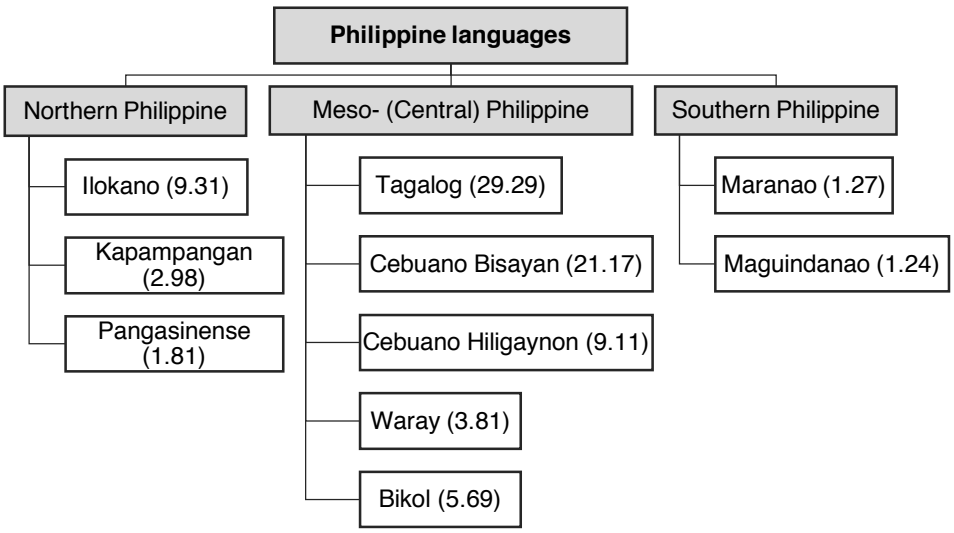

Figure 1: The 10 most widely spoken Philippine languages. Figures shown as a percentage of the total population. Data was adopted from Gonzalez (1998) and based on the 1995 Census of Population and Housing.

home to approximately 101 million Filipinos (Philippine Statistics Authority, 2016a), and to an estimated 183 living individual languages, of which 175 are indigenous and 8 are non-indigenous (Lewis, Simons & Fennig, 2016).[1] Despite the great ethnolinguistic diversity of the country, only ten of these languages are considered to have majority status, i.e., spoken by at least 1 million speakers, and have greater geographical reach and cultural significance. They are listed in Figure 1 above.

The 1987 Philippine Constitution, however, declares only two official languages – English and Filipino. English is an official language of the government and an important medium of instruction and communication across many domains of the Filipino society. Meanwhile, Filipino is a largely urban language spoken in major cities as a second language along with their respective

[1] Lewis et al.'s 2016 Ethnologue report put the total estimated number of languages in the Philippines at 187, of which 183 are living and 4 are extinct. The numbers, however, vary from one source to another; for instance, Macfarland (1993) claimed that there are approximately 120 indigenous languages in the Philippines, mostly belonging to the Austronesian or Malayo-Polynesian Group.

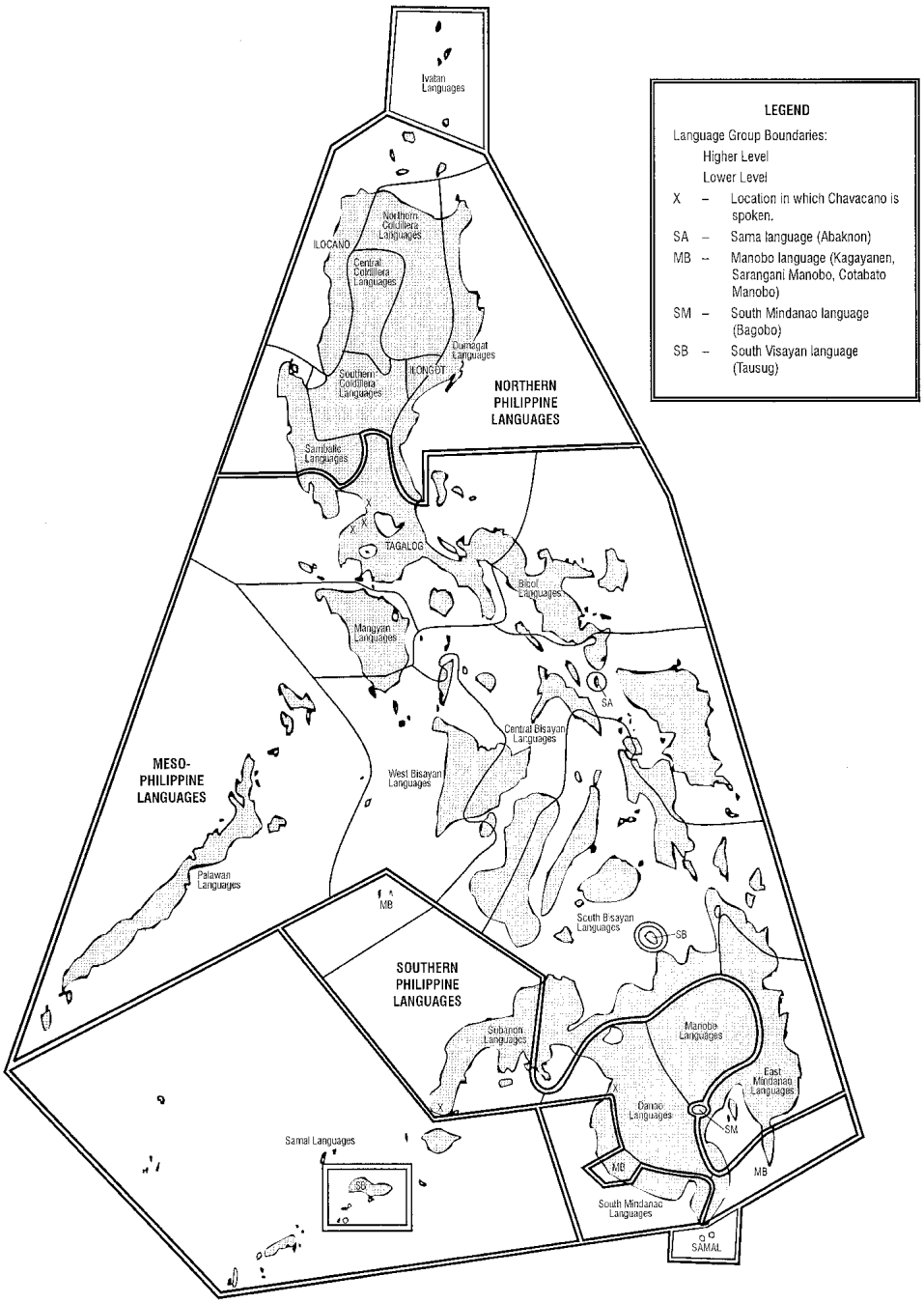

Figure 2: A map of the Philippines showing the geographical distribution of the major language groups (adopted from Gonzalez, 1998). The actual, current ethnolinguistic landscape, however, is not as clear-cut. For example, Cebuano Bisayan (a Central Philippine language) is the lingua franca of Mindanao, a southern island. Gonzalez mentioned that this was the result of waves of southward migration of people from the Visayan Islands. Meanwhile, in the case of Tagalog (as the structural base of *Filipino*), nation-building strategies and large-scale language education policies in the post-WWII era, as well as promotion through all types of media and forms of communication (print, radio, television, and social network) have greatly extended its reach across the archipelago, more so than any other regional language or language variety. Regardless of these monumental social and political changes, however, the correlation between language identity and regional affiliation in the country remains positively strong (Enriquez, 2012).

regional languages. It is currently the *lingua franca* of Metro Manila, the largest metropolitan area in the country, center of business, education, and culture, and seat of government. The Filipino language is essentially Tagalog, which was renamed Pilipino in 1959 "to make it more acceptable as the national language" and Filipino in 1972 "so that the name of the language would represent all Filipinos" (Thompson, 2003, p.33).

At the expense of English, the use of Filipino and Taglish – a language switching variety involving Tagalog and English (Thompson, 2003) – has rapidly gained traction in mass media; these are now the predominant and preferred language varieties in almost all types of news and entertainment program that are broadcast nationwide on TV and radio stations (Dayag, 2004; Thompson, 2003). Today, the use of (Standard) English use is limited to academia and formal language learning, some forms of media, and transactions involving the domains of the government and the law, business, and overseas work (Enriquez, 2012).

Nevertheless, despite the abovementioned downward trends in the use of English, the nativization and indigenization processes involving the formation of the PhilE variety have been steady and significant since the post-WWII era and the implementation of the Filipino-English Bilingual Education Policy (BEP) in 1974 (cf. Borlongan, 2011; Enaka, 2006; Schneider, 2003). English, as Filipinos speak it, now exhibits a notably local flavor especially in terms of the language's lexical, phonetic, and phonological features. In fact, PhilE is now widely recognized and accepted as a distinct variety of English.

1.2 Language education in the Philippines

The BEP paved the way for the official languages, English and Filipino, to be

integrated into the national education system and thus be formally taught to Filipino students. The policy, however, has undergone numerous revisions throughout the decades, and not without controversy (Enriquez, 2012). For instance, it has been criticized for its lack of control and uniformity across all education systems, as certain institutions (mostly private) have considerable autonomy over language-related policy implementations at the school level. As a student who studied in the Philippines, my own experience can attest to this lack. I was taught Home Economics and Livelihood Education (HELE), as well as Music, Arts, Physical Education and Health (MAPEH) in English in private elementary school, but when I moved to a semi-private (i.e., partially publicly funded) school for my secondary education, I had to learn both subjects in Filipino. Nonetheless, despite the lack of standardization and uniformity across the public and private education sectors, both sectors remain centered on improving – or at least maintaining – the effectiveness of the Filipino-English bilingual education program. Furthermore, except in a few private schools and international academies, the overwhelming majority of the English teachers in the Philippines are Filipinos (Enriquez, 2012); we would therefore expect that the type of language input received by students of English in the Philippines would more or less reflect the (standard) PhilE variety, which at this point in time, is approaching stability in terms of its phonological (and lexical) features (Borlongan, 2011; Gonzalez, 1998; Schneider, 2003).

However, major changes to language education in the Philippines are expected to happen with the recent nationwide implementation of the Mother Tongue-Based Multilingual Education (MTB-MLE) by the Department of Education (or DepEd). The MTB-MLE is the government's new banner

program for education under the umbrella of the K to 12 Basic Education Program (DepEd, 2014). Officially known as the "Enhanced Basic Act of 2013", K to 12 extends the now defunct 10-year basic education curriculum to 13 years to "provide sufficient time for mastery of concepts and skills, develop lifelong learners, and prepare graduates for tertiary education, middle-level skills development, employment, and entrepreneurship" (DepEd, n.d.). Focusing on building proficiency through language, students are now taught through their L1 (i.e., their regional language, or Mother Tongue / MT) in the first three years of elementary school. English and Filipino are now taught as language subjects starting Grade 1 "with focus on oral fluency", and would be gradually introduced as media of instruction in the latter half of their elementary education (DepEd, n.d.). In School Year 2012-13, 12 MTs from various regions were introduced as languages of instruction in the first three years of elementary school.[2]

Despite the new major policy changes and implementations in the country's education system, the English language has remained and will remain an indelible part of formal learning and a key medium of teaching instruction. Also, the recent policy changes and implementations pose no direct or immediate threat to the country's ESL sector, a largely private, international enterprise which has experienced phenomenal growth since the 1990s when foreign students first started coming in large numbers (de Guzman, Albela, Nieto, Ferrer & Santos, 2006).

[2] The 12 MTs that have already been implemented as languages of instruction in formal classroom learning are: the 10 majority regional languages, *Bahasa Sug* (the language of the Tausug people in the southern island province of Sulu), and *Chabacano* (a Spanish-based creole spoken mainly in the province of Zamboanga in Mindanao, and in a few towns in the province of Cavite in Luzon). As stated by the DepEd, other local languages will be included in succeeding school years (DepEd, n.d.).

1.3 The Philippine ESL industry

Focusing on the post-colonial acquisition of English in the Philippines, earlier works on second language acquisition (SLA) perceived Filipinos as 'non-native' learners of English (e.g., Castillo, 1969). The Philippine language situation today, however, is radically different and more complex than ever. English is still eminently present in almost all domains of the Filipino society, especially in education. Despite the recent implementation of the MTB-MLE policy (which diminishes the instructional role of English in the classroom during early language acquisition), formal learning of L2 English remains a necessary component of the BEP, deeply embedded and well established in the national education system. More importantly, the Philippines has a large, young, and competent English-speaking workforce, which includes a growing number of well-educated and well-trained Filipino English teachers in the private education sector (Choe, 2016).

1.3.1 The influx of Korean ESL learners

The influx of Korean citizens to the Philippines began in the 1990s when South Korea and the Philippines began intensifying trade relations, and rapidly increased in the 2000s when studying abroad became an increasingly popular trend among young Koreans (D.-Y. Kim, 2015; Miralao, 2007). Since then, the Philippines has remained a top choice among Korean students for short-term ESL programs, and even for long-term basic (elementary, high school) and specialized (tertiary) education (Choe, 2016; de Guzman et al., 2006). Annually, the country receives around 30,000 Korean students, of which 10% hold student visas and are mostly enrolled as full-time students, while the remaining 90% hold short-term Special Study Permits (SSPs) and are mainly enrolled in

English language academies (Choe, 2016).[3]

The phenomenal rise in the number of Korean students wanting to embark on short-term, study abroad / language immersion programs has resulted in hundreds of private, Korean-run language academies springing up in the major cities and towns across the country. These language academies – *language tutoring centers* or *special education centers* as some people call them – offer a plethora of short-term yet intensive English language-based programs, ranging from traditional ESL courses to customizable ones that cater to the students' wants and needs;[4] courses on Business English; as well as specialized classes designed to prepare students for international examinations such as the International English Language Testing System (IELTS) and the Test of English for International Communication (TOEIC).

Facing stiff competition from Korean entrepreneurs and investors, public and private local and international schools nationwide have also begun offering ESL programs. For example, on top of their mainstream classes, both Brent International School branches in Manila and Baguio City now offer specialist ESL courses that cater to the foreign students' level of L2 proficiency (Brent International School Manila, n.d.; Brent International School Baguio, n.d.). Even colleges and universities with sizable foreign student populations now offer supplementary ESL or remedial English classes to foreign students who wish or are required to improve their English language proficiency.

[3] SSPs are issued to international students studying non-degree special courses for a period not exceeding one year. (Choe, 2016, p. 2).

[4] An example of a non-traditional ESL course is the Sparta Program (MONOL, n.d.) offered by the MONOL Education Institute, one of the fieldwork sites for my research. These programs operate in a somewhat clockwork fashion requiring military-like discipline, encouraging students to follow a very strict study timetable that involves attending regular ESL classes while fulfilling their planned and customized self-study sessions.

1.3.2 Baguio City: a popular choice for Korean ESL learners

The Philippine ESL industry has focused its growth and constrained its expansion to the country's largest urban centers, since it is within these areas that large concentrations of Korean students can be found (see Figure 2 below). One such urban center, Baguio City has the reputation for being one of the most preferred places for ESL education, and even secondary and tertiary education courses.

With approximately 345,000 residents, Baguio is a medium-sized city of about 49 sq. km., situated in the northern part of the country in the island of Luzon (Philippine Statistics Authority, 2016b). Despite its relatively small land area, the city is populated by lush pine tree forests, sitting atop a plateau 1,400 meters above sea level. Dubbed as the "Summer Capital of the Philippines", its temperature averages 21ºC throughout the year – about 8ºC cooler than any lowland place in the country (City Government of Baguio, n.d.). In a quintessentially hot and humid tropical country situated near the equator, Baguio's high altitude, all-year-round cool climate, and pleasant environment are without a doubt the main draw not only for tourists, but also for students and especially parents who seek an ideal learning environment for their children.

Based on the 2010 Census of Population and Housing, student enrollees made up about 100,000 of Baguio's then 318,676 inhabitants (Philippine Statistics Authority, 2013, 2014) – a fact that firmly establishes the city's status as the education hub of the North.[5] Baguio is also host to more than 5,000 Korean students (Keith, 2015), and sizable communities of Korean immigrants

[5] The abovementioned student population was obtained from the 2010 Census of Population's demographic and household characteristics based on 20-percent sample households in Baguio City (Philippine Statistics Authority, 2014). The raw student population figure for the city in 2010 was estimated to be much higher at 150,000 (City Government of Baguio, n.d.).

and Christian missionary groups. With the recent drive by the Department of Tourism (DOT) to boost the tourism industry through promoting and enhancing the country's ESL market (Andrade, 2016), it is safe to say that Baguio, billing itself both as a tourist destination and an ESL education hub, should see a further increase in tourist arrivals and foreign student intake in the next few years.

Figure 3: Philippine urban centers with large concentrations of Korean students and residents (Google Maps, 2016). Blue pins mark the location of the cities with the largest concentration of Korean students in the Philippines. They are Baguio, Angeles, Iloilo, Bacolod, Cagayan de Oro, and the metropolitan centers Manila, Cebu, and Davao.

Figure 4: Panoramic view of Aurora Hill, Baguio (picture taken by me). This is where I stayed for the entire duration of my fieldwork.

1.4 Statement of the problem

The Philippines has become the most preferred country for ESL learning for East Asian and Southeast Asian students primarily due to its low tuition and living costs, and well-trained Filipino ESL teachers (Choe, 2016). The ESL industry boom, however, overshadows the complexity of the linguistic and educational landscapes that influence and shape the use of PhilE, the *de facto* medium of learning and instruction in the country. Despite boasting a population of well-trained ESL teachers, many foreign students continue to view Filipino-accented English – and PhilE in general – less favorably than its more predominant and prestigious counterpart varieties such as American English (AmE) and British English (BrE) (Castro & Roh, 2013; de Guzman et al., 2006; Roh, 2010). Korean students also primarily view ESL learning in the Philippines as a stepping-stone, or what Choe (2016) refers to as a *bridge* to tertiary education in Inner Circle countries (in the Kachruvian sense). For many Koreans, the English medium-based education in the Philippines serves as a viable low-cost option for attaining an internationally acceptable level of functional literacy and communicative competence in English (Gomez, 2013). It can thus be seen from the outset that foreign learners of English in this part

of the world appear to be struggling with conflicting ideologies about language learning in a non-native setting. At a time of ever-increasing globalization and economic competitiveness, foreign learners of English are becoming more eager to achieve native-like proficiency, but at the same time are searching for alternative and more affordable ways to do so.

1.5 Research questions and hypothesis

From the more macro, socio-economic and perhaps even political perspective, the rise of ESL industry in the Philippines demands a thorough examination and analysis. The present study, however, wishes to first deal with the social and linguistic aspects of the phenomenon, since this area has been largely understudied. I also believe – given that my approach to the issue at hand is primarily sociolinguistic in nature – that it is essential to investigate foreign learners' production patterns during L2 speech acquisition, since one of the main objectives of ESL education is to help learners achieve communicative competence in their L2.

Indeed, not much is known about the nature of sociolinguistic variation in the Philippine ESL context. The majority of foreign nationals studying in the Philippines embark on eight- or twelve-week immersion programs, but a considerable number take the long-term track, spending at least six months or even years studying English (or high school/college courses taught in English). Given that PhilE is perceptibly distinct from the predominant and more prestigious varieties of English (i.e., American English and British English), it would be interesting to answer the following research questions:

1. Are Korean learners acquiring PhilE-like features in their L2 speech

production patterns? Is there any evidence of phonetic transfer from L1 to L2 (Kang & Guion, 2006; M.-R. Kim, 2012a), or vice-versa (cf. Chang, 2012; Park, 2014)?

2. What sociophonetic factors are relevant to the learners' production of L1 and L2 consonantal stops in their course of L2 phonetic acquisition?
3. What do the variations in L1 or L2 speech production patterns (if any) say about leaners' perception and attitudes toward ESL learning in a non-native English-speaking context such as the Philippines?

I hypothesize that Korean learners will display differing levels of PhilE-like phonetic patterns in their production of stops based on their degree or length of exposure to PhilE, as well as exhibit variation conditioned by several relevant linguistic, social, and/or stylistic factors. With this, I proceed to my discussion of works done by scholars of SLA, phonetics, and sociolinguistics that have shaped and influenced the theoretical and conceptual underpinnings, as well as the methodological approaches employed in the present study.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 Sociolinguistic variation in second language acquisition

Preston (1996, p. 1) summarized the two-fold importance of (variationist) sociolinguistics to the study of SLA. First, second language contexts exhibit systematic variation in the production, processing, and acquisition of language. Second, such variation has both sociological and cognitive bases, and thus SLA studies must concern themselves with the sociological and social-psychological aspects of language. He also claimed, however, that sociolinguistic variationist approaches to the study of SLA have not been popular in the field of SLA research, primarily due to the persisting dichotomy between SLA research (which is predominantly influenced by the generative paradigm, and is mainly psycholinguistic in method and application), and sociolinguistics (in which language studies are driven primarily by sociological, social psychological, and anthropological aims). There also have been misunderstandings in the definition of the *variable rule* among SLA researchers, e.g., Preston pointed out that Ellis' (1985) definition (see quote below) was fallacious as it pertained to a context-sensitive categorical rule (as opposed to a variable rule):

> If it is accepted that learners perform differently in different situations, but that it is possible to predict how they will behave in specific situations, then the systematicity of their behavior can be captured by means of variable rules. These are 'if… then' rules. They state that if x conditions apply then y language forms will occur. (p. 9)

Given the scholarly beginnings of SLA research, Preston (1991) also succinctly elucidated the 'psycholinguistic puzzle' for sociolinguistic studies:

> (1) Variability arises when "social" situations activate realizations or even

> frequencies of realizations of alternate items from a single underlying grammar. (2) Variability arises when "social" situations activate different underlying grammars, however minimally different those grammars may be. (p. 33)

Indeed, the main objectives of, and approaches to, SLA research remain largely psycholinguistic in nature; the generative paradigm that is Universal Grammar (UG) still resonates among some proponents of SLA theories.[6] But as Preston (1996) noted, variationist analysis does not necessarily pose a threat to UG models of either native or second/foreign language linguistic competence since variation has always been a central tenet to SLA research conceptually and methodologically: it has been a fact of life in interlanguage and in language acquisition research (Berdan, 1996, p. 206). (*Interlanguage* is the systematic and rule governed speech of second language learners (Adamson, 1988). This definition is a revision of Selinker's (1972), which stated that L2 speech is systematic only at the level of the individual.)

The above claims on interlanguage are echoed and exemplified by Tsimpli (2006, p. 390), who argued that even though the 'grammar approach' to SLA builds mainly on syntactic theory and inevitably ignores performance factors or other non-linguistic constraints on L2 performance, it is still possible to analyze variation in the L2 speaker based on interactive models involving parts of the language faculty and other aspects of cognitive or motor systems that affect language performance. Variability is change (Labov, 1972); any changes to the phonological patterning and acquisition in a second language

[6] After decades of debate and accumulating evidence from research carried out by scholars from various academic (sub-) fields and disciplines, Ellis (2015) has finally omitted dealing with language universals and UG in his recently revised book, which was first published in 1985. He argued that purely linguistic theories have fallen out of favor, since proponents of such theories have been unable to provide an adequate account of how second languages are learned. He added that the two major developments in SLA research now and should primarily address the cognitive and social aspects of SLA.

context must warrant an investigation of sociolinguistic variation.

In his 2005 article, Bayley emphasized four key areas of study wherein variationist, quantitative approaches can have potential and significant contributions to SLA research: the effects of language transfer, the nature of the target language, the nature of SLA processes, and the acquisition of sociolinguistic competence. Bayley underscored the usefulness of variable rule analysis – or VARBRUL (Sankoff, 1988) – in providing a systematic and effective way to study potential transfer effects on L2 due to L1. He argued that assessing the degree (if any) of language transfer could be measured by performing several analyses, with a group of learners representing different first languages combined, and with learners separated by first language (p. 4). If the first group shows different language patterns (in the target L2) and if these patterns reflect a linguistic difference in their respective L1s, then language transfer effects may plausibly play a role in the given variation phenomenon.

Bayley also emphasized the importance of variationist approaches because they can reveal the nature of the target language(s) that second language learners are seeking to acquire. He also believed that studying different contexts of variation in SLA (i.e., cross-linguistically, and involving various languages and interlanguage situations) can help us better identify the nature of the language transfer phenomenon in SLA.

Finally, Bayley emphasized how variationist approaches enable us to study the acquisition of target language patterns of variability. What this means is that incorporating variationist theories and methods can extend the aim of SLA research from modeling language learners' patterns and processes of acquisition to examining the actual social ramifications of their (potentially)

acquired L2 features. In this view, combining SLA and variationist theories and research methods enables us to know and understand how second language learners use variable L2 features to index and/or negotiate their identities (or personas), beliefs, language ideologies and attitudes.

It has been established that variability is fundamental to SLA, and that variationist analyses inevitably must address larger issues relating to (1) the cognition of human grammar (or grammars, in the case of interlanguage phenomenon), and (2) the social context within which language acquisition takes place. These issues are strongly exemplified in Ellis (2015), the recently published second edition of his famous work, *Understanding Second Language Acquisition*. Ellis argued that SLA scholars now should primarily turn to the importance of cognitive psychology-based research to help explain the mechanisms of cognitive processing of language input and output, and the role they play in second-language development. He also placed equal importance to the development and application of social theories to SLA research, openly acknowledging the view that language acquisition is just as much social as it is cognitive in nature.

From the outset and at first glance, SLA research and variationist sociolinguistics appear to be two distinct, incompatible fields of knowledge inquiry, separated and demarcated by their respective theoretical underpinnings, methodological approaches, and overall research objectives. However, drawing from what has been discussed so far, social variation is in fact essential and crucial to interlanguage; there is no reason why we should not adopt sociolinguistic methods in SLA research, nor why sociolinguistic theories cannot inform theories of cognition and ultimately enrich our knowledge of

language acquisition.

While there are many studies that attempt to describe and model the variation phenomenon in SLA based on the linguistic, cognitive, and/or social aspects of language acquisition, the present study particularly pays attention to the variation phenomenon involving (1) the PHKor learners' speech production patterns in their L1 and L2, and (2) their sociolinguistic perception of Filipino-accented English, which I will generally refer to as the 'PhilE accent'. In the next few sections, I begin with a discussion of the earlier, but still prevailing, theories and models that describe and explain linguistic variation and language acquisition in second language contexts. I then further narrow down my literature review to focus more on (rather) more recent theories and models of L2 speech acquisition. Finally, I discuss relevant studies on the speech production of stop consonants in Korean, English, and Filipino, and relevant studies on the production and perception of IVEs/non-native Englishes and foreign accents in general.

2.2 Theoretical frameworks and concepts in L2 speech acquisition

2.2.1 Early Labovian approaches to SLA research

L. Dickerson (1974) and W. Dickerson (1976) provided some of the earliest quantitative, longitudinal variationist studies of SLA. In her dissertation, L. Dickerson investigated the variables /z/, /s/, /ð/, /r/, and /l/ of Japanese learners of English at the University of Illinois at Urbana-Champaign in the United States and adopted Labov's variable rule model of sound change (W. Dickerson examined /r/ and /l/ using a much smaller sample of Japanese ESL learners). Both studies showed that:

> 1) the linguistic environment is a predictor of variable occurrence, and 2) longitudinal (or apparent-time) treatment of data reveals the progress of linguistic change (in SLA, in the individual rather than in the system, although it may also be shown that such changes in 'like' individuals are systematic; that is, there is shared interlanguage development). (Cited in Preston, 1996, p. 8)

Other earlier models of SLA that have incorporated the Labovian paradigm include Tarone's (1979, 1982) Continuous Competence Model and Krashen's (1976, 1977, 1981, 1987) Monitor Model. Both adopt Labov's (1972) attention to speech model, but differ in terms of how they view *style*, as well as *monitor* or attention to speech.[7] For Tarone, style is a continuum within which the language acquirer can exhibit varying degrees of monitoring or attention to form. Krashen, on the other hand, believed that style is made up of two distinct modules. He suggested that some few rules are easily represented and are attained through conscious activity (learning), but most rules are in fact difficult to describe (through explicit instruction) and are therefore attained through unconscious means (acquisition).

Cazden, Cancino, Rosansky and Schumann (1975) and Hakuta (1976) pioneered some of the first systematic studies on SLA, focusing on the acquisition of English by non-native speakers. Looking at Cazden et al.'s study,

[7] The concept of *style* here primarily draws from Labov's earlier works in the 1960s. Although Labov has not explicitly defined what *style* is, he has provided five 'methodological axioms' or working principles of identifying, delineating, and measuring it (Labov, 1984, p. 29):

- *There are no single style speakers:* all individuals exhibit varying degrees of style shifting. This refers to any consistent change in linguistic forms used by a speaker, qualitative or quantitative, which can be associated with a change in topics, participants, channel, or the broader social context.
- *Styles can range along a single dimension, measured by the amount of attention paid to speech:* style shifting is influenced by the amount of attention that is paid to speech.
- *The vernacular, in which the minimum attention is paid to speech, provides the most systematic data for linguistic analysis:* Labov defined the "vernacular" as the mode of speech that is acquired early in life (pre-adolescence).
- *Any systematic observation of a speaker defines a formal context where more than the minimum attention is paid to speech:* the more formal the context of the conversation is, the more likely speakers are going to pay attention to their own speech (and therefore the less likely they are to shift to the vernacular style).
- *Face-to-face interviews are the only means of obtaining the volume and quality of recorded speech that is needed for quantitative analysis.*

they investigated the untutored acquisition of English in the USA by six native speakers of Spanish (two children, two adolescents, and two adults, by collecting speech samples in three different situations: spontaneous conversations, elicitations (elicited conversations and experimental elicitations), and pre-planned sociolinguistic interactions, roughly resembling the template of Labovian sociolinguistic interviews.[8] Their model of L2 acquisition suggests that when language learners pay attention to their L2, the (grammatical) simplifications that occur in their L2 may be similar in form to those that occur in their L1, but the motivations for their occurrence may be different: for L1 learners, cases of such 'simplification' occur due to constraints of cognitive development, but for L2 learners, they function as strategies of communication. Simplification here refers to the participants' attempts to use prototypical lexico-grammatical items or patterns in the L2 based on their knowledge of their L1. A classic example provided by Cazden et al. (1975, p. 84) involves *wh*-questions in English. The learners, during their course of L2 acquisition, should encounter both inverted (i.e., *wh*-fronted) and uninverted (embedded) forms, which enable them to choose to either simplify their L2 grammar or use the L1 form. Simplifying the L2 grammar would prompt the learners to produce uninverted (embedded) *wh*-constructions, e.g., **I know where he is going?* which are considered 'incorrect' forms. Such forms would be eventually and accordingly corrected through the process of checking them against their L2 knowledge, continuing to attend to L2 input, and revising their L2 knowledge.

[8] Experimental elicitations were a series of numerous elicitation tasks that required participants to provide specific answers to questions/instructions. Some of these include imitating utterances, negating statements, answering tag questions and wh- questions, translating English sentences into Spanish and vice-versa, transforming active sentences into passives, etc.

According to L. Dickerson (1974), "(a) homogenous system cannot change through time; a variable system can" (p. 19). As shown by the studies I have mentioned that incorporate Labovian theories and methods, variability is critical and essential to understanding language acquisition. Indeed, once we accept the assumption that language variation – and by extension, language change – are inherent and inexorable, fundamental features of language acquisition, the following key issues make better conceptual and methodological sense under the variable rule paradigm:

- investigating how learners (young or adult) can acquire new phonological features in their speech, and
- how existing or newly developed features can vary according to linguistic environment, stylistic differences, or other potentially significant internal/external factors.

Before I proceed to the next sub-section, wherein I elaborate on the relevant and (relatively) more recent theories and models of L2 acquisition that focus on phonological variation and change, I would like to discuss two more studies on sociolinguistic variation in SLA. The first one is Beebe (1980), which investigated the word-initial and final /ɹ/ production patterns of nine Thai ESL learners living in New York and provided very interesting evidence of style shifting in interlanguage phonology:

> …the target language (English) acted as the superordinate rule system when the variable examined had no social meaning in the native language (Thai), but when the variable was in fact strongly marked for social value in Thai, the native language (Thai) was adopted as the superordinate rule system. The latter style shifting involved transfer of a socially appropriate variant. (p. 433)

Beebe's findings provide some evidence to support Tarone's (1979, 1983, 1989) claim that the rule system in the target language (i.e., L2 English)

'permeates' more in formal L2 situations such as elicitation tasks: Thai ESL learners exhibited 72% accuracy in the pronunciation of word-final /ɹ/ in the formal style (wordlist), but only 35% in the informal style (conversation). Data on word-initial /ɹ/, however, showed that L1 phonetic interference was significant in the L2 formal style, where Thai speakers exhibited 48% accuracy in the pronunciation of word-initial /ɹ/ in conversation, but only 9% in listing. Also, and more importantly, the most formal 'r' variant in Thai, /ř/, occurred significantly (24.4%) in the L2 listing, indicating that the sociolinguistic pattern of Thai learners in their L1 (Thai) formal style were being transferred to their L2 (English) formal style. Beebe's findings suggest that the system of interlanguage phonology is more complex than previously thought: the transfer of L1 social identity cues to the developing L2 phonology (in the case of the Thai ESL learners, the transfer of the "highly conscious, learned social meaning" (p. 444) indexed by the formal and socially appropriate formal Thai phonetic variant /ř/ to English), shows that social contexts and socially assigned values contribute to the variation in linguistic forms manifested during SLA. Also in this case, we can see that the Labovian notion of 'style shifting' occurred across styles not only within the same language but also in interlanguage.

The other study I would like to discuss is Eisenstein (1982), which examined 74 adult ESL learners also living in New York but hailing from a range of L1 backgrounds. This study was different not only because the setting involved multiple L1s, but also because the research objective aimed to shed light on social variation in adult speech perception (as opposed to production). More specifically, Eisenstein's study aimed to describe and explain the development of dialect discrimination and identification of English dialect

stereotypes in New York City (i.e., New York English and Black English) involving second language learners of English.[9]

Eisenstein integrated data from three tasks, i.e., dialect discrimination, speaker evaluation, and personal interview, and concluded that beginning learners could satisfactorily discriminate between dialects by their seventh month of living in New York, although the type of dialect discrimination at this stage primarily involves distinguishing standard norms from non-standard ones. In other words, beginning learners remain largely unaware of non-standard dialectal differences, which is what we would expect given that most of their language learning and exposure is confined to formal learning environments. Eisenstein also found that dialect discrimination of Black English among advanced learners was closer to native speaker judgments, which is expected given that their level of linguistic knowledge and exposure to the New York speech community would have already increased their awareness of such dialect variety. However, she also discovered that advanced learners were unable to recognize the non-standard New York dialect due to the nature of its "wide dispersion in both lower and middle classes and its prevalence among some native students at the university", which suggests that developing a high level of dialect discrimination and second language proficiency "are not sufficient conditions for the formulation of specific categories associated with cultural attitudes and norms" (p. 388).

Over the decades, more studies on language attitudes and perception of

[9] Native speakers of the following languages were included in the study: Spanish, Persian, Greek, Arabic, Chinese, French, French Creole, Hebrew, Hungarian, Indonesian, Italian, Japanese, Korean, Portuguese, Russian, Rumanian, and Thai. Meanwhile, the English dialects considered in the study were Black English, New York English, Hawaiian English, and Irish English. The first two English dialects were included because they are commonly encountered in daily New York life; the latter two dialects were added as control variables (Eisenstein, 1982).

L2 English learners have been published, detailing the sociolinguistic aspects of L2 speech acquisition (for example, see McKenzie, 2007). These studies have revealed that knowledge of dialect or regional variation is crucial to developing native-like competence in second language learning. They have also shed light on the importance of regional and social variation in the perception of different varieties of English among L2 learners, which have serious implications on (second) language pedagogy.

2.2.2 Cognitive models of L2 speech acquisition

In this sub-section, I elaborate on two, rather more recent frameworks of L2 acquisition that focus on phonological change and phonetic transfer: The Speech Learning Model (SLM) developed by Flege and his colleagues (1995, 1996) and the Perceptual Assimilation Model-L2 (PAM-L2) developed by Best and Tyler (2007). Although these speech models draw from a primarily psycholinguistic approach, I believe that their implications on language transfer and dynamics of interaction between first- and second-language phonological systems prove useful and relevant to my study. I then proceed to Section 2.2.3 and discuss a few more relevant theoretical concepts, i.e., *phonetic drift* (Chang, 2012), *polarization* (Keating, 1984; Laeufer, 1986), and *incrementation* (Labov, 2007), before moving to the next sub-section, where I introduce the sociophonetic theories and approaches to the study of linguistic variation and language acquisition.

Drawing from the discussion in Section 2.2.1, earlier SLA research (e.g., Cazden et al., 1975) acknowledged the importance of examining various factors influencing SLA but mostly concentrated on examining L1 *interference* on L2 acquisition (cf. Flege, 1995). The issue surrounding presumed L1 invariance

during second-language acquisition (Chang, 2012), however, has been brought to light thanks to ever-increasing evidence of L2 to L1 language transfer in various SLA contexts. The most extensively documented and notable research of this kind was carried out by Flege (1987, 1995, 1996, 2002, 2007) at the University of Alabama at Birmingham, which resulted in the development of the Speech Learning Model (SLM). According to Flege, the SLM was developed under the assumption that:

> …phonetic systems used in the production and perception of vowels and consonants *remain adaptive over the life span*, and that phonetic systems reorganize in response to sounds encountered in an L2 through the addition of new phonetic categories, or through the modification of old ones. (1995, p. 233)

The SLM also postulates that the bilingual system accommodates L1 and L2 phonetic categories in a common phonological space, but constantly strives to maintain contrast between them. Furthermore, the model makes categorical distinctions of L1 and L2 sounds at the allophonic, and not phonemic, level, which contrasts with phonological theories of SLA (e.g., Lado, 1957). According to Flege, discerning cross-language phonetic differences is possible even in fine-grained allophonic variations, provided that (1) there is sufficient dissimilarity between a novel L2 sound and its closest L1 sound, and that (2) the L2 sound transmitted to – and perceived by – the language acquirer carries adequate 'native-speaker' information.

The above SLM postulates crucially trace back to the concept of *equivalence classification*, defined by Flege (1987, p. 49) as "a basic cognitive mechanism which permits humans to perceive constant categories in the face of inherent sensory variability found in the many physical exemplars which may instantiate a category". In other words, it is a cognitive mechanism that allows language learners to identify and classify a range of sounds produced by various

speakers or in different contexts (e.g., linguistic environment, speech style, etc.) into the same (allophonic) category. He argued that this very mechanism, as age of learning (AOL) increases, may cause phonetic convergence (category assimilation). In this case, when an L2 learner is exposed to an L2 sound that is phonetically 'similar' to an existing L1 sound in his phonological space, equivalence classification prevents him from being able to perceive the fine-grained cross-linguistic phonetic differences, resulting in the approximation of the sounds in the interlanguage. In other words, the original L1 phonetic category is modified to accommodate the 'similar' L2 sound, and the production and perception of the L1 and L2 sounds in the interlanguage will reflect the modification of the L1 phonetic category, potentially causing the L2 learner to diverge from monolingual norms (Yeni-Komshian, Flege, & Liu, 2000).

Meanwhile, an L2 learner's exposure to a 'new' L2 sound (one that is unique or distinct to the L2 and not analogous to any existing, known L1 sound) does not activate or *avoids* equivalence classification, which results in phonetic divergence, i.e., category dissimilation, or the creation of a new phonetic category in the interlanguage. The acquisition of a new sound may even affect L1 pronunciation; the shared phonological space becomes 'pressured' to maintain (and perhaps even maximize) phonological contrast between the existing sound inventory from the L1 and the newly created one from the L2.[10] This process, parallel to the case of phonetic assimilation, also causes the L2 learner to diverge from monolingual norms.

Another relevant, competing cognitive model of L2 speech acquisition

[10] Keating (1984) referred to the phenomenon of maximizing contrast between two phonetic categories as *polarization*. (See p. 31 for a more in depth discussion.)

is Best & Tyler's (2007) PAM-L2. This is a modification of the Perception Assimilation Model (PAM), a theoretical framework designed to account for non-native speech perception among naïve listeners (as opposed to the SLM, which was developed based on SLA studies that involved experienced listeners). The PAM-L2 differs from the SLM mainly in that it primarily addressed the issue of equivalence classification at the (articulatory) gestural, phonetic, and phonological levels. Best & Tyler claimed that:

> Equivalence at the lexical-functional level means that the phonological category has a similar contrastive relationship to surrounding categories in the phonological space. It does *not* automatically imply equivalence or even perceived similarity at the phonetic level. (pp. 27-28)

They cited the perception of /r/ among English L2 learners of French as a case of equivalence classification at the phonological level, arguing that French /r/ and English /r/ are not very 'articulatorily' and phonetically similar, yet learners perceive the former as phonemically similar to the latter.[11] Their essential argument was that L2 learners are able to perceive and ultimately learn articulatory gestures and phonological (and not just phonetic) information during their L2 acquisition. (It must be noted that (Standard) French /r/ is prototypically described as a uvular fricative [ʁ]; meanwhile, English /r/ is classified as an alveolar approximant [ɹ], although this may vary across regional varieties and dialects. For example, in Regala-Flores' (2014) study of (Basilectal) PhilE, the English /r/ sound is rendered differently, i.e., as a rolled (trill) consonant [r] or a one-tap [ɾ]. However, in my experience of speaking and

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listening to my Filipino student participants, I noticed that most of them use a rather perceptually more elongated, more retroflex version of General AmE [ɹ].)

PAM-L2 provides a much more detailed account of predicting success at L2 perceptual learning, but does not overtly explain how L2 perception can potentially influence L1 production patterns. In this regard, SLM provides a more holistic view of SLA, in that it provides a (more) bi-directional view of language, i.e., phonetic, transfer. Both SLM and PAM-L2, however, cannot comprehensively account for cross-linguistic perceptual relations beyond the segmental level (Chang, 2012, p. 264). Nonetheless, both frameworks acknowledge that L2 acquisition is guided by the perceptual similarity between L1 and L2 sounds (Chang, 2012; Flege, 1996), and that the perceived relations between these sounds in the interlanguage may change during naturalistic learning (Flege, 1995, p. 237). They also both offer a way to help explain age-related effects, suggesting that linguistic and language learning experience, and not necessarily or primarily physical changes in the neurology of the brain (cf. McLaughlin, 1977) play a much larger role in the rate of success (or decline) of L2 speech acquisition.

2.2.3 Phonetic drift and sound change in L2 speech acquisition

In the discussion of the SLM (Flege, 1995), it was mentioned that perceptual interference can occur in a 'reverse' manner, as in the case of phonetic convergence when an L2 sound is approximated with (or assimilated to, in more PAM-L2 terms) an existing, known L1 sound. Thus, I find it more appropriate to use the term *phonetic drift* (Chang, 2012), which is a broader, more neutral term that describes the (potentially) bi-directional process of language – more specifically phonetic – transfer in the interlanguage. As implied by the term,

acoustic perceptual similarities between L1 and L2 sounds may influence (i.e., cause to change, in the affective sense) the production of the L2 sound, as well as of the L1 sound. In either case, the resulting sound change could be either assimilatory or dissimilatory.[12]

Assimilatory cases of phonetic drift in VOT have been observed in several studies. In Harada's (2003) study of Japanese-English bilinguals, it was found that the speakers make a distinction between L1 and L2 VOT values regardless of the place of articulation, thus successfully creating two different phonetic categories for L1 and L2 VOT (p. 1087). However, Harada noted that the speakers' L1 phonetic category was different from monolingual norms, since they produced significantly longer VOT values. Meanwhile, in the study of early and late Korean-English bilinguals in Kang & Guion (2006), it was found that while early Korean-English bilinguals manifested a clear distinction between L1 and L2 phonetic categories, late bilinguals seemed to have assimilated them, producing English voiced stops that were less dissimilar from both Korean fortis and lenis stops in terms of VOT. They also produced Korean stops that were significantly different from monolingual norms, which also indicated assimilatory phonetic drift from L2 to L1. Other notable cases of category assimilation were observed in late English-Spanish bilinguals in the United States (Lord, 2008) and in early and late Italian-English bilinguals in Canada (Mackay, Flege, Piske & Schirru, 2001).

Dissimilatory cases of phonetic drift also abound. In Mack's (1990) study of a single French-English bilingual child, it was observed that the boy

[12] Category assimilation and category dissimilation are analogous to phonetic *convergence* and phonetic *divergence*, respectively.

produced both L1 and 'new' L2 VOT values that were much longer than French and English monolingual norms. Meanwhile, a slightly different and unexpected trend was observed in early Japanese-English child bilinguals by Yusa, Nasukawa, Koizumi, Kim, Kimura and Emura (2010), who found that exposure to English (which is characterized by relatively long-lag VOT) caused the speakers to produce significantly shorter L1 VOT.[13] Flege and Eefting (1987a, b) also found cases of dissimilatory drift among (1) proficient and non-proficient adult Dutch-English bilinguals, and (2) Spanish-English bilingual children and adult, "later childhood bilinguals" or LCB (Flege & Eefting, 1987b, p. 71). In the former case, Dutch-English bilinguals produced significantly shorter L1 /t/ to maintain phonological contrast with their newly developed L2 phonetic category. This trend was observed mostly in adult (but early) proficient Dutch-English bilinguals, which draws an interesting parallel to Yusa et al.'s (2010) findings on early naïve Japanese-English bilinguals. Meanwhile, in the latter case, Spanish-English bilinguals showed significantly shorter VOT values for both L1 and L2 in comparison with age-matched Spanish and English monolinguals.

Flege & Eefting's (1987a, b) findings on category dissimilation provided evidence supporting the principle of *polarization*, which states that phonetic categories within a shared phonological space disperse to reach a "maximal separation of the distributions of values" (Keating, 1984, p. 310; cf. Liljencrants & Lindblom's (1972) dispersion theory). The findings also

[13] The L1 VOT findings by Yusa et al. (2010) contrast with those of Harada (2003). In this light, Chang (2012) argued that their findings were ambiguous based on the notion that children have comparably little L1 experience, and underdeveloped L1 representations that are still in the process of maturation. Thus, changes in the L1 phonetic category can be attributed to the normal process of language development.

suggested that the convergent L2 effect on L1 production (in Chang's (2012) terms, *phonetic drift* from L2 to L1) was brought about by the non-native nature of the L2 input. In other words, the new L2 phonetic category acquired by the speakers was systematically different from English monolingual norms "because much of their L2 input was likely to have been Spanish-accented English rather than the English spoken by English native speakers" (1987b, p. 67).

The studies I have mentioned present cases of assimilatory and dissimilatory phonetic drift involving single, isolated phonetic features (i.e., VOT). However, analyzing phonetic drift becomes complicated and more problematic when the process of sound change during L2 speech acquisition involves (1) the interaction of two or more (segmental/suprasegmental) features in the same phonetic category or (2) assimilatory modifications on a few structural levels (Chang, 2012). The above conditions have been well exemplified in the literature by cases of L2 speech acquisition contexts involving Korean as either L1 or L2. Korean is an interesting object of study in SLA due to its three-way stop system (Han & Weitzman, 1965, 1967, 1970; C-W. Kim, 1965; Ladefoged, 2005; Lisker & Abramson, 1964), which involves varying degrees of VOT length, and therefore aspiration, in speech production. For instance, M.-R. Kim's (2000, 2003, 2012a, b) extensive research on the interlanguage of adult Korean-English bilinguals highlights the complexity of consonantal (aspiration) and vocalic (tonal) feature interactions in bilingual phonological systems, which has been difficult to account for with Flege's (1995) assimilation theory. Based on her findings, adult Korean-English bilinguals were found to produce L2 voiced stops that significantly differed

from any of the Korean and English stop types as they exhibited some sort of dual behavior in terms of two acoustic parameters: VOT, a consonantal feature, and fundamental frequency at vowel onset (f_0 onset), a vocalic/tonal feature – see Table 1 below.

In terms of VOT, Table 1 below also shows that English voiced stops are more comparable to Korean lenis stops, which are prototypically produced with short-lag to intermediate VOT length (also see: C.-W. Kim, 1965). In terms of f_0 onset, however, English voiced stops are more comparable to Korean fortis stops, which normally have intermediate to high f_0 onset values. I would also like to highlight M.-R. Kim's #s/ptk/$_{\mathbf{L2}}$ label, which refers to English voiceless stops in word-initial syllabic consonant clusters beginning with a voiceless sibilant, i.e., /s/. Based on her findings, English stops in this phonetic environment correspond to fortis stops in Korean in terms of VOT and f_0 onset.

According to M.-R. Kim, L2 voiced stops also exhibited overall shorter VOT and lower f_0 onset, which were systematically different from Korean and English monolingual production norms. She also argued that the cross-linguistic patterns of VOT and f_0 onset appear to be dissimilatory at first, but based on the SLM it may not necessarily be so, since the likelihood of developing 'new' phonetic categories for L2 sounds diminishes with increasing age of learning (Flege, 1995). She, however, noted a clear-cut assimilatory process of phonetic drift from L1 to L2 in the case of L2 voiceless stops, which exhibited long-lag VOT and high f_0 onset values that strongly corresponded with their L1 aspirated counterparts. Overall, Kim's study highlighted the importance of interactional effects in L2 speech acquisition, suggesting that examining one phonetic feature alone (e.g., VOT) may not be sufficient to determine the nature and explain the

Table 1: Classification of the L1 and L2 stop system in the interlanguage of Korean-English bilinguals. Adopted from M.-R. Kim (2012a).

		f_0 onset	
		Low	High
VOT	Short-lag	**Voiced** $_{L2}$	Fortis $_{L1}$ and #s/ptk/ $_{L2}$
	Long-lag	Lenis $_{L1}$	**Voiceless** $_{L2}$ And Aspirated $_{L1}$

process of phonetic drift in the interlanguage. It was also interesting to entertain the idea – despite the need for further evidence – of both assimilatory and dissimilatory processes of phonetic drift potentially (and perhaps even simultaneously) occurring in the phonological space.

Chang (2012) published perhaps one of the most extensive and in-depth studies on phonetic drift in L2 speech acquisition involving the Korean language. The study, set in Korea, examined both L1 and L2 stop consonantal and vowel systems of 19 adult and "functionally monolingual" (Best & Tyler, 2007, p. 16) English speakers from the onset of their (short-term) formal learning of L2 Korean until completion. Chang's findings illustrated a complex series of feature interactions and cross-language phonetic effects that occurred at both segmental and subsegmental, as well as global/systemic levels of speech production. The study thus revealed how phonetic drift can take place beyond segment-to-segment cross-linguistic connections (p. 255), and manifest in larger structures, e.g., in a global distribution of phonetic properties (f_0 onset following aspirated and fortis stops regardless of phonetic environment), or even in a whole system of sounds, such as vowels. In Table 2 below, I have summarized Chang's (2012) findings on L2 to L1 phonetic drift based on the phonetic feature involved and the level of phonological structure in which the

Table 2: Observed cases of L1 phonetic drift in the speech production of English learners of Korean. In this table, I have summarized Chang's (2012) findings on L1 phonetic drift.

Phonetic feature	Level of phonological structure	Categorical assimilation / linkages between L1 (English) and L2 (Korean)
VOT	Subsegmental	L1 voiceless stops lengthened in approximation to the longer VOT of L2 aspirated stops
	Segmental	L1 /t/ lengthened to a much lesser degree due to the segmental nature of L2 /t^h/ (it has the shortest mean VOT length among all L2 stop types based on Chang's data).
f_0 onset	Subsegmental	f_0 onset following L1 voiced stops drifted upward, approximating the f_0 onset of L2 fortis stops.
		f_0 onset following L1 voiceless stops also drifted upward, but this time approximating the f_0 onset of L2 aspirated stops.
	Global	Shared control mechanism for f_0 modulation: L1 f_0 onset in both stop-initial and vowel-initial words all experienced upward drift, approximating the higher f_0 onset of Korean.
Vowel formants (*F1* & *F2*)	Global	Mean *F1* value of the English vowel system approximated the mean F1 value of the Korean vowel system; little change in mean *F2* value.

assimilatory procedures take place.

In accordance to the principles of the SLM and PAM-L2, Chang's study showed that variation or changes in L1 speech production could occur rapidly even at the early stages of language acquisition. Chang's findings also highlighted (to a much greater extent) the importance of L2 perceptual input, the linguistic background of the study participants, and the nature of the L2 learning environment – hence, the overall language setting and *linguistic experience* during L2 speech acquisition. Thus, regarding the phonetic study of L2 learners, he concluded:

> The point to take away, however, is not that study participants should always be monolingual. Rather, the experiential characteristics of the study sample should accurately represent the population which the study means to investigate. (p. 266)

Chang explains that because experiential characteristics are crucial to language

acquisition, it is essential to conduct speech production research in the most natural setting as possible. He proposed that work on cross-linguistic speech production should consider phonetic drift in other types of linguistic experiences, such as ambient L2 exposure and interactions with non-native speakers. In the works of Flege and Eefting (1987b), for instance, we see the importance of identifying the non-native nature of the L2 input received by the Spanish-English bilingual speakers in determining the type of language transfer (i.e., dissimilatory phonetic drift) that manifested in their speech production. In fact, linguistic experience has *always* been a focal research topic in phonetics, sociolinguistics, and SLA studies, tracing back to earlier works on speech production (e.g., Flege, 1987) and even speech perception (e.g., Eisenstein, 1982; Liberman, Harris, Hoffman, & Griffith, 1957).

Chang (2013) also mentioned the importance of novel information in systematic phonetic changes in the production of L1 sounds starting in the first weeks of L2 learning. Studying eleven adult native AmE speakers who were also experienced learners of L2 Korean, and comparing their L1 and L2 speech production patterns with novice L2 learners in Chang (2012), Chang showed that phonetic drift was greater in novice learners, supporting the hypothesis that "experienced learners manifested less phonetic drift in their production of L1 stops and vowels than experienced learners" and suggesting that "progressive familiarization with an L2 leads to reduced phonetic drift at later stages of L2 experience" (p. 520). Chang, however, emphasized that phonetic drift can still be present among the more experienced L2 learners – they are simply less influenced than learners who are new to the L2.

Phonetic variation and change in L2 speech acquisition manifest not only in the actual production patterns of L2 speakers, but also in the perception of L2 listeners. As a case in point, let us consider another study that involved Korean as L2. Park (2014) investigated the effects of pitch on L2 learners' categorical perception of Korean alveolar lenis and fortis stops, /t/ and /t*/. The study, set in Korea, involved 13 native English speakers taking up an introductory Korean language course at the University of Milwaukee. By employing a listening, AX (same-different) discrimination task in two pairs of stimuli – #CV (non-words) and #CVC (minimal pairs) – and artificially manipulating the natural pitch of the sound input using Praat (Boersma & Weenink, 2015), Park found that the learners were unable to discriminate between Korean /t*/ and /t/ when the former's natural pitch was reduced, but not when the pitch contrast between the two stops was neutralized. This suggested that the learners were sensitive to f_0 (at onset) cues and not VOT cues, causing them to primarily employ f_0 cues to discriminate Korean /t/ and /t*/.

Park's findings presented interesting key points pertaining to the nature of categorical assimilation in L2 speech acquisition. First, they provide evidence for the claim that L2 secondary cues play a greater role in category assimilation during L2 speech acquisition, which was suggested by Llanos, Dmitrieva, Shultz and Francis (2013) in their study of Spanish-English bilinguals. Second, they show that learners of L2 Korean are following the same recent shift from a predominantly VOT-based to f_0-based categorical perception (and speech production) of the Korean stop system found among monolingual Korean speakers (M.-R. Kim, 2000, 2012a, b; more details on this in the next subsection). The predominance of f_0 cues also implies some categorical

assimilation potentially occurring at the global level, evident from Chang's (2012) study of L1 to L2 phonetic drift in English-Korean bilinguals (see also Kim & Park, 2001).

Based on Chang's works on L2-influenced phonetic drift in the L1 of English learners of Korean, and on Park's work on the categorical perception of L2 among the same type of bilingual learners, I believe that it will be insightful to view phonetic drift involving the English and Korean languages in a 'flipped' setting, in which Korean serves as the L1, and English the L2. From a sociolinguistic point of view, it is also interesting to problematize the notion of phonetic drift in non-native contexts. While this has been done in other studies (e.g., Flege & Eefting, 1987a, b), there are virtually no in-depth studies of sociolinguistic variation in the Philippine ESL context that look at both L1 and L2 speech production and perception.

Overall, the theoretical concepts and frameworks discussed above have been useful in revealing speech output patterns and learning developments in L2 learners. However, as Leung (2012) stated, these frameworks fall short in terms of integrating relevant factors in L2 speech acquisition like actual (L2) language input, as well as a myriad of social and other affective factors. Proponents of SLA research claim that in order to comprehensively describe and explain the phenomenon of (second) language acquisition, one must integrate the cognitive, psychological, and social aspects of acquisition (Ellis, 2010, 2015; Leung, 2011, 2012; Milroy & Preston, 1999; Niedzielski, 1999; Ryan & Giles, 1982). Not much is known, however, about the sociolinguistics of L2 speech acquisition in non-native settings such as the Philippines, where foreign learners of English are exposed to PhilE through exposure in the

classroom and in the larger Filipino-English bilingual speech community. In this regard, the present study seeks to fill the sociolinguistic gap in SLA research by investigating the speech production and perception of Korean learners through the application of sociophonetic theory and research methods.

2.3 Differences between Korean and English: VOT and f_0 onset

2.3.1 Korean

Phonologically, the sound systems of Korean and PhilE differ in numerous ways. In terms of consonants, the stop system of Korean is distinct from that of PhilE. Stops are generally classified in terms of their Voice Onset Time (VOT), which is defined as the period from the stop burst to the onset of vocal fold pulsing (Lisker & Abramson, 1964; Thomas, 2011). VOT is further subdivided into three distinct categories: *lead/pre-voicing*, where vocal fold pulsing occurs before the stop burst; *short-lag*, in which the duration between the burst onset and pulsation onset ranges from 0ms to less than 30ms; and *long-lag*, in which the said duration exceeds 30ms. Based on this categorization, Korean is unique among the world's languages in that its three stop categories include only short-lag and long-lag stops (see Flege, 1995; Han & Weitzman, 1965, 1967, 1970;

Table 3: Mean Korean word-initial VOT (ms) and VOT range across the decades (adopted from M.-R. Kim, 2012c; cited in Park, 2014, p. 28)

		VOT duration / ms			
		Fortis	Lenis	Aspirated	Mean difference (Aspirated – Lenis)
1960s – 1970s	Mean	11	32	104	68
	Range	0-52	15-100	30-210	
1990s – 2002s	Mean	14	49	91	42
	Range	9-50	15-89	75-121	
2004 – present	Mean	15	63	77	14
	Range	2-26	17-171	22-196	

Table 4: Comparing mean Korean word-initial VOT data from various studies (standard deviation values in parenthesis). VOT data is sorted by phonation type and gender. For the present study, the data presented below was drawn from the PHKor group. Note that the PHKor group exhibited the overall shortest mean VOT duration for lenis and aspirated stops.

	VOT duration / ms					
	Fortis		Lenis		Aspirated	
	Females	Males	Females	Males	Females	Males
Silva (2006a)	10 (8)	11 (7)	67 (23)	63 (25)	76 (27)	71 (25)
Oh (2011)	14 (9)	17 (9)	58 (21)	57 (21)	72 (21)	85 (20)
Chang (2012)	11 (4)	17 (6)	64 (18)	55 (28)	90 (24)	97 (24)
Present study	11 (7)	13 (6)	55 (18)	40 (22)	70 (16)	60 (22)

M.-R. Kim, 2000; Lisker & Abramson, 1964). Korean short-lag stops /p^*, t^*, k^*/ are called fortis (or tense) stops and are characterized by very short VOT values (0 to less than 30ms). Korean long-lag stops /p, t, k/ and /p^h, t^h, k^h/ are respectively called lenis (or lax) and aspirated. Lenis stops have intermediate VOT values; aspirated stops have long ones.

The Korean stop system, however, has been undergoing a generational change from below – in the Neogrammarian sense, *incrementation* (Beckman, Li, Kong & Edwards, 2014) – in that younger speakers are producing lenis and aspirated stops that are gradually merging or becoming neutralized (Choi, 2002; Kang & Guion, 2008; Kang & Han, 2013; M.-R. Kim, 2008, 2011b, 2014; Oh, 2011; Silva, Choi & Kim, 2004; Silva 2006a; Wright, 2007). Moreover, the apparent VOT merger has been accompanied by a contrastive shift in fundamental frequency (f_0), which is a measure of pitch and tone. As mentioned in Section 2.2.3 earlier, f_0 at vowel onset (f_0 onset) following stops in word– or syllable–initial position now increasingly functions as the primary cue in distinguishing Korean lax stops from aspirated ones. This occurs in particular

at the beginning of a prosodic unit termed by Jun (1998) as the Accentual Phrase, in which distinctions in the Korean stop system are made more apparent by contrasting tone in the vowel onset of the initial syllable, instead of contrasting the degree (length) of aspiration in the stop (Beckman et al., 2014).[14] Apparent-time evidence of this phenomenon has also been gathered and documented in various studies (Kang & Guion, 2008; Keating, 1984; M.-R. Kim, 2000, 2008, 2012a, 2014; Kim, Beddor & Horrocks, 2002; Kim & Duanmu, 2004; Kingston & Diehl, 1994; Silva, 2006a; Wright, 2007).

The Korean stop system has also been observed to exhibit dialect variation following the geographical and demographical distribution of the general Korean dialects. Cho (2004) investigated the production of word-initial stops produced by Korean speakers from Seoul and from Daegu (in the Gyeongsang Region) and found that Daegu speakers' lenis stops had significantly shorter VOTs than those of Seoul speakers, and had more fortis-like quality. Holliday and Kong (2011) showed similar findings among young adult Daegu speakers, observing gender effects on variation wherein males were more likely to produce shorter VOTs for lenis stops. They also found that sound change in the Korean stop system was more progressive among Seoul and Jeju speakers as they produced near-merger VOT values for lenis and aspirated stops, thus affirming Silva's (2006a, b) claim that the Korean stop system is gradually undergoing generational change (see also M.-R. Kim, 2014).[15]

Looking at the bigger picture of phonological acquisition and language

[14] M.-R. Kim (2000) argued that the shift from consonantal to vocalic contrast in the Korean stop system provides evidence that Korean is gradually undergoing tonogenesis.

[15] Dialect variation is also present in the production of sibilant fricatives /s^{h}/ (lenis-aspirated) and /s*/ (fortis) by Seoul and Daegu speakers, where Seoul speakers produced significantly longer aspiration durations for both fricative types (see Lee, 2002; Holliday, 2012).

change, Beckman et al. (2014) gathered data from various synchronic and diachronic studies on the Korean stop system and produced corroborating evidence pointing to the generational transfer and regularity of the shift from VOT to f_0 contrast within the system. They viewed this systematic sound change as a process of incrementation since it shows continuity between phonological development (the shift from VOT to tonal contrast) and the age-related variation observed in the speech community undergoing the change (p. 151). Beckman et al. also observed gender-based variation in the process incrementation: when Korean listeners were tasked with discriminating stop phonation types produced by male speakers, they relied more on VOT cues than f_0 cues; the opposite effect occurred, however, when they were tasked to listen to female speakers. The effect of gender suggests that the incrementation process in Korean is less prevalent among male speakers (due to their rather conservative patterns of phonological change), and more so among females (since their sound changes are more advanced).

2.3.2 English and PhilE

English has a two-way stop system. The 'native', predominant varieties of English like AmE and BrE are primarily characterized by phonation type, i.e., [±voice]. Voiced stops /b/, /d/, and /g/ are typically not very voiced, and instead are released together with the vowel onset, resulting in a VOT duration of approximately zero (Benkí, 2005). Voiceless stops /p/, /t/, and /k/ in utterance-initial position are prototypically long-lag, with intermediate to long VOTs. In non-native varieties, however, the distribution of voiced and voiceless stops can vary (see M.-R. Kim, 2011a). For instance, voiceless stops in the PhilE variant are prototypically unaspirated, even in utterance-initial position (Regala-Flores,

2014).

A descriptive analysis of Philippine-based Korean learners' data from the present study showed that the mean VOT of English aspirated stops in word-initial position in formal speech style (i.e., wordlist + reading passage) is 56ms (σ=23ms), which falls within the range of mean VOT values (54ms ~ 90ms) in word-initial position produced by 'native' English speakers as described in previous studies (e.g., Lisker & Abramson, 1964; Morris, McCrea & Herring, 2008). However, as far as my knowledge is concerned, no published study has accounted for and quantitatively measured the VOT durations of stops in PhilE. Based on the Filipino students' wordlist data from the present study, voiceless stops acoustically have very short VOT values regardless of their phonological environments, and perceptibly sound like fortis stops in Korean. Meanwhile, voiced stops exhibited mostly zero to lead (i.e., negative) VOT values that seem comparable to those in Spanish (see Benkí, 2005). Figure 5 below provides a summary of the mean VOT values for both Philippine-based Korean and Filipino student participants.

Meanwhile, fundamental frequency (f_0) can interact with stop phonation to differentiate voicing cues (Haggard, Ambler & Callow, 1970), although it plays a much less crucial role in creating phonemic distinctions in English. But English exhibits similar control mechanisms for f_0 modulation with Korean (Chang, 2012; M.-R. Kim, 2012a), which is summarized in Table 5 below. Chang, however, posited that the type of dialect in English may play a role in L2 Korean-to-L1 English influence, since English dialects vary quite widely in terms of their vowel positions in the *F1* x *F2*. In the case of PhilE, the vowel system is substantially different from that of General AmE, but is also similar

in that systemic variation exists in terms of regional (Regala-Flores, 2014) and even lectal differences (see Tayao's (2004) vowel charts in Figure 6 above). Bearing this idea of systemic variation in mind, we should therefore expect the Korean ESL learners' production of English stops to be affected when they become exposed to a non-native variety of English.

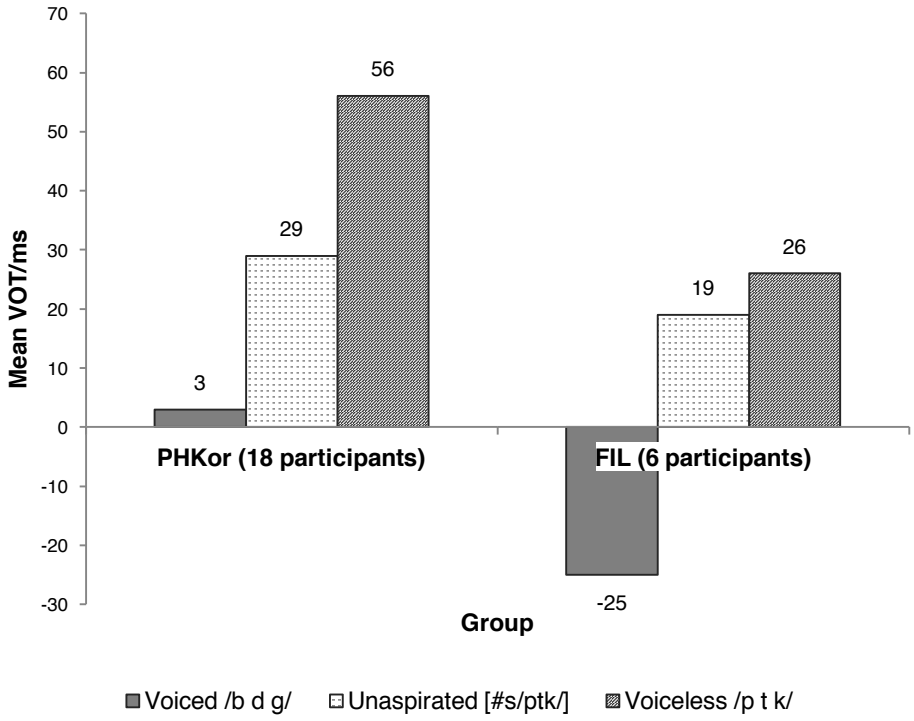
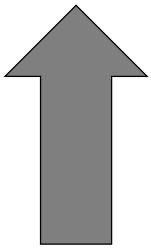


Figure 5: Mean English VOT values (ms) for word-initial stops produced by Philippine-based Korean (PHKor) and Filipino student participants in formal speech style, i.e., wordlist + reading passage. Data was sorted by phonation type.

Table 5: Tonal correspondences between Korean and English, sorted by phonation type (adapted from M.-R. Kim, 2012a).

Korean	English
Aspirated /p^h t^h k^h/	**Voiceless** /p t k/
Fortis /p^* t^* k^*/	**Voiceless unaspirated** [#s/ptk/_]
Lenis /p t k/	**Voiced** /b d g/



Increasing f_0 (tone) at vowel onset following stop

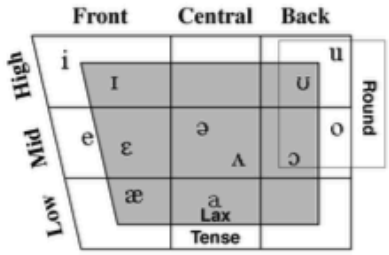


Figure 5. General American English

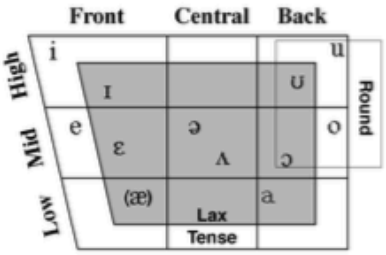


Figure 6. Philippine English acrolect

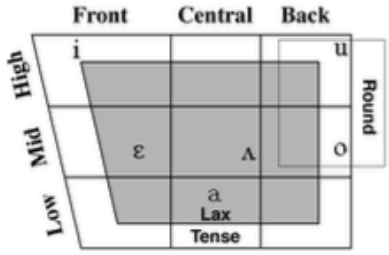


Figure 7. Philippine English mesolect

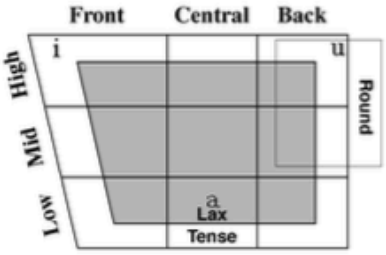


Figure 8. Philippine English basilect

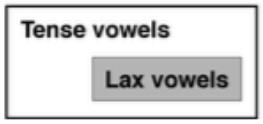


Figure 6: Vowel charts for (General) American and Philippine English. Adopted from Tayao (2004). The PhilE vowel charts reflect the apparent influence of (socio-economic) lectal variation on PhilE phonology.

To summarize, VOT is primarily used in English to contrast voiced and voiceless stops. For Korean, stop types are contrasted in terms of both f_0 and VOT. Since the present study concerns speech production in both L1 Korean and L2 English, f_0 and VOT values in both languages will be analyzed to account for variation in the categorical assimilation of L2 sounds, as well as changes in L1 and L2 phonetic drift during L2 speech acquisition (cf. Chang, 2012).

CHAPTER 3

METHODS

3.1 Participants

3.1.1 PHKor and FIL student participants

The majority of student participants included in the present study constitute part of a larger pool of participants gathered during fieldwork research conducted in Baguio City, Philippines from June to July 2015. This fieldwork involved the collection of two main types of data: (1) audio-recordings of Korean learners and their teachers in their daily ESL classroom interactions, and (2) individual audio-recordings of Korean and Filipino student participants performing speech elicitation and perception identification tasks. A total of 29 Koreans took part in either or both recording sessions.

The present study, however, has only included and analyzed audio-recorded data samples obtained from the individual testing sessions. The individual participants involved in the analysis were divided into two distinct groups: the main group, which comprises 18 Philippine-based Korean (**PHKor**) students, and a comparison sample group of six Filipino (**FIL**) students. Table 6 below (p. 48) provides a breakdown of the student participant numbers for the individual testing sessions.

The PHKor group comprises 10 female and 8 male students (μ=20.3 years; σ= 2.59). Of the 18 students, five males and seven females are still on Long-Term (LT) stay (i.e., at the time of writing this dissertation), living and studying as full-time undergraduate students at the University of Baguio (UB)

in Baguio City. Their mean length of study (**LOS**) in Baguio City is 5.35 years (σ=4.84 years).

Six of the LT PHKor students signed up for a month-long English remedial program offered by their university (these participants also participated in the classroom recording sessions). Three of these LT students live with at least one family member; the remaining ones currently live with their Korean friends or schoolmates in the city's residential areas, since the university offers no campus accommodation. Even though the students mostly hang out among themselves, they are regularly exposed to PhilE, mainly through classroom- and school-level interactions.

Meanwhile, the remaining six PHKor students (two males and four females) had enrolled on a short-term (ST), intensive in-house ESL program in MONOL Educational Institute, a well-known Korean-owned and privately run institution. Their mean LOS in Baguio City was 0.32 years (or 3.84 months, σ=0.10 years). The school is well guarded and exclusive; it is also far away from the city center. Living on campus was compulsory for all students, so the participants' exposure to PhilE was therefore limited primarily to their classroom interactions with their Filipino ESL teachers.

The comparison sample group FIL was obtained from the same tertiary institution as the LT students from the PHKor group, comprising 3 males and 9 females – all full-time undergraduates currently pursuing nursing or medical technology courses (μ= 20.3 years, σ=0.82). During my fieldwork, I managed to interview 12 Filipino students, but due to time constraints, I could analyze audio-recorded data from only six of them (3 males, 3 females).

3.1.2 SGKor participants

The Singapore-based Korean (**SGKor**) group was collected so that the PHKor group could be compared to a Korean-speaking group that had no prior exposure to PhilE or formal teaching instruction from a Filipino-accented teacher of English. I decided to collect this group in my home university, National University of Singapore (NUS). The SGKor group comprises 3 female and 2 male students (μ=20.8, σ=1.17) who were on a four-month ST exchange program in NUS. Data elicitation and perception tasks and audio-recording of the SGKor students were carried out in March 2016, on the third month of their student exchange program.

The SGKor students' L1 Korean and L2 English production patterns, however, need to be treated with caution. The sociolinguistic conditions for any potential variation or rapid sound change in the interlanguage for SGKor students are different; Singapore English (or SgE) is a distinct and nativized regional variety of English (Hiramoto, 2012; Leimgruber, 2013), displaying unique phonological and grammatical features (for a general overview of SgE phonology, see Deterding, 2007).

Table 6: Student numbers for the individual testing sessions. The participants are sorted by their language/educational program (i.e., short-term, ST or long-term, LT).

		Short-Term (ST)	Long-Term (LT)	Total
Philippine-based Korean students **(PHKor)**	Female	4	6	10
	Male	2	6	8
		6	12	18
Filipino students **(FIL)**	Female	0	9	3
	Male	0	3	3
		0	12	12
Singapore-based Korean students **(SGKor)**	Female	3	0	3
	Male	2	0	2
		5	0	5
	Total	**11**	**24**	**35**

But compared to VOT trends in PhilE in Figure 5 (p. 43), and based on Ng's (2005) detailed study of SgE VOT patterns across five different ethnolinguistic affiliations, bilingual Singaporeans generally produce English stops with mean VOT values that are much less dissimilar from native English speaker norms (see Figure 7 below for a summary of SgE speakers' mean VOT values). If we assume that Ng's (2005) measurements are a good indication of VOT norms for word-initial stops among Singaporean speakers of English, we can expect that potential VOT variations or changes in the SGKor students' interlanguage – brought about by their increased degree of exposure to SgE – should be much less significant compared to say, VOT variations or changes in the PHKor students' interlanguage due to exposure to PhilE.

3.2 Materials and Procedure

For the individual testing sessions, the participants performed a series of tasks – namely a perception (identification) task, and four types of production (elicitation) tasks: word and phrase list tasks in Korean (in Filipino for the Filipino student participants); a reading passage and a wordlist task, both in English; and a short casual interview, also in English. Participants attended the sessions at their respective institutions, usually during their free periods or after school. Each session took approximately 30 to 40 minutes. All task instructions were issued in English.

As the Principal Investigator, I successfully conducted audio-recordings in both schools, but faced several logistical issues. MONOL Institute gave me access to their school facilities – and while classrooms were always available for audio-recording, daily constructions that were taking place around the campus affected the quality of several audio-recording sessions. Meanwhile,

Mandarin		asp	unasp	vc
Bilabial	Eng(formal)	57.637	5.011	5.686
	Eng(informal)	50.561	3.596	-4.744
Alveolar	Eng(formal)	60.692	9.203	7.458
	Eng(informal)	82.658	7.120	6.393
Velar	Eng(formal)	84.322	30.278	13.716
	Eng(informal)	82.190	12.608	18.051
Hokkien		**asp**	**unasp**	**vc**
Bilabial	Eng(formal)	75.808	2.356	3.364
	Eng(informal)	43.343	0.584	1.535
Alveolar	Eng(formal)	83.444	8.648	9.262
	Eng(informal)	69.470	8.603	6.342
Velar	Eng(formal)	98.794	17.047	17.303
	Eng(informal)	80.316	11.639	15.422
Cantonese		**asp**	**unasp**	**vc**
Bilabial	Eng(formal)	70.236	1.206	4.360
	Eng(informal)	64.064	1.937	2.300
Alveolar	Eng(formal)	69.375	5.178	5.789
	Eng(informal)	62.976	8.027	4.916
Velar	Eng(formal)	93.020	14.600	17.171
	Eng(informal)	74.356	13.794	14.879
Malay		**asp**	**unasp**	**vc**
Bilabial	Eng(formal)	41.143	5.888	7.548
	Eng(informal)	29.149	7.412	5.913
Alveolar	Eng(formal)	41.056	14.656	10.646
	Eng(informal)	47.618	9.778	8.668
Velar	Eng(formal)	71.479	18.844	18.834
	Eng(informal)	63.074	21.030	17.504
Tamil		**asp**	**unasp**	**vc**
Bilabial	Eng(formal)	41.423	5.909	-2.124
	Eng(informal)	28.520	5.630	-10.767
Alveolar	Eng(formal)	35.988	8.368	-5.613
	Eng(informal)	21.428	8.039	-9.357
Velar	Eng(formal)	69.248	24.219	12.440
	Eng(informal)	50.199	21.032	16.207

Figure 7: Mean VOT values (in ms) of SgE stops, sorted by ethnolinguistic affiliation (adopted from Ng, 2005). Note: asp = aspirated /ptk/; unasp = unaspirated stop /ptk/; vc = voiced stops /bdg/.

UB had a few psychology laboratories and a small sound recording studio – but I was not granted access to these facilities. Eventually, I had to conduct the testing sessions in classrooms and other open access areas that were less than ideal for audio-recording due to their large glass windows and concrete walls and flooring. There was also one case in which I had to record four LT students

(i.e., M5, M6, M7, and M8) on the same day, but no classrooms were available for me to conduct testing sessions. It was their last day of English remedial classes and they were free to take part in the testing sessions only on that day. I had no choice but to conduct the testing sessions in the school cafeteria, which unfortunately was a tad too noisy for high-quality sociolinguistic audio-recording. I tried to mitigate potential recording problems by making the abovementioned participants repeat portions of the task which I felt were not adequately caught by the audio-recorder. Post-interview, tokens that did not produce good spectrographs were discarded.

Despite all the above issues, sufficient sociophonetic data per participant (and per stop consonant in each production and perception task) was gathered, allowing for a feasible and detailed statistical analysis of VOT and f_0 onset in both Korean and English.

3.2.1 Korean/Filipino language task

The Korean participants were first tested on their L1 speech production through a wordlist adopted from the Seoul dialect component of Cho, Jun and Ladefoged's (2002) speech material and a phrase list adopted from Kang and Guion (2008). The words and phrases were designed to elicit all the phonemes in the Korean stop system, /p^h p p^* t^h t t^* k^h k k^*/. Overall, 27 Korean items (9 words and 18 phrases) were included in this task. Meanwhile, the FIL students were asked to read out a wordlist containing words designed to elicit all the stop phonemes in Filipino (Tagalog), /p t k b d g/.

For both the Korean and Filipino elicitation tasks, each word was individually and twice displayed on PowerPoint slides that were played on a MacBook Air 13-inch laptop. The participants were asked to utter the word on

each slide twice. All the elicitations were audio-recorded at 96kHz and 16bps using a Zoom H1 Handy Recorder, Ver. 2.0, with a built-in microphone.

3.2.2 English wordlist and reading passage task

After performing a speaker identification task (see Section 3.2.4 below), all participants were then tested on their L2 English speech production through two formal elicitation tasks, a wordlist and a reading passage. The wordlist consisted of 29 target English words with stops in word-initial position [#_V] and stops after a voiceless alveolar sibilant, i.e., in [#s/ptk/_] position. Meanwhile, the reading passage comprised three short paragraphs containing 35 target English words with stops in word-initial, i.e., [#_V], and in [#s/ptk/_] positions.

Before I proceed with the presentation of my findings in the next chapter, I must discuss several conceptual and methodological challenges that I had encountered when I carried out the elicitation tasks in English. First, the target words in both elicitation materials (wordlist and reading passage) were not controlled for the following vowel. This was brought about by my initial plan to include and vary vowel (following the stop consonant) as a linguistic variable (I initially wanted to also investigate the L2 vowel system of Korean learners of English, but I decided not to pursue it due to time and space constraints).

Second, the present study initially included only voiceless stops in the English wordlist (as they directly correspond to the Korean stop system), so some of the participants' wordlist data did not include the English voiced stops /b d g/. (After I went back to Singapore from my Baguio fieldwork, I attempted to mitigate this issue by including word- and syllable-initial /b d g/ in the wordlists of the remaining Korean – that is, SGKor – participants.)

Table 7: Word items in Korean and Tagalog whose tokens were sampled and analyzed in the present study.

Korean Unique tokens, *n*=9			**Tagalog** Unique tokens, *n*=12		
파다	/ˈpʰɑtɑ/	“to dig/excavate”	pari	/ˈparɪ/	“priest”
바다	/ˈpɑtɑ/	“sea”	palay	/ˈpalaɪ/	“rice plant”
빻다	/ˈp*ɑtɑ/	“to grind”	bata	/ˈbata/	“child”
타다	/ˈtʰɑtɑ/	“to ride”	balak	/ˈbalak/	“motive”
달다	/ˈtɑltɑ/	“to be sweet”	tao	/ˈtaʔɔ/	“person”
따다	/ˈt*ɑtɑ/	“to pick”	tama	/ˈtama/	“correct”
카드	/ˈkʰɑtɨ/	“card”	dagat	/ˈdagat/	“sea”
가다	/ˈkɑtɑ/	“to go”	daloy	/ˈdaloɪ/	“flow”
까다	/ˈk*ɑtɑ/	“to peel”	kama	/ˈkama/	“bed”
			kapit	/ˈkapɪt/	“grip”
			gamit	/ˈgamɪt/	“thing”
			gatas	/ˈgatas/	“milk”

Table 8: Target word items in English whose tokens were sampled and analyzed in the present study. These words contain (in word- and syllable-initial position) all the stop phonemes found in American and British Englishes, and PhilE, namely /p b t d k g/.

Wordlist (unique tokens, *n*=23)		**Reading Passage** (unique tokens, *n*=35)		
par	dance	parents	time	going
pat	dark	party	Tina	got
past	car	Paul	to	cake
back	cap	pet	Tom	car
banter	cast	Peter	toy	cat
bar	gap	basketball	turn	coming
basket	gasp	be	two	court
bat	guard	birthday	day	Karl
tar	spark	but	do	Kate
tap	skate	buy	give	Kitty
task	stop	talk	go	school
dad		telephone	goes	

Third, and finally, the reading passage did not equally account for all the stop types in English (for the same reason stated above), causing some word-initial voiced stops to have relatively fewer tokens. It also did not include instances of voiceless stops in consonant cluster position, [#s/ptk/_], except for [#sk_] in *school*. Considering these methodological issues, a few clarifications

should be noted before proceeding to the analytical chapters: (1) for the wordlist speech data, only SGKor participants have all /b d g/ tokens; (2) for the reading passage data, all participant groups do not have [#s/p/_] and [#s/t/_] tokens; (3) due to the lack of certain stop tokens in the wordlist and in the reading passage, I decided to collapse both wordlist and reading data sets into one category, i.e., *formal* speech style.

3.2.3 Casual interview

The final elicitation task involved a short casual interview that averaged around three minutes per participant. The following three main questions were asked: (1) Describe your favorite Korean food (for PHKor/SGKor participants) or Filipino food (for FIL participants); (2) Describe an embarrassing moment that happened to you; and (3) What do you like or do not like about studying English in Baguio (for PHKor and FIL participants) / in Singapore (for SGKor participants)? Furthermore, supplementary questions, feedback and/or comments were included in cases when the participants had difficulty understanding the main question or expressing themselves in English.

The target word tokens drawn from the conversation speech samples included all cases of English stops in word-initial, i.e., [#_V], and [#s/ptk_] positions. To ensure the naturalistic, 'casual' nature of the data, only tokens found after the first minute of each casual interview were included in the data analysis. Moreover, Korean proper nouns (e.g., *Daegu*, a city in South Korea's Gyeongsang region), as well as Korean words that have been well integrated into English (e.g., food items like *kimchi* and *bulgogi*) were excluded, but not PhilE words (e.g., *Baguio*, which is a proper name for a city in the Philippines).

3.2.4 Sociolinguistic perception task

All individual participants who performed the elicitation (speech production) tasks also performed a short sociolinguistic perception task. Due to the 'experimental' nature of the testing session, the sociolinguistic perception task was carried out in between the Korean and English elicitation tasks as a 'break' in between them to minimize potential order effects on L1 and L2 speech production. The methods employed for this task are described and explained in detail in Chapter 5, Section 5.1.1 (pp. 116-118).

3.2.5 Language Background Questionnaire

At the end of the testing session, each participant was asked to fill in a language background questionnaire, in which some of the questions were adapted from Roh (2010) (also cited in Castro & Roh, 2013). The questionnaire comprises three parts. Part A was designed to gather participant demographic data, such age, sex, and place, LOS in the Philippines or in Singapore, as well as length of residence (henceforth **LOR**) in Korea. Part B included questions on the participants' language backgrounds and self-ratings on their L1 and L2 proficiency. In Part C, participants were encouraged to write down their thoughts or opinions that may not have been covered in the previous sections.

The questionnaires are found in Appendixes 1-3 (pp. 171-185). Participant responses are also provided in Appendixes 4-5 (pp. 186-189).

3.3 Acoustic Analysis

The dependent variables are **VOT** of the stop burst and f_0 at onset of the following vowel (henceforth ***f*$_0$ onset**). All speech samples used for data analysis were segmented and analyzed using Praat 5.4.01 (Boersma & Weenink, 2015).

Table 9: Breakdown of all stop tokens in word-initial and [#s/ptk/_] positions examined in this study, sorted by participant group.

Group	L1	L2				Total
	Wordlist	Wordlist	Reading	Conversation	Subtotal	
PHKor	328	705	756	607	2068	2,396
SGKor	87	467	230	145	842	929
FIL	274	346	252	199	797	1071
Total	*689*	*1,518*	*1,238*	*951*	*3,707*	***4,396***

Spectrographic data were manually segmented for VOT and f_0 onset, however all formant and duration measurements were automatically calculated using FormantPro (Xu, 2007-2015). Tokens that involved anomalous pronunciations, or showed unclear pulsations or stop bursts due to background noise, or creaky or irregular phonation, were all discarded. Tables 7 and 8 above provides a summary of all the tokens examined in the present study.

VOT is defined as the duration between the stop burst and the onset of pulsation as shown on the waveform (Thomas, 2011). When the pulsation markings were not clear, VOT boundary was demarcated by the onset of periodicity in the waveform (Lisker & Abramson, 1964).

Meanwhile, f_0 onset was measured from vibrations per unit time (f_0 = 1000 x number of regular pulses / span of time in ms). Measurements were calculated within the first five regular glottal pulses of the vowel. Then, they were converted into values on a logarithmic (Bark) scale using Traunmüller's (1990) formula

$$\text{Bark} = \frac{26.81 \times \text{F}}{1960 + \text{F}} - 0.53$$

where *F* is frequency in Hertz (Hz). But converting raw into log values does not control for individual variation in the overall pitch of each of the participants'

voices. In effect, the log values were further converted into *z*-scores. Calculating the individual *z*-scores for each participant was performed using the formula

$$z\text{-score} = \frac{f_0\ onset - \mu}{\sigma}$$

where μ is the participant's mean f_0 onset, and σ the standard variation. Even though raw f_0 onset values in both English and Korean are presented in Chapter 4, Bark normalized *z*-scores are used in the descriptive and statistical analyses of f_0 onset.

It must be acknowledged that the present study does not control for the vowel that follows a word-initial stop or a stop in [#s/ptk/_] position; in phonetic studies involving an interlanguage, multiple phonetic inventories, or more than one language/dialect variety, controlling for vowel is often carried out because vowel correspondence can often vary from one vowel to another and even among similar vowels across language/dialect varieties. Thus, to grasp a fair comparison of results from previous works and the present study, all English stops followed by /ɑ/ – PALM or START vowels, in Wells' (1982) terms – were singled out and analyzed separately (total *n*=673).

3.4 Statistical analyses

To examine L1 and L2 speech production data and sociolinguistic perception data, various types of statistical analyses were performed, ranging from simple statistical tests to fitting linear mixed effects regression models. Chapters 4 and 5 provide details of how production and perception data sets were modelled and quantitatively analyzed for potentially significant patterns of variation based on several internal (linguistic) and external (social, stylistic) variables and variable interactions.

CHAPTER 4

L1 KOREAN AND L2 ENGLISH SPEECH PRODUCTION

This chapter provides a descriptive and statistical analysis of Voice Onset Time (VOT) and Fundamental Frequency at the onset of the following vowel (f_0 onset) for **both** L1 Korean and L2 English stops. Sections 4.1 and 4.2 will focus on L1 and L2 stops in word-initial [#_V] or consonant-cluster [#s/ptk/_] positions. In these sections, the bulk of the analysis of variation in L1 and L2 VOT and f_0 onset will involve looking at relevant internal (linguistic) factors, i.e., phonation (or voicing) and place of articulation, as well as a few external factors, e.g., speech style, length of study, and type of study program. The last section, 4.3, will introduce a series of linear mixed effects regression models that aim to provide a more detailed view of the earlier findings and account for other relevant social factors of variation not mentioned in the first three sections.

At this point, I would like to call attention to Sections 4.1 and 4.2. These sections involve mostly simple and initial *t*-tests that are designed to illustrate general points of comparison in the production of L1 Korean and L2 English stops by the three participant groups; the *t*-tests themselves do not correct for the *multiple comparisons* problem (the alpha level for statistical significance have not been appropriately adjusted), nor for the problem of *pseudoreplication* (Winter, 2011).[16] I feel, however, that *t*-tests remain useful to the present study and should be presented here, because of the three reasons. First, the tests

[16] The present study does not address the problem of pseudoreduplication, since the *t*-tests used in the study does not make any assumption that all observations are truly independent. For the purposes of providing general patterns and trends in VOT and *f*0 onset (in both L1 Korean and L2 English),

provide an overview of the variation in L1 and L2 stop production among PHKor, SGKor, and FIL groups. Second, the tests allow us to identify general patterns and data trends in VOT and f_0 onset for each specific internal/external variable. Third, the tests provide a series of exploratory steps in the overall analysis of L1 and L2 stop production, aiding in the design, and supplementing the analysis, of the linear mixed effects regression models.

4.1 Voice Onset Time (VOT)

4.1.1 Variation according to phonation type and speech style

Figure 8 below illustrates the participant groups' mean English and Korean word-initial VOTs. English VOT data was sorted such that it corresponded with the three-way stop distinction in Korean. But as mentioned in Chapter 2, English features a two-way stop system; thus, to draw correspondence with the three-way stop system of Korean, a separate category for voiceless unaspirated stops, [#s/ptk/_], was created. (This cross-linguistic correspondence follows from M.-R. Kim's (2012a, b) analysis of L1 and L2 stops produced by Korean learners of English.) Also, the English VOT data was separated into two sets and sorted by speech style (i.e., formal and informal) since almost all available works in the current literature focus on formally elicited English and Korean stop productions in mostly controlled phonological environments (c.f. Kang and Guion, 2006).

There were several interesting trends found in the English VOT data when sorted by phonation type. Compared to the SGKor group, the PHKor group produced significantly shorter mean VOT for voiceless stops [$t(1783)=4.31$, $p=0.00002$] and significantly longer mean VOT for (voiceless) unaspirated stops [$t(367)=2.42$, $p=0.01597$]. Moreover, FIL students exhibited

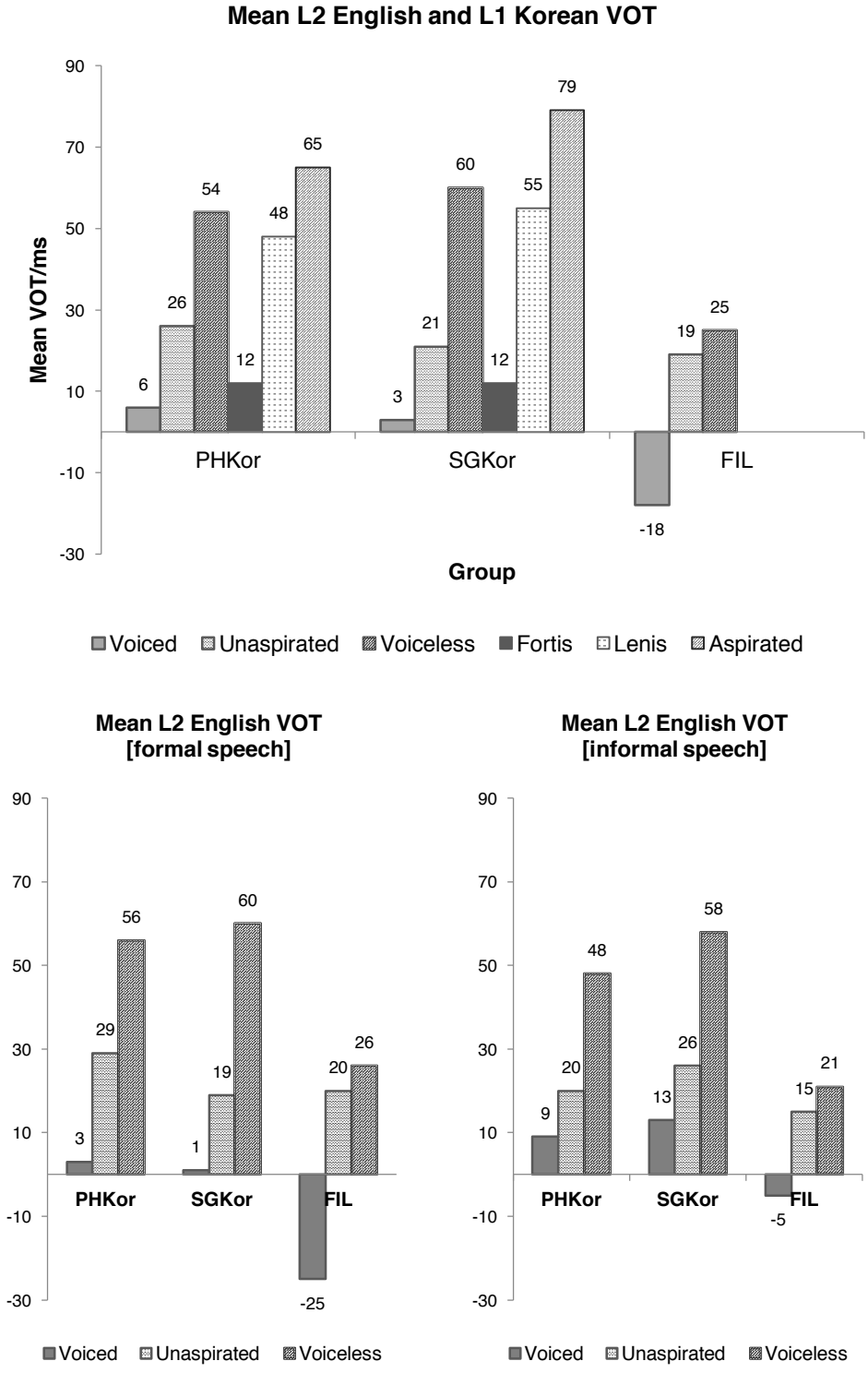


Figure 8: Mean word-initial L2 English and L1 Korean VOTs (in ms) across different phonation types. English VOT data comprises stop tokens produced in both formal and informal speech styles.

overall lead (i.e., negative) mean VOT for word-initial voiced stops at –18ms, and relatively short mean VOTs for voiceless stops in word-initial position and

(voiceless) unaspirated stops in [#s/ptk/_] position (about 25ms and 19ms, respectively). The empirical findings for VOT produced by the FIL group thus support the claim that in PhilE, voiced stops exhibit very short to negative VOTs, and voiceless stops are prototypically unaspirated in word-initial position (cf. Regala-Flores, 2014).

More interesting trends in VOT, however, were observed when stylistic variation was considered. In formal speech, the PHKor group produced significantly longer mean VOT for voiced stops compared to the FIL group [$t(204)=9.22$, $p<0.0001$]. On the other hand, no significant difference in mean VOT for voiced stops was found between the PHKor and SGKor groups [$t(488)=0.51$, $p=0.60878$]. In informal speech, the PHKor students also produced a mean VOT value that was significantly longer than the FIL group, assuming unequal variances $t(100)=4.06$, $p=0.0001$, but significantly shorter than the SGKor students, assuming unequal variances $t(194)=2.34$, $p=0.02035$.

Stylistic variation was also observed regarding the production of voiceless stops. In formal speech, the PHKor group produced voiceless stops with a mean VOT that was significantly shorter by 4ms compared to the SGKor group [PHKor: 56ms, SGKor: 60ms; $t(590)=2.66$, $p=0.0081$]. The difference in mean VOT between the two groups was even greater in informal speech, i.e., 10ms [PHKor: 48ms, SGKor: 58ms; $t(398)=3.45$, $p=0.00062$]. Meanwhile, in comparison with the FIL group, the PHKor group produced significantly longer mean VOT for voiceless stops in both speech styles [formal speech: $t(929)=26.94$, $p<0.0001$; informal speech: $t(416)=16.56$, $p<0.0001$].

We now look at the effects of speech style on the production of unaspirated stops. In formal speech, the PHKor group produced significantly

longer VOTs for unaspirated stops compared to the SGKor group [$t(262)=3.65$, $p=<0.0001$]. This trend, however, was not observed in informal speech, wherein no significant difference was found between the mean VOTs of the two participant groups [$t(25)=0.23$, $p=0.23454$]. Speech style, however, did not seem to affect the PHKor group's variation in forms in comparison with the FIL group, as it produced significantly longer mean VOTs in both formal [$t(213)=4.93$, $p=1.61871e-06$] and informal speech [$t(46)=2.44$, $p=0.01876$].

We now turn to the effects of speech style in the variation in English VOT within each group. In informal speech (compared to formal speech), the PHKor group produced significantly shorter mean VOTs for voiceless stops [$t(1339)=5.63$, $p= p<0.0001$] and unaspirated stops [$t(190)=4.13$, $p= p<0.0001$], but longer mean VOT for voiced stops [$t(436)=3.02$, $p=0.00264$]. Interestingly, the PHKor group's differences in mean VOT across speech styles somewhat mirrors that of the FIL group, who, in informal speech, also produced significantly shorter mean VOTs for voiceless stops[$t(311)=3.95$, $p=0.0001$] and unaspirated stops [$t(35)=2.38$, $p=0.02265$], and longer mean VOT for voiced stops [$t(195)=4.59$, $p<0.0001$]. Contrastingly, in informal speech, the SGKor group produced significantly longer mean VOTs for voiced stops [$t(281)=5.32$, $p<0.0001$], but not for voiceless and unaspirated stops, where no significant mean VOT differences were found across speech styles. (The group's mean VOT for voiceless stops was shorter by approximately 2ms, which was statistically insignificant [$t(442)=0.69$, $p=0.49055$]. On the other hand, the group's mean VOT for unaspirated stops was longer by approximately 7ms, although this too was considered statistically insignificant [$t(78)=1.51$, $p=0.13463$].)

Table 10: Comparing PHKor participants' mean English word-initial VOT values (in ms) from the present study with native English VOT norms produced by American speakers of English (standard deviation values in parenthesis). Data for native English VOT norms was adopted from Morris et al. (2008) (cited in Chang, 2012). Voiceless unaspirated stops were produced in complex onset word-initial position, i.e., [#s/ptk/_].

		Morris et al. (2008)		**Present study (PHKor)** [combined wordlist + reading]		
		Voiced	Voiceless	Voiced	Unaspirated	Voiceless
Female	Labial	12 (5)	54 (15)	-5 (19)	21 (19)	53 (20)
	Coronal	16 (6)	69 (16)	4 (21)	20 (12)	58 (20)
	Dorsal	22 (8)	63 (14)	19 (19)	35 (15)	66 (21)
	Combined	17 (6)	62 (15)	5 (22)	25 (16)	59 (21)
Male	Labial	13 (6)	53 (27)	-10 (18)	30 (19)	44 (23)
	Coronal	16 (5)	58 (15)	-8 (22)	26 (17)	50 (26)
	Dorsal	24 (10)	62 (15)	16 (16)	41 (14)	62 (22)
	Combined	18 (7)	58 (19)	0 (22)	32 (18)	53 (25)

Extending the discussion to more fine-grained variations, it appears that PHKor students are more likely to exhibit negative VOTs for word-initial voiced stops in both formal and informal speech styles. Zooming into informal speech, males produced mean VOTs of approximately –10ms and –8ms for /b/ and /d/; and in conversation, –8ms for /b/. Females also produced a negative mean VOT for /b/ (approx. –5ms), but only in formal speech. Meanwhile in the SGKor group, one male student (M9) had exceedingly negative mean VOT for voiced stops (μ=–44ms), which was significantly even more negative than the FIL group's mean VOT of about –25ms.[17] But based on the overall trends in the data, the PHKor group's mean VOT for voiced stops, which ranged from

[17] SGKor student M9 was the only participant in the study that did not enroll in short-term intensive or long-term English classes in Korea and/or abroad. His stint as an exchange student in Singapore was therefore his first 'full' exposure to English language medium instruction. During the interview, he claimed that although English was taught in Korean schools, he had learned to speak the language mostly through self-taught methods, which relied heavily on online resources – and thus well away from the traditional teacher-led classroom instruction. During the formal elicitation tasks, his production of voiced stops perceptibly featured hypercorrections and (somewhat) exaggerated articulations. It is interesting to note, however, that the mean VOT values for his voiceless stops were well within the group average. For this reason, I have decided to nonetheless include his sample tokens in my data analysis.

very short (<30ms) to negative, were determined to be significantly much shorter in comparison with the mean VOT measurements available in the current literature (see Table 10 above).

The data presented in Figure 8 above also comes from the Korean wordlist speech sample. Due to constraints in time and space, speech samples from the phrase list adopted from Kang and Guion (2008) were excluded from the analysis. Thus, only 415 Korean stop consonant tokens in total (PHKor n=328; SGKor n=87) were analyzed. Nevertheless, a few notable trends were observed. The mean VOT for lenis stops produced by the PHKor group was shorter by approximately 7ms compared to the SGKor group; however, this mean VOT difference was statistically insignificant [$t(134)=1.39, p=0.1687$]. A similar trend was observed for fortis stops: the difference in mean VOT between the two groups was also statistically insignificant [$t(34)=0.19$, $p=0.8532$]. Meanwhile, for aspirated stops, the PHKor group produced significantly shorter mean VOT compared to the SGKor group [$t(140)=3.37$, $p=0.00097$]. This finding is quite interesting because it seems to correspond to the PHKor group's apparent shortening of English voiceless stops in word-initial position.

4.1.2 Place of articulation

We now look at the patterns of variation in English VOT based on place of articulation (see Figure 9 below). In comparison with the SGKor group, the PHKor group produced significantly longer mean English VOT for dorsal stops [$t(403)=2.24$, $p=0.02585$] and marginally longer VOT for labial stops [$t(482)=1.78, p=0.07593$]. Vis-à-vis the FIL group, the PHKor group produced significantly longer mean VOT values across all places of articulation.

Turning to the production of Korean stops (also see Figure 9 below), the PHKor group produced overall shorter mean VOTs for compared to the SGKor group for all places of articulation. Labial, coronal, and dorsal stops produced by the former group were shorter by approximately 8, 7, and 6ms, respectively. These mean differences, however, were not statistically significant – although these could have been affected by the relatively small sample tokens of Korean VOT data gathered from both the PHKor and SGKor groups (PHKor n=328; SGKor n=87).

4.1.3 Phonemic contrast

I would now like to discuss more patterns of variation in L1 Korean and L2 English VOT among the Korean participants based on phonemic contrast, which involves the interaction between phonation and place of articulation (see Figure 10 below for the normalized z-scores). Comparing the English VOT data from the PHKor and SGKor groups, their mean VOT difference was statistically significant for only one phoneme, i.e., /t/, in which the mean VOT of the PHKor group was significantly shorter compared to the SGKor group [t(589)=3.06, p=0.00235]). Meanwhile, no significant differences in mean VOT were observed for the rest of the phonemes: /p/ [t(321)=1.62, p=0.10555]; /k/ [t(162)=0.41, p=0.67921]; /b/ [t(205)=0.35, p=0.72419], /d/ [t(89)=0.31, p=0.75837], and /g/ [t(135)=1.02, p=0.30803]. Based on these findings, and as far as the mean VOTs of the PHKor and SGKor groups are concerned, it seems that the most widespread inter-group variation in L2 English involves the production of word-initial /t/.

We now turn to the variation in Korean VOT, which is also illustrated in Figure 10 below. Compared to the SGKor group, the PHKor group produced

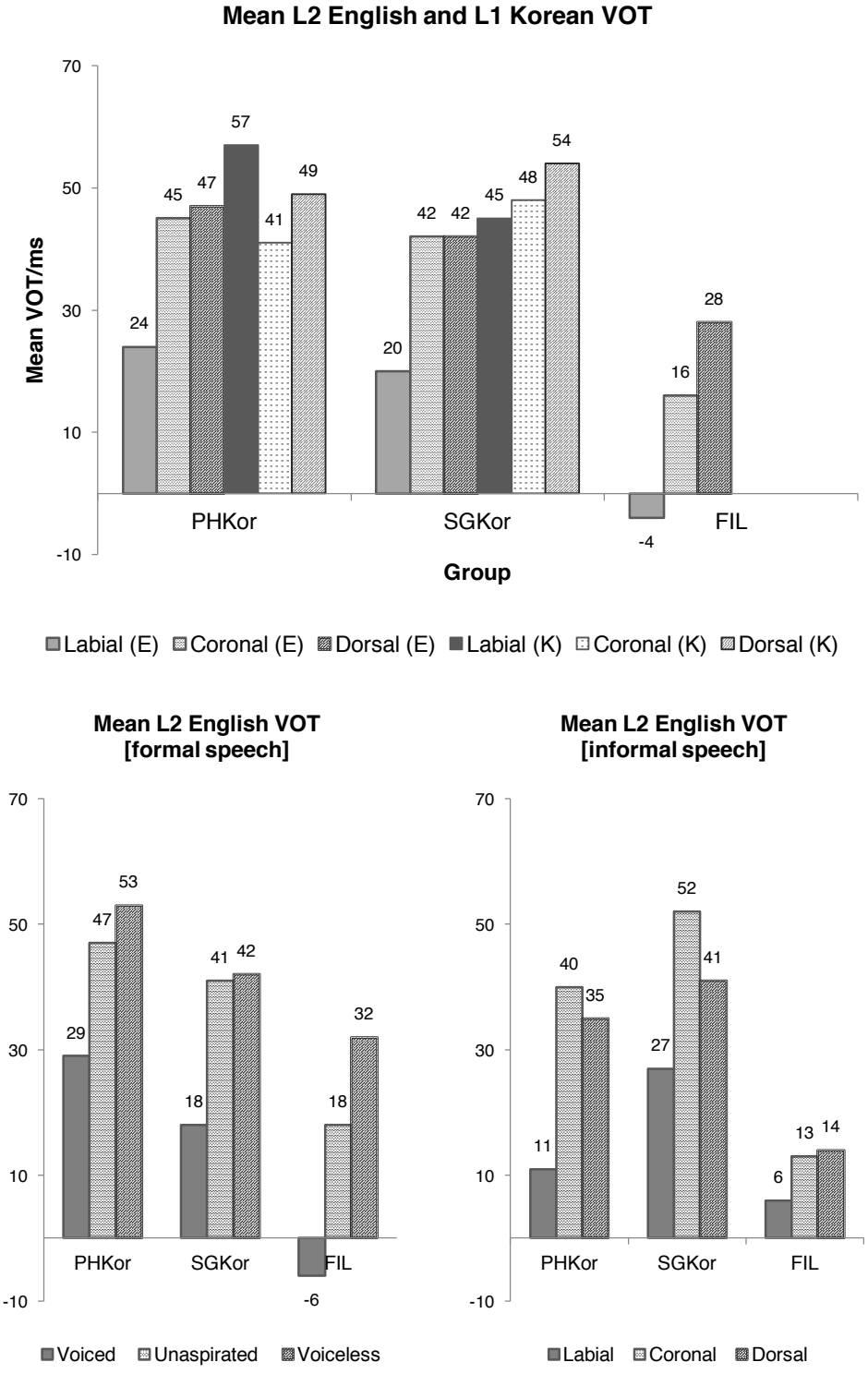


Figure 9: Mean word-initial L2 English and L1 Korean mean VOT values (in ms) across different places of articulation. English VOT data comprises stop tokens produced in both formal and informal speech styles.

significantly shorter mean VOT for /t^h/, aspirated stop in coronal position [t(44)=2.23, p=0.03122].This finding was particularly interesting because it

also appears to correspond to the previously mentioned VOT patterns of English /t/, a voiceless stop that is also produced in coronal position. Meanwhile, no significant differences in mean VOT were observed elsewhere, except in the production of /p*/ (fortis labial stop), where the PHKor group produced significantly longer mean VOT compared to the SGKor group [$t(32)=3.50$, $p=0.00138$].

4.1.4 Korean aspirated-lenis VOT merger

I would now like to address one of notable features of the Korean stop system discussed in Chapter 2, the aspirated-lenis VOT merger, which has been widely considered to be an instantiation of language change. One of the main reasons for obtaining Korean VOT data was to determine whether VOT merger was present in either or both the PHKor and SGKor groups. Based on the findings, VOT merger seemed unlikely for both groups since the mean VOTs for aspirated stops were much significantly longer compared to mean VOTs for lenis stops [PHKor: asp.: μ=65ms, lenis: μ=48ms, $t(216)=6.22$, $p=2.56082e-09$; SGKor: asp.: μ=79ms, lenis stops: μ=55ms, $t(58)=4.14$, $p=0.00011$].

4.1.5 Study program and Length of study (LOS)

More interesting data trends were observed by looking at the variation in speech production based on the study background of the participants. For instance, English VOT production was seen to vary across study programs, i.e., whether the students were studying long-term/LT (that is, full-time undergraduates in university), or taking up intensive short-term/ST ESL courses. Based on the VOT data illustrated in Figure 11 below, LT PHKor students were producing significantly shorter mean VOTs for all phonation types compared to ST PHKor

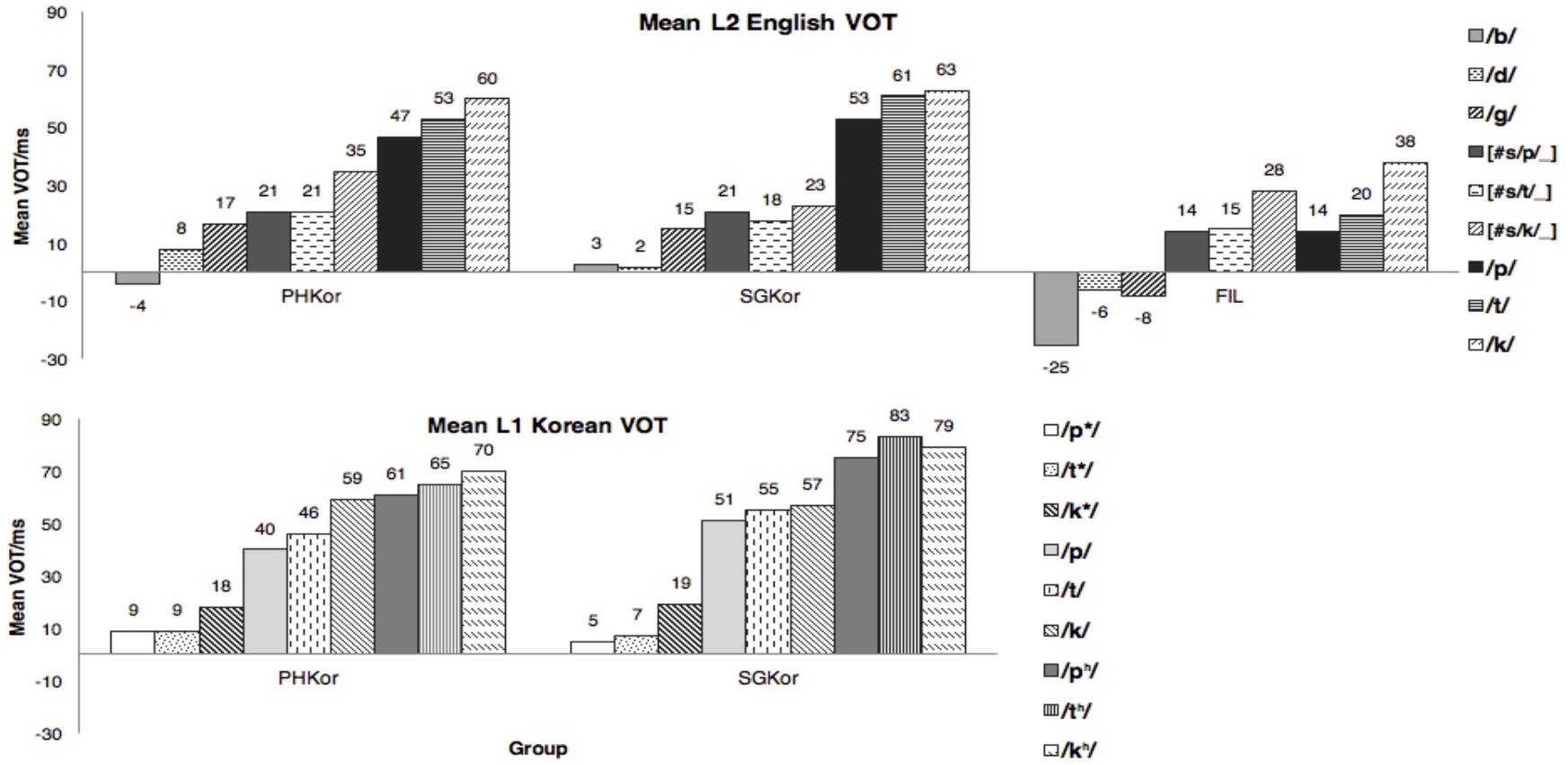


Figure 10: Mean word-initial L2 English and L1 Korean VOT values (in ms) sorted by phoneme type. Phonemic contrast is the interaction between the type of phonation and the place of articulation. L2 English VOT data comprises stop tokens produced in both formal and informal speech styles.

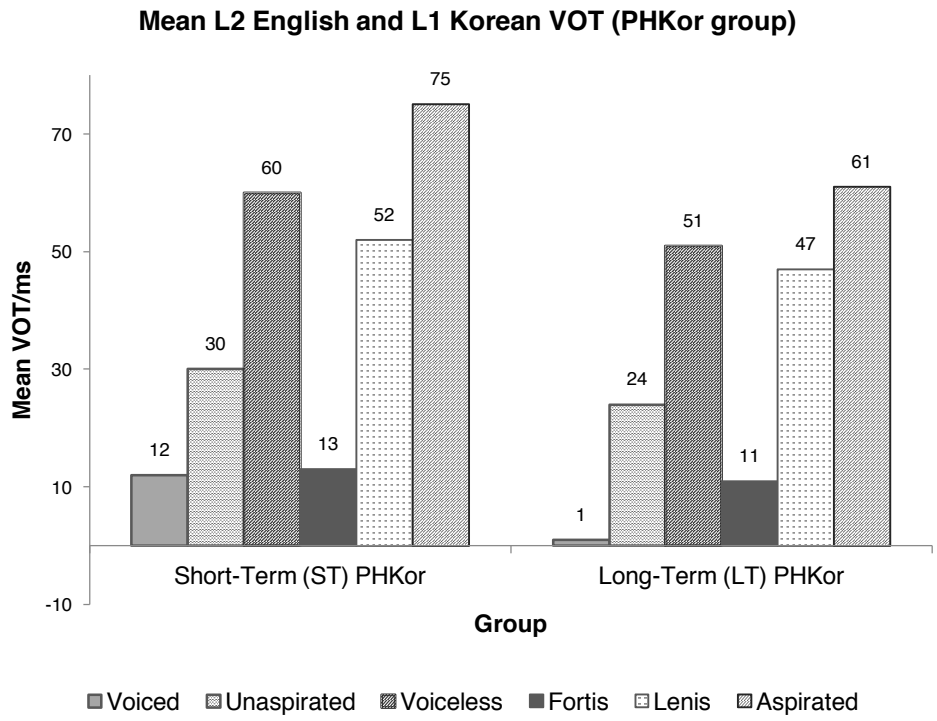


Figure 11: LT and ST PHKor mean word-initial L2 English and L1 Korean VOT values (in ms) across different phonation types. English VOT data comprises stop tokens produced in formal and informal speech styles.

students. The LT students were also more likely to produce negative VOTs for voiced stops.

The more notable trends, however, were observed in the production of voiceless and unaspirated stops. ST and LT PHKor students varied significantly in their production of English voiceless stops vis-à-vis the comparison group, SGKor. While the ST PHKor group did not differ significantly from the SGKor group based on their mean VOTs [$t(884)=0.22$, $p=0.82767$], the LT PHKor group did, producing significantly shorter mean values [$t(1074)=7.27$, $p=6.82908e\text{-}13$]. In the case of unaspirated stops, ST PHKor students produced significantly longer mean VOT compared to the LT PHKor group [$t(184)=2.51$, $p=0.01308$] and to the SGKor group [$t(180)=3.23$, $p=0.00146$]. In fact, based on auditory perception alone, several ST (and even a few LT) PHKor students

were producing voiceless stops in [#s/ptk/_] position that showed more aspiration relative to the SGKor group.

There was also some stylistic variation observed, in that PHKor students produced aspirated stops in [#s/ptk/_] position more frequently and intensely in formal speech than in informal speech [$t(219)=4.07$, $p=0.00007$]. Overall, the above findings for English VOT are interesting because they suggest that ESL learners enrolled in different second-language learning programs and in different institutions (even if they are located within the same speech community) may produce dissimilar or varying patterns of English stop production.

Looking at the Korean VOT data (also see Figure 11 above), it was observed that overall, the LT PHKor group produced shorter mean VOTs compared to the ST PHKor group across all phonation types; however, the only significant mean VOT difference observed was in the production of aspirated stops [fortis: $t(108)=0.99$, $p=0.3251$; lenis: $t(57)=1.12$, $p=0.26577$; aspirated: $t(109)=3.83$, $p=0.00021$]. Comparing the ST PHKor and SGKor groups, the former produced shorter mean VOTs overall, although none of the mean VOT differences between the groups were statistically significant [fortis: $t(63)=0.60$, $p=0.54943$; lenis: $t(63)=0.47$, $p=0.64234$; aspirated: $t(65)=0.83$, $p=0.41131$]. In fact, no other inter-speaker comparisons yielded significant mean VOT differences, except the LT PHKor and SGKor groups' production of aspirated stops [$t(104)=4.41$, $p=0.00003$], and lenis stops, which exhibited marginally significant difference [$t(98)=1.78$, $p=0.07882$].

We now turn to the variation in English VOT according to length of study in years (LOS). In this case, no cross-group comparisons are possible,

since all SGKor students in Singapore were on short-term stay (i.e., < 6 months) and all FIL students in the Philippines were born in the country and have been studying there since kindergarten or elementary school. Based on the data in Figure 12 below, the PHKor group's overall mean VOT seemed to decrease with increasing LOS (R=-0.11826, p<0.0001, R^2=0.014, using the Pearson correlation test). Although the variance explained is small, we can see that students who were or have been studying in the Philippines for a much longer time tended to produce English stops with comparatively shorter VOTs.

Turning to Korean VOT (also see Figure 12 below), no significant change in overall mean VOT with increasing LOS was observed (R=-0.00208, p=0.97006, R^2=0, using the Pearson correlation test). There is, however, another piece of apparent-time evidence – that is, the differences in mean VOTs between LT versus ST PHKor students – which show that the PHKor students' production of significantly shorter VOTs in Korean aspirated stops runs parallel to, and in conjunction with, their production of significantly shorter English voiceless stops. This suggests that some degree of L2-to-L1 interference not primarily influenced by LOS-related factors could be occurring or have occurred in the interlanguage of the ST PHKor students. In other words, the development of such phonetic interference could have potentially arisen due to other external factors, e.g., varying degrees of exposure to the ambient, non-native L2 setting, and attention paid to L1 speech, among others.

4.1.6 Interim summary

Before I proceed with the interim summary and discussion of results, it must be acknowledged that the data and results obtained for Korean VOT (and Korean f_0 onset, in Section 4.2) need to be cautiously interpreted since the sample size

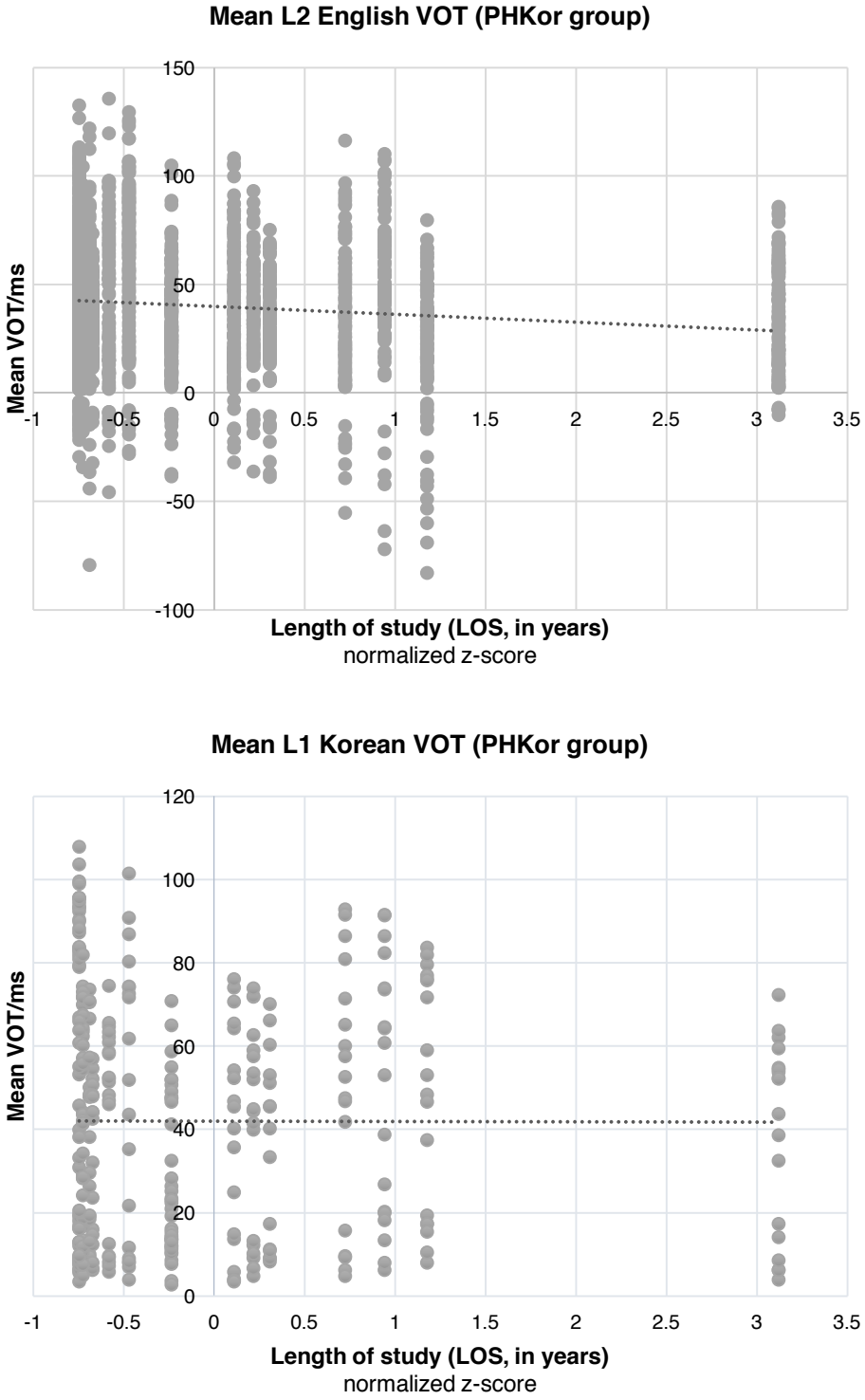


Figure 12: PHKor mean word-initial L2 English and L1 Korean VOT values (in ms) across different phonation types. The average LOS for the PHKor group is 5.35 years (σ=4.84); however, one participant (i.e., **F5**) has been living and studying in the country for almost 18 years (*z*=3.12).

of Korean stop tokens was relatively small (total *n*=415). Nonetheless, there were some interesting patterns of variation and significant trends in the PHKor

students' production of L1 (and L2) stops, which warrant further discussion and explanation.

Compared to SGKor students in the present study, PHKor students overall exhibited higher mean VOT for English word-initial voiced stops, but produced significantly more stop tokens with zero to negative VOT (67% for PHKor versus for 17% SGKor). Also, compared to Korean learners that had already been observed in other studies, PHKor students produced significantly shorter mean VOT for word-initial voiceless stops (see Table 1, p. 34 for a comparison with Korean learners' L2 English data in the current literature). Also, compared to the SGKor students, PHKor students produced overall shorter Korean VOT durations for all phonation types (fortis, lenis, and aspirated) and in all places of articulation (labial, coronal, and dorsal). The data, however, only showed a significant variation in VOT duration for Korean aspirated stops, which seems to correspond to the production of English voiceless stops. Nonetheless, the difference between the groups' respective mean VOT values for Korean aspirated stops was approximately 14-15ms, which is perceptibly (in the auditory sense) and acoustically very salient. This finding is also interesting because the PHKor group's relatively shorter VOTs could potentially imply that their exposure to PhilE (whose stop consonants are characterized primarily by little to no aspiration at the burst onset), as both medium of instruction and object of acquisition, may have influenced their speech production patterns not only in their L2, but also in their L1.

The interaction between phonation and place of articulation revealed some interesting trends in the variation in English VOT. For instance, PHKor students exhibited significantly different (shorter) mean VOTs only for English

/t/; marginally longer VOT durations for Korean /p*/; and significantly shorter VOT durations for Korean /t^{h}/. The latter finding is interesting as it parallels the significant cross-group VOT differences found in the production of English /t/ in simple onset, word-initial position. As far as the current data and findings are concerned, the shortening of VOT in Korean /t^{h}/ neatly parallels the production patterns of English /t/, showing a similar effect in both languages. It is, however, uncertain why PHKor students would significantly lengthen the VOT of Korean /p*/, although a few explanations are plausible. One, there is probably a lack of attention paid to Korean speech, since it is less frequently spoken in the ambient L2 setting. Two, there might be a need for sufficient phonetic distance between Korean /p*/and English /p/ to maintain phonemic contrast in the speech output, since the auditory input received for /p/ in their ambient L2 (i.e., PhilE) setting is more likely to be perceived as unaspirated.

The findings also showed that ST and LT PHKor students produced varying patterns of English stop production. ST PHKor students, who enrolled in an intensive in-house ESL program at a private institution, produced overall longer mean English VOTs that seemed to differ from stop production norms exhibited by both FIL and SGKor students. LT PHKor students, on the other hand, produced mean VOTs that were significantly shorter compared to ST PHKor students, and which appeared to assimilate more to FIL students' stop production norms.

Furthermore, ST PHKor students did not differ significantly from SGKor students in their production of Korean aspirated and lenis stops (LT PHKor students did so), suggesting that potential L2-to-L1 effects in the interlanguage may not manifest strongly in the earlier stages of non-native L2

speech acquisition. There was, however, no evidence of aspirated-lenis merger among the participants. To some extent, these findings challenge or provide counterevidence to the general claim in the current literature that Korean aspirated and lenis stops are undergoing merger in terms of VOT duration (cf. Choi, 2002; Kang & Guion, 2008; M.-R. Kim, 2008, 2011b; Oh, 2011; Silva et al., 2004, Silva, 2006a, b; Wright, 2007). But before any final conclusions can be drawn from this observation, f_0 onset findings must first be presented and discussed in detail (see Section 4.2), since the Korean stop system involves both variations and changes in terms of both consonantal and tonal contrasts.

As mentioned earlier in Chapter 2, Section 2.2.3 (p. 36), Chang (2013) showed that phonetic drift was greater for novice learners of L2 Korean than for more experienced learners. At this point, it is essential to note that the L1 Korean and L2 English VOT results obtained in the present study reveal a somewhat different trend in phonetic drift in comparison with the findings obtained by Chang: LT PHKor students – the more experienced learners of L2 English – showed greater phonetic drift in both L1 and L2 compared to their ST PHKor counterparts. who, at that point in time, were newly exposed to the non-native PhilE variety.

It thus seems, based on the apparent-time results of phonetic drift in the interlanguage (that is, by contrasting short-term vs. long-term trends in L1 and L2 VOT), that rapid phonetic drift in the L2 can potentially occur in a dissimilatory manner at the early stages of non-native L2 speech acquisition, which gradually becomes more assimilatory as it moves more closely to community norms with prolonged exposure to, or increased degree of linguistic interaction in, the ambient L2 setting.

4.2 Fundamental frequency at vowel onset (f_0 onset)

4.2.1 Variation according to phonation type and speech style

Looking at overall trends in f_0 onset (see Table 11 and Figure 13 below), the PHKor group produced an overall mean f_0 onset of 200Hz, which was higher than the mean f_0 onset values of 176Hz and 182Hz produced by the SGKor and FIL groups, respectively. But based on the Bark normalized *z*-scores, the PHKor group in fact produced lower overall mean f_0 onset for English stops compared to the SGKor group, although this difference was not statistically significant [$t(1634)=0.38, p=0.70159$]. The PHKor group's overall mean *z*-score, however, remained higher compared to the FIL group, although the difference in their values was also not significant [$t(2863)=0.39, p=0.69976$].

More fine details of variation were observed from the interaction between phonation and speech style. In formal speech, the PHKor group produced significantly lower mean f_0 onset compared to the SGKor group for all stop types; compared to the FIL group, they produced higher mean f_0 onset for voiced stops, but lower mean f_0 onset values for voiceless and unaspirated stops. Meanwhile, in informal speech, the PHKor group produced higher mean f_0 onset than the SGKor group for voiceless stops, but showed no significant difference for voiced stops. Compared to the FIL group, they showed no significant overall difference in mean f_0 onset in the production of voiceless and unaspirated stops.

We now turn to the variation in Korean f_0 onset. Based on Table 13 below, the PHKor group produced a mean f_0 onset of 202Hz for Korean stops in word-initial position, about 6Hz higher than the 196Hz produced by the SGKor group, and almost equivalent to the 200Hz average for English stops.

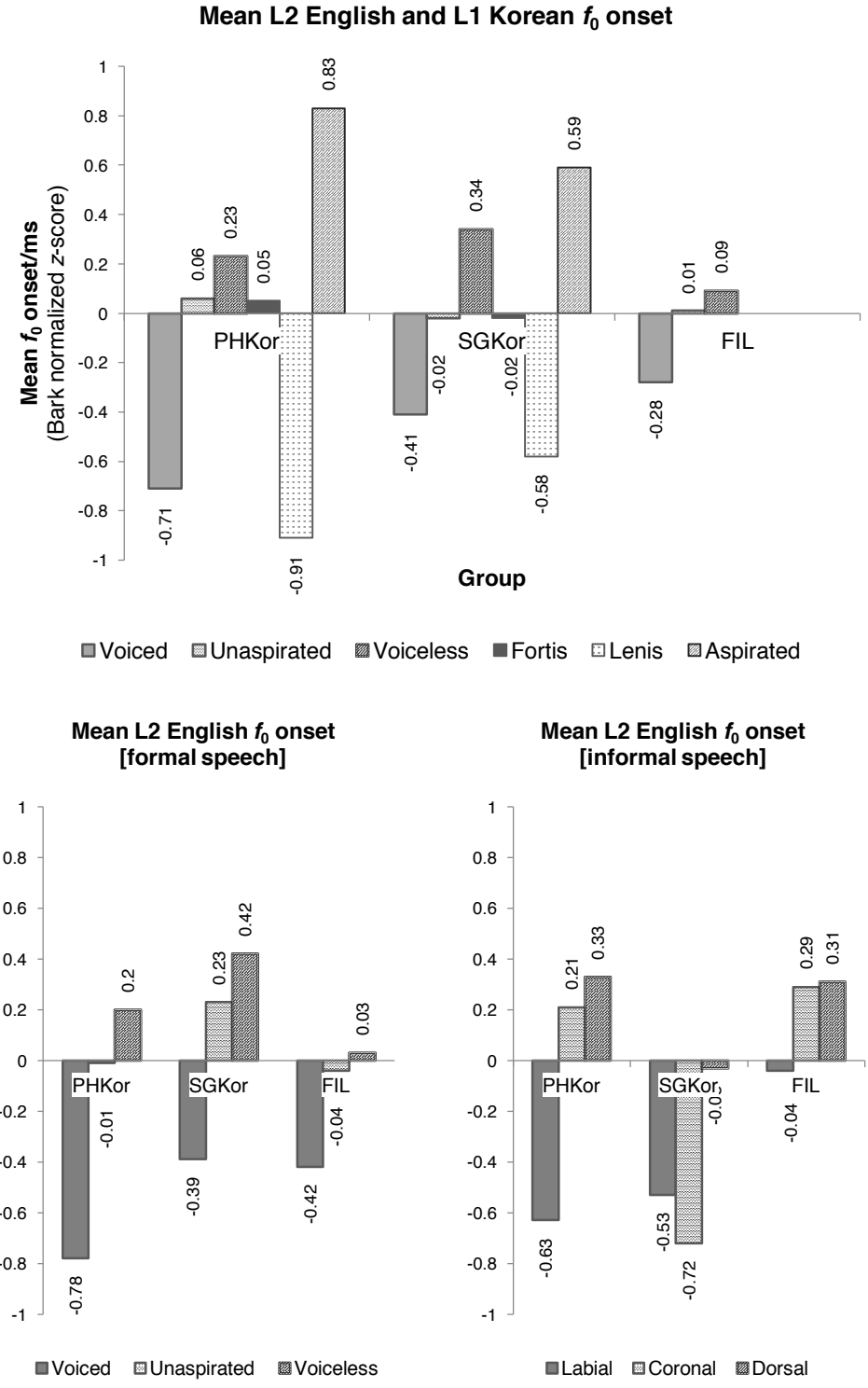


Figure 13: Mean word-initial L2 English and L1 Korean f_0 onset (in Bark normalized *z*-scores) across different phonation types. English VOT data comprises stop tokens produced in both formal and informal speech styles.

But if we look at their normalized *z*-scores, the mean f_0 onset values for both groups (PHKor: z=0.00, σ=0.97, n=328; SGKor: z=0.01, σ=88, n=87) did

not differ significantly from one another [$t(413)=0.09$, $p=0.92661$]. Zooming into phonation type, no significant differences in mean f_0 onset were found for fortis stops [$t(135)=0.49$, $p=0.6271$] and aspirated stops [$t(140)=1.37$, $p=0.17355$], despite the PHKor group producing overall higher mean f_0 onset values for both phonation types. The PHKor group's mean f_0 onset for lenis stops, however, was significantly lower [$t(134)=3.05$, $p=0.00275$] – a finding that corresponds to the lowering of f_0 onset in their English voiced stops.

Table 11: Comparison of the participants' mean English word-initial f_0 onset values (raw values, in Hz) across different phonation types, sorted by speech style. Unaspirated stops were produced in [#s/ptk/_] position.

		Phonation type			
		Voiced	Unaspirated [#s/ptk/_]	Voiceless	Combined
Formal speech	PHKor	179 (49)	197 (64)	204 (64)	199 (63)
	SGKor	169 (61)	184 (64)	182 (65)	177 (64)
	FIL	170 (37)	183 (44)	186 (50)	182 (48)
Informal speech	PHKor	184 (53)	212 (53)	214 (57)	203 (57)
	SGKor	165 (61)	177 (62)	172 (68)	170 (65)
	FIL	175 (52)	185 (42)	189 (46)	184 (43)
Combined	PHKor	181 (51)	201 (62)	206 (63)	200 (61)
	SGKor	168 (61)	183 (63)	181 (66)	176 (64)
	FIL	172 (37)	183 (43)	186 (49)	182 (46)

Table 12: Comparison of the participants' mean English word-initial f_0 onset values (raw values, in Hz) across different phonation types, sorted by gender.

		Phonation type			
		Voiced	Unaspirated [#s/ptk/_]	Voiceless	Combined
Female	PHKor	218 (31)	241 (39)	250 (43)	242 (42)
	SGKor	213 (26)	228 (29)	236 (23)	226 (27)
	FIL	205 (29)	222 (20)	220 (35)	217 (33)
Male	PHKor	130 (18)	143 (40)	152 (33)	147 (33)
	SGKor	103 (29)	107 (10)	111 (15)	108 (21)
	FIL	148 (20)	150 (26)	155 (40)	153 (34)
Combined	PHKor	181 (51)	201 (62)	206 (63)	200 (61)
	SGKor	168 (61)	183 (63)	181 (66)	176 (64)
	FIL	172 (37)	183 (43)	186 (49)	183 (46)

Table 13: Comparison of the participants' mean Korean word-initial f_0 onset values (raw values, in Hz) across different phonation types, sorted by gender.

		Phonation type			
		Fortis	Lenis	Aspirated	Combined
Female	PHKor	254 (29)	217 (17)	274 (43)	249 (39)
	SGKor	237 (45)	215 (14)	264 (45)	239 (41)
Male	PHKor	143 (21)	125 (12)	161 (26)	143 (25)
	SGKor	134 (20)	106 (10)	149 (19)	132 (24)
Combined	PHKor	205 (61)	177 (49)	224 (67)	202 (62)
	SGKor	191 (63)	178 (54)	216 (68)	196 (63)

4.2.2 Place of articulation

We now examine the variation in English f_0 onset according to place of articulation, using normalized *z*-scores illustrated in Figure 14 below (see Tables 14 and 15 below for the raw mean f_0 onset values). It was found that the PHKor and SGKor groups exhibited no significant differences in mean f_0 onset for word-initial English stops for all places of articulation [$t(850)=0.30$, $p=0.76489$]. Moreover, when the PHKor group was compared with the FIL group, a similar trend was observed except in the production of labial stops, in which the mean f_0 onset of the former group was deemed marginally higher [$t(646)=1.97$, $p=0.04944$]. If we, however, look at the overall trends in the data, all groups appear to exhibit rather similar patterns of L2 tonal contrast.

We now turn to the variation in Korean f_0 onset. Raw mean f_0 onset values and normalized *z*-scores are respectively summarized in Table 15 and Figure 14 below. Based on the overall trends, no significant cross-group differences in mean f_0 onset were found for Korean stops across all places of articulation, indicating that place of articulation may not be a significant predictor of variation in L1 tonal contrast between the two groups.

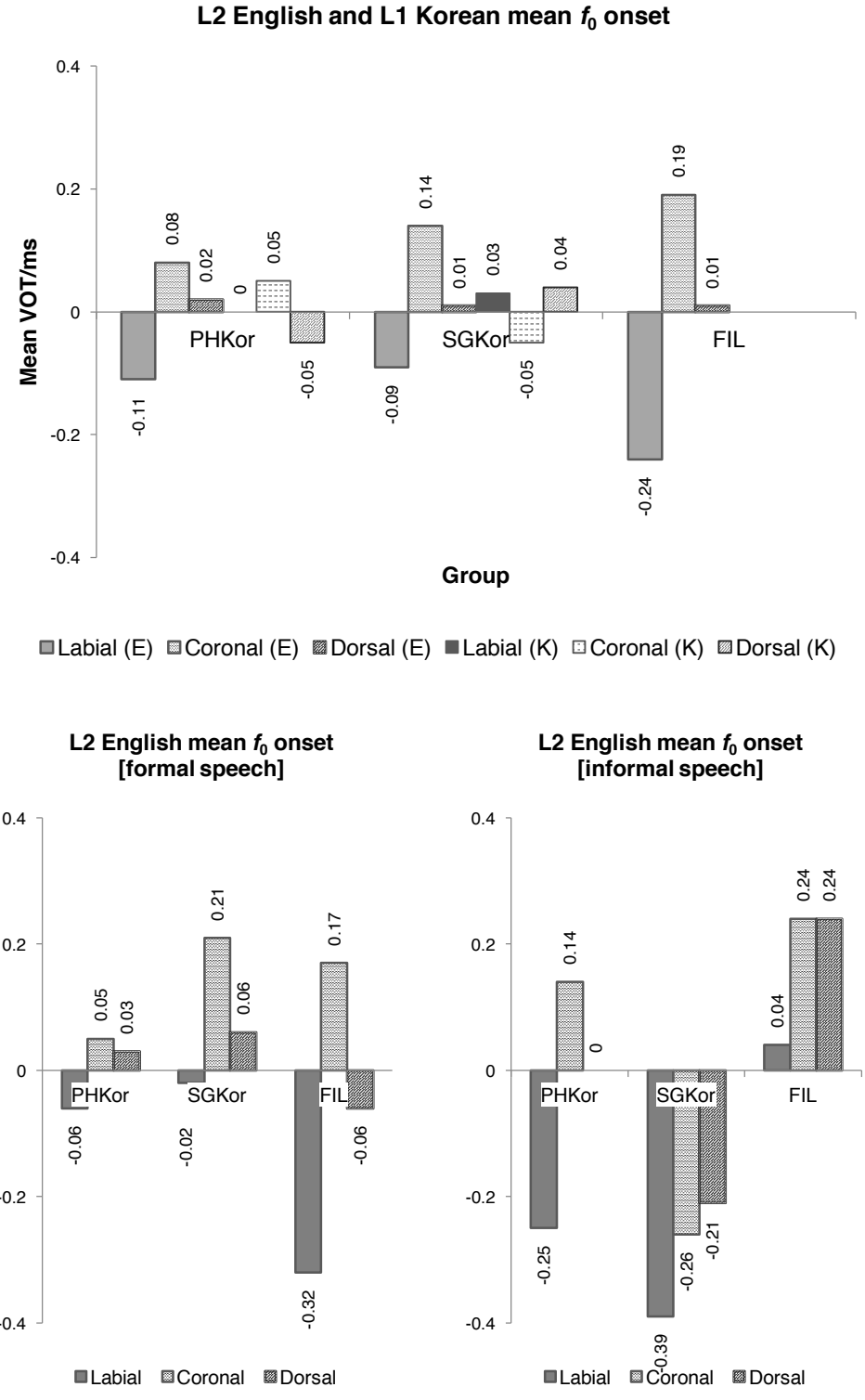


Figure 14: Mean word-initial L2 English and L1 Korean f_0 onset (in Bark normalized z-scores) across different places of articulation. English VOT data comprises stop tokens produced in both formal and informal speech styles.

Table 14: Comparison of the participants' mean English word-initial f_0 onset values (raw values, in Hz) across different places of articulation, sorted by speech style.

		Place of articulation			
		Labial	Coronal	Dorsal	Combined
Formal speech	PHKor	197 (62)	201 (64)	199 (62)	199 (63)
	SGKor	176 (64)	179 (64)	177 (62)	177 (64)
	FIL	174 (42)	189 (56)	182 (42)	182 (47)
Informal speech	PHKor	200 (57)	211 (55)	198 (58)	203 (57)
	SGKor	152 (63)	175 (65)	183 (63)	170 (65)
	FIL	171 (35)	189 (48)	190 (41)	184 (43)
Combined	PHKor	198 (61)	204 (62)	198 (61)	200 (61)
	SGKor	172 (64)	178 (64)	178 (62)	176 (64)
	FIL	174 (40)	189 (54)	184 (42)	182 (46)

Table 15: Comparison of the participants' mean English and Korean word-initial f_0 onset values (raw values, in Hz) across different places of articulation, sorted by gender.

			Place of articulation			
			Labial	Coronal	Dorsal	Combined
L2 English	Female	PHKor	237 (42)	245 (42)	243 (40)	242 (41)
		SGKor	224 (36)	229 (26)	225 (26)	226 (30)
		FIL	208 (30)	223 (36)	217 (29)	216 (33)
	Male	PHKor	143 (33)	148 (33)	146 (33)	146 (33)
		SGKor	107 (28)	108 (15)	107 (12)	107 (20)
		FIL	147 (23)	159 (47)	154 (23)	153 (34)
	Combined	PHKor	198 (61)	204 (62)	198 (61)	200 (61)
		SGKor	172 (64)	178 (64)	178 (62)	176 (64)
		FIL	174 (40)	189 (54)	184 (42)	182 (46)
L1 Korean	Female	PHKor	250 (40)	249 (36)	247 (43)	249 (39)
		SGKor	241 (53)	248 (30)	234 (41)	239 (41)
	Male	PHKor	143 (28)	145 (26)	141 (22)	143 (25)
		SGKor	132 (22)	131 (30)	132 (23)	132 (24)
	Combined	PHKor	205 (64)	202 (61)	199 (63)	202 (62)
		SGKor	184 (68)	192 (66)	205 (59)	196 (63)

4.2.3 Phonemic contrast

I would like to discuss more patterns of variation in English f_0 onset based on phonemic contrast, which involves the interaction between phonation and place of articulation (see normalized z-scores in Figure 15 below). Comparing the PHKor and SGKor groups, the former group produced significantly lower mean

f_0 onset for /b/ [t(265)=2.15, p=0.0327], /d/ [t(149)=2.25, p=0.02609], as well as /g/ [t(248)=3.49, p=0.00057]. Marginal difference in mean English f_0 onset was observed for /t/, a voiceless coronal stop [t(374)=1.82, p=0.06925]. The latter finding is particularly interesting because one, /t/ was the only voiceless stop produced by the PHKor group that showed substantial contrast in tone vis-à-vis the SGKor group; two, the tonal contrast observed seems to parallel the VOT contrast for the same phoneme (refer to Section 4.1.3, p. 65). Meanwhile, comparing the PHKor group with the FIL group, no obvious pattern of variation in mean f_0 onset data was observed. But even within the FIL group, there is no obvious or discernible pattern in f_0 onset, suggesting that f_0 onset might not play any significant role in phonemic contrast in PhilE.

Turning to the variation in Korean f_0 onset, the PHKor group (compared to the SGKor group) produced significantly lower mean f_0 onset values for only /p/ [t(41)=3.72, p=0.0006] and /k/ [t(48)=2.20, p=0.0323]; no significant differences in mean f_0 onset were found for /t/ [t(41)=0.03, p=0.97903] and the rest of the phonemes: fortis /p*/ [t(44)= 0.37, p=0.71355], /t*/ [t(41)=0.14, p=0.88673], and /k*/ [t(13)=0.53, p=0.60265]; and aspirated /p^h/ [t(9)=0.98, p=0.3518], /t^h/ [t(44)= p=0.26102], and /k^h/ [t (47)=0.18, p=0.86079].

4.2.4 Stops followed by PALM/START vowel

In phonetic studies involving an interlanguage, multiple phonetic inventories, or more than one language/dialect variety, controlling for vowel is often carried out because vowel correspondence can often vary from one vowel to another and even among similar vowels across language/dialect varieties. For example, in their investigation of tonal contrast in the Korean stop system, M.-R. Kim (2012a, b) and Park (2014) designed controlled phonological environments for

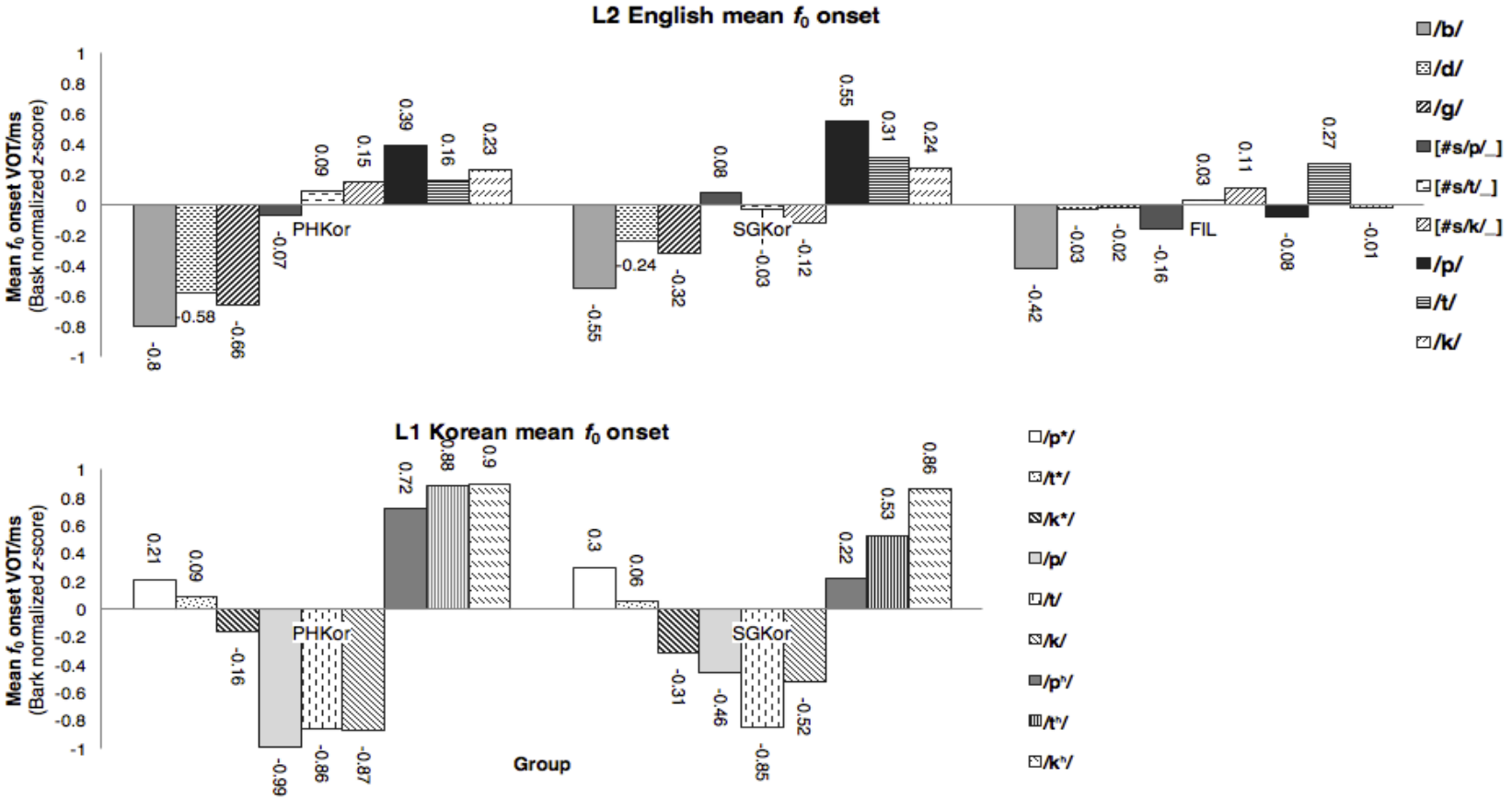


Figure 15: Mean word-initial English f_0 onset (Bark normalized z-values) for stops followed by /ɑ/, across different phonation types. Data comprises stop tokens produced in formal and informal speech styles.

stop consonants by making use of mono- or di-syllabic Korean lexical items comprising word-initial stop token each followed by an /ɑ/ vowel.

Chang (2012) noted that the vowels /i, ɪ, e, ɛ, ʊ, ʌ/ in English are, across dialects, most similar to the same vowels in Korean in the *F*1 x *F2* space, so the potential influence of English is similar across dialects. The English /ɑ o u/ vowels, however, exhibit salient disparity across fronting and non-fronting dialects, so they might influence or affect the way speakers of English acquire L2 Korean. Similarly, we would expect Korean learners of L2 English to manifest varying patterns of speech production, especially when exposed to non-native varieties like PhilE. In terms of vowel positioning in the *F1* x *F2* space, PhilE is notable for its *coalesced* category /ɑ/ (Tayao, 2004), which merges two General AmE phonemes, /æ/ (e.g., *pass* [pæs] is realized as [pɑs]) and /ʌ/ (e.g., *cut* [kʌt] is realized as [kɑt]) (refer to Figure 6, p. 45 for the comparative vowel charts of PhilE and General AmE).

But it must be noted that the methodology and descriptive analysis of f_0 onset employed by the present study did not control for Vowel. Thus, to grasp a fair comparison of results from previous works and the present study, all English stops followed by /ɑ/ – PALM or START vowels, in Wells' (1982) terms – were singled out and analyzed separately (total *n*=673). For ease of reference, the PALM and START variants of /ɑ/ were collapsed under one lexical set, **PALM**. Figure 16 and Table 16 below illustrate the mean f_0 onset values for English stops followed by PALM, categorized by phonation type.

Based on the normalized *z*-scores, the overall mean f_0 onset for English stops produced by the PHKor group (z=–0.06) was marginally lower compared to the SGKor group (z=0.08) [$t(490)$=1.92, p=0.05604]. Zooming into each type

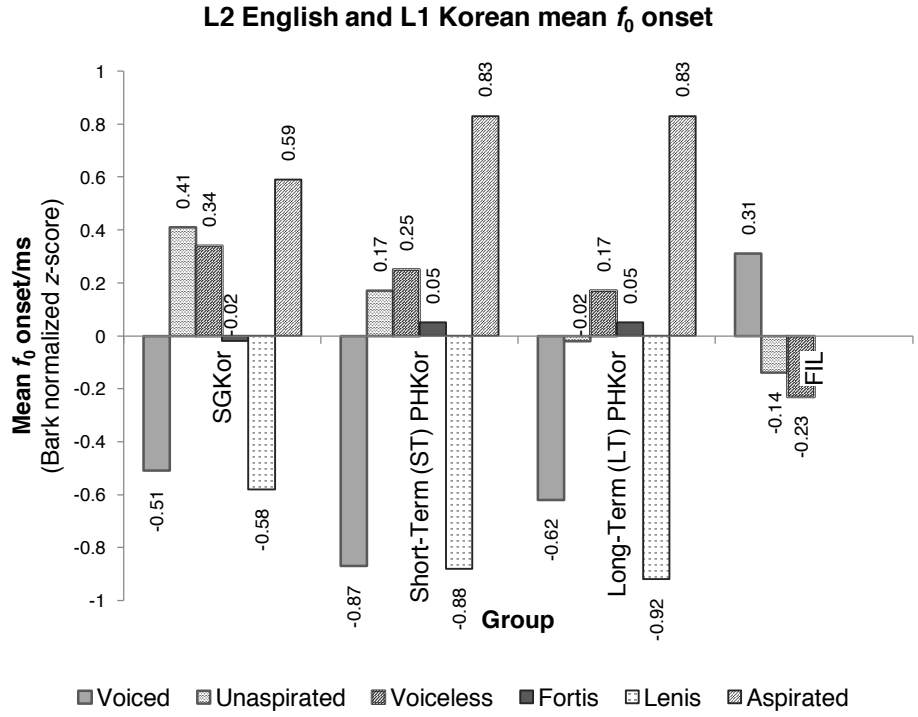


Figure 16: Mean word-initial English f_0 onset (Bark normalized z-values) for stops followed by /ɑ/, across different phonation types. Data comprises stop tokens produced in formal and informal speech styles.

Table 16: Comparison of the participants' mean Korean word-initial f_0 onset values (raw values, in Hz) for stops followed by /ɑ/, across different phonation types, sorted by gender.

		Phonation type			
		Voiced	Unaspirated [#s/ptk/_]	Voiceless	Combined
Female	PHKor	220 (38)	229 (38)	250 (49)	243 (47)
	SGKor	212 (23)	238 (32)	238 (19)	230 (25)
	FIL	222 (10)	216 (13)	215 (25	216 (22)
Male	PHKor	130 (14)	142 (40)	145 (35)	143 (40)
	SGKor	98 (6)	110 (2)	109 (9)	106 (10)
	FIL	159 (21)	145 (19)	140 (17)	144 (19)
Combined	PHKor	166 (52)	192 (58)	197 (67)	194 (65)
	SGKor	170 (58)	191 (68)	184 (66)	180 (64)
	FIL	176 (34)	181 (40)	177 (43)	178 (42)

of phonation, however, reveals that the PHKor group produced significantly lower mean f_0 onset values for voiceless [$t(317)=3.79$, $p=0.00022$] and unaspirated stops [$t(93)=2.83$, $p=0.00569$], but not for voiced stops [$t(22)=1.08$, $p=0.29276$]. And compared to the FIL group, the PHKor group produced

significantly different (lower) mean f_0 onset for voiced [$t(29)=2.67, p=0.01237$] and voiceless stops [$t(313)=2.49$, $p=0.01347$], but not for unaspirated stops [$t(119)=0.06, p=0.95484$].

Turning to English f_0 onset, stops preceding /ɑ/ showed rather more clear-cut patterns of variation. Based on the raw mean f_0 onset values in Table 16 above, the PHKor group produced marginally higher mean f_0 onset values for voiceless (197Hz) and unaspirated stops (192Hz) compared to the SGKor group (184Hz and 191Hz, respectively). But if we look at the normalized *z*-scores, the former group in fact exhibited overall lower L2 tonal contrast patterns for the same types of stops.

4.2.5 Study program and Length of study (LOS)

The data in Figure 16 above also illustrates the variation in English f_0 onset between the ST and LT PHKor students. Based on the Bark normalized *z*-scores, the ST PHKor group's overall trends in mean f_0 onset appeared to be more similar to the SGKor group. In contrast, the LT PHKor group's trends in f_0 mean onset for voiceless and unaspirated stops appeared to be more similar to the FIL group, evidenced by their lower *z*-scores visa-à-vis the ST PHKor group. Moreover, if we look at the LT PHKor group's production of voiceless and unaspirated stops, their f_0 onset patterns appear to correspond to their VOT patterns (the group's lowering of f_0 onset seems to be occurring or have occurred in conjunction with their shortening of VOT).

We now turn to the differences in Korean f_0 onset patterns between the LT and ST PHKor groups (also see Figure 16 above). Based on the LT and ST PHKor groups' normalized *z*-scores, no significant differences in mean f_0 onset were found for all phonation types [fortis: $t(90)=0.45$, $p=0.65495$; lenis:

$t(108)=0.02$, $p=0.98782$; aspirated $t(56)=0.02$, $p=0.98124$]. Also, there were no significant cross-group differences involving the SGKor group except in the production of lenis stops, wherein the mean f_0 onset values of both PHKor groups were significantly lower [LT PHKor *v* SGKor: $t(98)= 2.84$, $p=0.00551$; ST PHKor *v* SGKor: $t(63)=2.54$, $p=0.01344$].

Another interesting observation involves the production of Korean aspirated stops produced by the LT and ST PHKor groups, since both their mean f_0 onset values were higher compared to the SGKor group. Although the mean f_0 onset differences were not statistically significant [LT PHKor *v* SGKor: $t(104)=1.37$, $p=0.17484$; ST PHKor *v* SGKor: $t(65)=1.04$, $p=0.30424$], these Korean f_0 onset patterns did not correspond to the English ones (both LT and ST PHKor students produced overall lower f_0 onset for English voiceless stops). Furthermore, these f_0 onset patterns also do not seem to parallel the VOT patterns observed for either English or Korean (PHKor students produced shorter overall mean VOT for both English voiceless stops and Korean aspirated stops).

We now look at the variation in English and Korean f_0 onset according to length of study in years (LOS). Like the VOT case, analysis of inter-speaker variation in f_0 onset was not possible with the SGKor and FIL groups. Based on the PHKor group's overall English f_0 onset data, no significant changes with increasing LOS were observed. But narrowing down the analysis to English stops followed by a PALM vowel has revealed that the overall mean f_0 onset significantly decreased with increasing LOS ($R=-0.1868$, $p<0.001$, $R^2=0.0349$) see Figure 17 below). Although the variance explained is small, we can still observe that students who were or have been studying in the Philippines for a

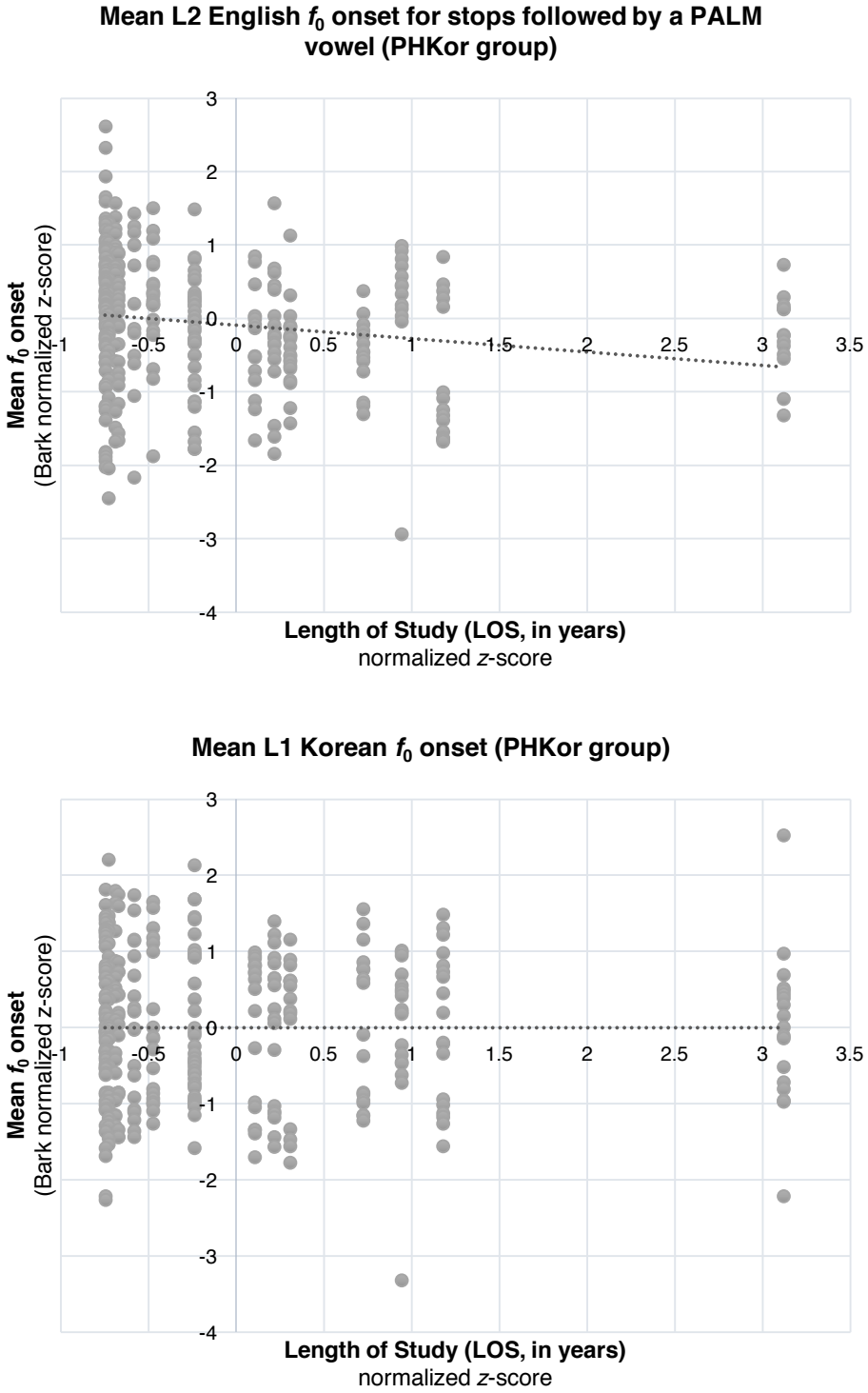


Figure 17: PHKor mean word-initial L2 English (PALM) and L1 Korean f_0 onset (in Bark normalized *z*-score) sorted by LOS (in years). The average LOS for the PHKor group is 5.35 years (σ=4.84); however, one participant (i.e., **F5**) has been living and studying in the country for almost 18 years (*z*=3.12).

much longer time were not only producing shorter VOTs, but also lower f_0 onset. For Korean f_0 onset, however, no significant changes in mean f_0 onset

with increasing LOS were observed, based on the overall trend in the data (also see Figure 17 above).

4.2.5 Interim summary and discussion

Inter-speaker variation in terms of overall mean f_0 onset was not statistically significant, suggesting that all participant groups were producing stops with tonal contrast patterns that lie within a comparable pitch range. Nonetheless, the PHKor group produced f_0 onset values that were, on average, lower and higher compared to the SGKor and FIL groups, respectively. Thus, the PHKor group's patterns of tonal contrast could be considered 'intermediate' and possibly undergoing a state of flux (like the earlier findings in Section 4.1 on consonantal contrast in English). In other words, the patterns of tonal contrast in the PHKor group, relatively to the patterns exhibited by the SGKor and FIL groups, point to a possible downward L2 phonetic drift, in approximation to the f_0 onset of stops in PhilE.

Looking at Korean f_0 onset data, the PHKor group produced overall higher raw mean f_0 onset compared to the SGKor group; based on Bark normalized *z*-scores, however, both groups did not differ significantly from one another. In fact, f_0 onset patterns only became apparent when data figures were narrowed down to each phonation type, which showed that significant variation in f_0 onset occurred only in the production of lenis stops. While no other patterns of variation were deemed significant, this finding is unique in that it corresponds to the apparent-time lowering of f_0 onset in English voiced stops – suggesting a possible L2-to-L1 interference brought about by linguistic exposure to the ambient PhilE setting.

As mentioned earlier, phonation and speech style had significant effects on f_0 onset. English voiced stops produced by PHKor students in formal speech were found to diverge in relation to the voiced stops produced by both SGKor and FIL groups, suggesting that downward but dissimilatory L2 phonetic drift might be taking place. Interestingly, assimilatory L2 drift was also observed in the case of voiceless and voiceless stops in informal speech, suggesting that PHKor students were more likely to drift closer to PhilE pronunciation norms when paying less attention to speech.

For both English and Korean data, place of articulation did not appear to be significant to the variation in f_0 onset since based on the overall trends, all participant groups exhibited the same pitch range for each place of articulation. This finding, however, is unsurprising given that in English, consonantal articulatory features in the oral cavity play no direct role in vocalic/tonal contrast because such contrast is principally achieved by varying the rate of vibration of the vocal folds in the larynx.

In terms of phonemic contrast in English, the PHKor group exhibited significant variation in f_0 onset with the SGKor group but not with the FIL group (primarily due to the FIL group exhibiting no systematic pattern of variation in f_0 onset). Compared to the SGKor group, the PHKor group produced marginally lower mean f_0 onset for /t/ – an interesting finding, since it appears to occur in conjunction with their shortening of VOT for the same phoneme. Turning to the variation in Korean f_0 onset, the PHKor group also produced significantly lower mean f_0 onset for /p/ and /k/. This, however, seems more like a case of downward phonetic drift at the level of phonation (as opposed to phoneme), since both /p/ and /k/ are lenis stops – they correspond to the much lower f_0 onset of the FIL

group's voiced stops.

Narrowing down the analysis to English stops preceding /ɑ/ yielded more clear-cut patterns of variation in f_0 onset. The PHKor group exhibited tonal contrast patterns for voiceless and unaspirated stops that significantly differed from the SGKor group, producing the stops at much lower f_0 onset values. Furthermore, the former group's trends in f_0 onset for voiceless and unaspirated stops appeared to be more similar to the FIL group based on apparent time evidence, i.e., LT PHKor students were producing lower mean f_0 onset compared to ST PHKor and SGKor students (see Figure 15 above). More interestingly, the PHKor group's lowering of mean f_0 onset for voiceless and unaspirated stops also appeared to parallel the apparent-time reduction in mean VOT for the same stops. This finding suggests that LOS may also be a significant predictor of changes or variations in f_0 onset among Korean learners of L2 English, although it must be acknowledged that if we consider all other vowel types, the overall variation in tonal contrast (measured in f_0 onset) does not become as clear-cut anymore – not as clear-cut as variation in consonantal (VOT) contrast.

4.3 Linear mixed effects regression analysis

This section hopes to provide a more comprehensive account of intra- and inter-speaker variation in L1 and L2 speech production. Data from the Filipino participants are not further analyzed in this section, since the main objective here is to narrow down the discussion to the description and explanation of VOT and f_0 onset variation in the L1 and L2 stop systems of the Korean learners.

Four main data sets were collected. From these, 10 statistical models were created and analyzed with linear mixed effects regression using **rbrul**

(Johnson, 2009), a software package specifically designed for analyzing quantitative sociolinguistic data. rbrul is compatible with R (Venables & Smith, 2005), a language for statistical computing. Of the 10 statistical models, two models of VOT (i.e., $EngVOT_1$ and $KorVOT_1$) and three models of f_0 onset (i.e., $EngF0_1$, $EngPALM_1$ and $KorF0_1$) were designed to investigate intra-speaker variation in the PHKor group. The remaining five models, which combined both PHKor and SGKor data (see Table 17 below), were created to point out significant patterns of inter-speaker variation.

All models included the following predictor variables: **Phonation**, **Place**, **Gender**, and the **Phonation:Place** interaction (i.e., phonemic contrast) as fixed effects; **Participant** as a random effect; and **Age** as a continuous fixed effect. All regression models used normalized *z*-scores for Age. The following effects were then added, depending on the nature of the data set: **Style**, **Dialect**, and **Group** as fixed effects; Length of study (**LOS)** as a fixed continuous effect, with normalized *z*-scores; and **Word** as a random effect, to account for potential lexical variation. Moreover, fixed interactions with Group and with Gender were also added to models comprising both PHKor and SGKor data. Tables 18 and 19 below summarize the variable assignments for each regression model.

It must be noted that the categorical variable **Program** (Long-Term/LT study vs Short-Term/ST study) – described in Chapter 3 and discussed quite extensively in Sections 4.1 and 4.2 – was excluded from the regression analysis. Removing the variable somehow mitigates the lack of categorical (i.e., LT *v* ST) overlap between the group of intensive ESL PHKor students (all of whom were on ST stay in the same Korean-run private school) and the group of tertiary PHKor students (all of whom were on LT study at the same local university).

Another reason why Program was excluded was because it exhibited high, data-based multicollinearity (v.i.f. > 5) with two factors of *linguistic exposure*, namely **Interaction with Filipino peers** (how often they interacted with Filipino friends/other peers) and **Formal learning involvement** (how actively they participated/were involved in their formal L2 learning). These variables, whose values were taken from the language background questionnaires, were added to the regression models instead. (The questionnaires are found in Appendixes 1-3, pp. 171-184.)

In fact, both Interaction and Involvement exhibited linguistic exposure effects on both the PHKor students' L1 and L2 speech production (see Figure 18 below). The overall data showed significant decrease in both mean English and Korean VOTs with increasing level of interaction with Filipino peers. Similar trends in both English and Korean VOTs were observed with increasing frequency of involvement in formal L2 learning. Thus, based on these trends, incorporating the variables to the PHKor regression models seemed more ideal because they provide more clear-cut categorical measures of the degree of the PHKor students' exposure to their ambient, non-native L2 setting.

Table 17: Data sets and regression models used to analyze L2 English and L1 Korean VOT and f0 onset. *For models EngPALM1 and EngPALM2, only English stops followed by a PALM vowel were included. The subscript 1 refers to the first series of regression models, which involve PHKor data, while the subscript 2 refers to the second series involving both PHKor and SGKor data.

	Regression models	
Data set	PHKor group (Series #1)	PHKor *v* SGKor (Series #2)
English VOT	**$EngVOT_1$**	**$EngVOT_2$**
English f_0 onset*	**$EngF0_1$** **$EngPALM_1$**	**$EngF0_2$** **$EngPALM_2$**
Korean VOT	**$KorVOT_1$**	**$KorVOT_2$**
Korean f_0 onset	**$KorF0_1$**	**$KorF0_2$**

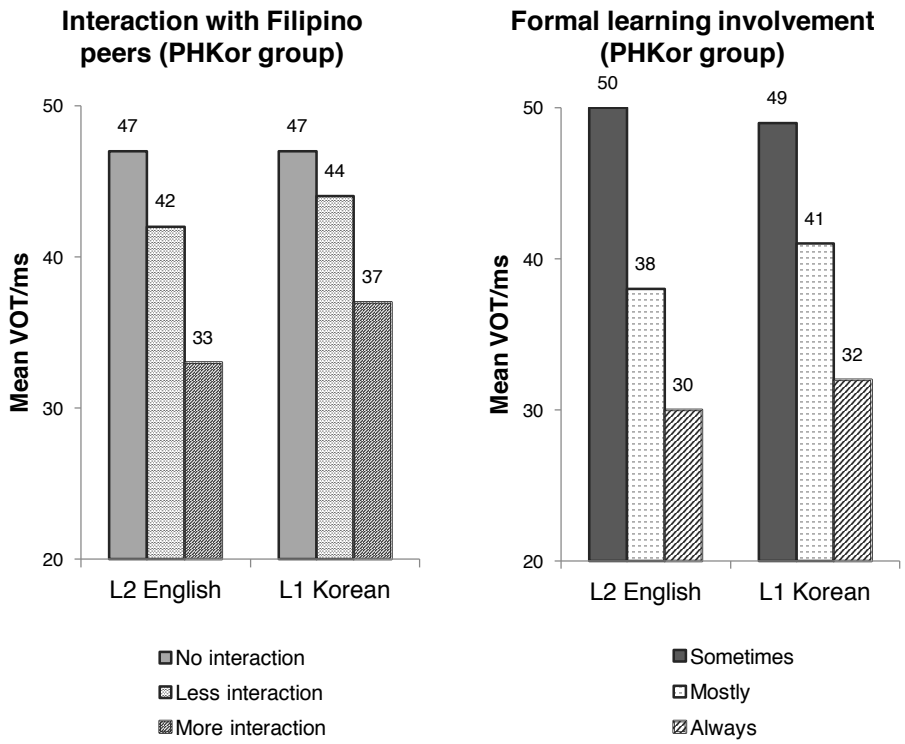


Figure 18: PHKor mean word-initial L2 English and L1 Korean VOT (in ms) across different frequencies of interaction with Filipino peers and involvement in formal L2 learning. English VOT data comprises stop tokens produced in formal and informal speech styles.

Table 18: Predictor variable assignments for the PHKor group regression models.

Predictor variables			Eng VOT_1	Eng $F0_1$	Eng $PALM_1$	Kor VOT_1	Kor $F0_1$
Fixed	Phonation		•	•	•	•	•
	Place		•	•	•	•	•
	Gender		•	•	•	•	•
	Style		•	•	•		
	Dialect			•	•		•
	Interaction		•	•	•	•	•
	involvement		•	•	•	•	•
Fixed interaction	Phonation	Place	•	•	•	•	•
	Gender	Phonation		•	•		•
		Place		•	•		•
		Dialect		•	•		•
		Style		•	•		
Fixed continuous	Age		•	•	•	•	•
	LOS		•	•	•	•	•
Random	Participant		•	•	•	•	•
	Word		•	•	•		

Table 19: Predictor variable assignments for the PHKor *v* SGKor regression models.

Predictor variables			Eng VOT_2	Eng $F0_2$	Eng $PALM_2$	Kor VOT_2	Kor $F0_2$
Fixed	Phonation		•	•	•	•	•
	Place		•	•	•	•	•
	Gender		•	•	•	•	•
	Style		•	•	•		
	Dialect			•	•		•
	Group		•	•	•	•	•
Fixed interaction	Phonation	Place	•	•	•	•	•
	Group	Phonation	•	•	•	•	•
		Place	•	•	•	•	•
		Gender	•	•	•	•	•
		Dialect		•	•		•
	Gender	Phonation		•	•		•
		Place		•	•		•
		Dialect		•	•		•
		Style		•	•		
Fixed continuous	Age		•	•	•	•	•
Random	Participant		•	•	•	•	•
	Word		•	•	•		

4.3.1 Intra-speaker variation: modelling PHKor data

4.3.1.1 L2 English VOT and f_0 onset

Tables 20 and 21 below provide a detailed summary of the best step-down $EngVOT_1$ and $EngF0_1$ models for the PHKor group's English data. The best step-down $EngVOT_1$ model with a goodness-of-fit (R^2) score of 0.672 revealed two significant internal predictors of variation in English VOT, namely Phonation (p=9.64e-40) and Place (p=1.8e-07). Three external predictors were also deemed statistically significant: Age (p=0.00476) + Interaction (with Filipino peers) (p=0.0114) + (Formal learning) Involvement (p=0.037).

Turning to the variation in English f_0 onset, the best step-down $EngF0_1$ model differed significantly between males and females; so, fixed interactions with Gender (i.e., Gender:Phonation, Gender:Place, and Gender:Dialect) were

considered in a post-hoc stepwise analysis. None of the resulting statistical models, however, produced any significantly better fit to the data.

The findings in Section 4.2.4 showed a significant trend in the patterns of tonal contrast involving English stop consonants followed by a PALM vowel. Thus, to further examine the patterns of variation in f_0 onset for these stops, all these sample tokens were extracted and analyzed separately in rbrul. The best step-down EngPALM$_1$ model (R^2=0.258, see Table 22 below) revealed three significant predictors of variation in f_0 onset, namely LOS (p=0.00129), Phonation (0.00855), and Interaction (0.0365). No fixed interactions involving Gender produced any significantly better fit to the data, based on a chi-square test [χ^2=5.97, d.f.=3, p=0.113].

4.3.1.2 L1 Korean VOT and f_0 onset

A stepwise analysis of the Korean VOT data resulted in a mismatch between the best step-up and step-down models. In this section, I discuss both. As shown in Table 23 below, the best step-down KorVOT$_1$ model (R^2=0.767) suggested three significant predictors of variation in Korean VOT: Phonation (p=7.53e-93), Place (p=9.53e-11), and Involvement (0.0401). On the other hand, the best step-up model with a goodness-of-fit (R^2) score of 0.767 (see Table 24 below) revealed the same significant predictors, namely Phonation (p=3.73e-85), Place (p=9.62e-11), and Involvement (p=0.0401), but also included Gender (p=0.0218). But since the analysis produced mismatched step-up and step-down models, a chi-square test was performed to determine the KorVOT$_1$ model that produced a better fit to the data. Based on the test, the step-up regression analysis produced the overall better-fit model with a significantly lower deviance.

Table 20: Best step-down $EngVOT_1$ model of L2 English VOT.
Predictors: Participant [random, not tested] and Word [random, not tested] and Phonation (9.64e-40) + Place (1.8e-07) + Age (0.00476) + Interaction with Filipino peers (0.0114) + Formal learning involvement (0.037) [p-values dropping from full model]

Deviance=17837.004; Log likelihood=-8918.502; d.f.=13; Grand mean=40.092ms				
Predictor variable		**Coefficient**	**Tokens**	**Mean VOT**
Phonation	Voiceless	22.344	1341	54.375
	Unaspirated	-2.052	289	26.198
	Voiced	-20.292	438	5.528
Place	Dorsal	5.138	730	47.417
	Coronal	3.716	768	44.761
	Labial	-8.854	570	24.419
Interaction with Filipino peers	No interaction	4.509	614	47.249
	Less interaction	1.811	693	41.683
	More interaction	-6.320	761	32.868
Formal learning involvement	Sometimes	7.076	496	49.752
	Mostly	-1.318	1365	41.683
	Always	-5.759	207	32.868
Age	(continuous) +1	4.548		

Table 21: Best step-down $EngF0_1$ model of L2 English f_0 onset.
Predictors: Participant [random, not tested] and Word [random, not tested] and Phonation (1.15e-17) + Style (0.000191) [p-values dropping from full model]

Deviance=5450.946; Log likelihood=-2725.473; d.f.=7; Grand mean=0.007				
Predictor variable		**Coefficient**	**Tokens**	**Mean f_0 onset**
Phonation	Voiceless	0.380	1341	0.231
	Unaspirated	0.285	289	0.055
	Voiced	-0.664	438	-0.711
Style	Informal	0.119	607	-0.008
	Formal	-0.119	1461	0.014

Table 22: Best step-down $EngPALM_1$ model of L2 English f_0 onset.
Predictors: Participant [random, not tested] and Word [random, not tested] and LOS (0.00129) + Phonation (0.00855) + Interaction with Filipino peers (0.0365) [p-values dropping from full model]

Deviance=784.296; Log likelihood=-392.148; d.f.=9; Grand mean=-0.064				
Predictor variable		**Coefficient**	**Tokens**	**Mean f_0 onset**
Phonation	Voiceless	0.423	221	0.032
	Unaspirated	0.088	76	-0.142
	Voiced	-0.511	20	-0.836
Interaction with Filipino peers	Less interaction	0.187	98	0.112
	No interaction	-0.028	98	-0.021
	More interaction	-0.159	121	-0.242
LOS	(continuous) +1	-0.221		

Meanwhile, the best step-down $KorF0_1$ model for Korean f_0 onset (R^2=0.529, see Table 25 below) only revealed one significant predictor of

variation in f_0, Phonation (1.66e-54). Like the stepwise analysis of the $EngF0_1$ and $EngPALM_1$ models, no significant gender effects were observed in the $KorF0_1$ model, even when three fixed interactions with Gender (Gender:Phonation, Gender:Place, and Gender:Dialect) were included.

Table 23: Best step-down $KorVOT_1$ model of L1 Korean VOT.
Predictors: Participant [random, not tested] and Phonation (7.53e-93) + Place (9.53e-11) + Formal learning involvement (0.0401) [p-values dropping from full model]

Deviance=2672.148; Log likelihood=-1336.074; d.f.=9; Grand mean=41.942ms				
Predictor variable		**Coefficient**	**Tokens**	**Mean VOT**
Phonation	Aspirated	23.941	111	65.454
	Lenis	6.214	107	48.478
	Fortis	-30.154	110	11.858
Place	Dorsal	7.285	108	48.661
	Coronal	-2.091	109	40.568
	Labial	-5.194	111	36.753
Formal learning involvement	Sometimes	8.325	72	48.961
	Mostly	0.777	216	41.393
	Always	-9.101	40	32.269

Table 24: Best step-up $KorVOT_1$ model of L1 Korean VOT.
Predictors: Participant [random, not tested] and Phonation (3.73e-85) + Place (9.62e-11) + Formal learning involvement (0.0401) + Gender (0.0218) [p-values building from null model]

Deviance=2667.106; Log likelihood=-1333.553; d.f.=10; Grand mean=41.942ms				
Predictor variable		**Coefficient**	**Tokens**	**Mean VOT**
Phonation	Aspirated	23.937	111	65.454
	Lenis	6.209	107	48.478
	Fortis	-30.146	110	11.858
Place	Dorsal	7.297	108	48.661
	Coronal	-2.082	109	40.568
	Labial	-5.215	111	36.753
Formal learning involvement	Sometimes	8.528	72	48.961
	Mostly	0.333	216	41.393
	Always	-8.861	40	32.269
Gender	Female	3.739	183	45.263
	Male	-3.739	145	37.749

Table 25: Best step-down $KorF0_1$ model of L1 Korean f_0 onset.
Predictors: Participant [random, not tested] and Phonation (1.66e-54) [p-values dropping from full model]

Deviance=664.642; Log likelihood=-332.321; d.f.=5; Grand mean=0.00				
Predictor variable		**Coefficient**	**Tokens**	**Mean f_0 onset**
Phonation	Aspirated	0.838	111	0.827
	Fortis	0.059	110	0.048
	Lenis	-0.897	107	-0.908

4.3.2 Inter-speaker variation: modelling PHKor v SGKor data

4.3.2.1 L2 English VOT and f_0 onset

Performing a stepwise analysis with Phonation:Place as the only fixed interaction produced the best step-down $EngVOT_2$ model (R^2=0.652) with only two significant predictors, Phonation (p=1.78e-51) and Place (p=1.03e-06). However, adding four fixed interactions involving Group (Group:Phonation, Group:Place, Group:Style, and Group:Dialect) improved the analysis, but produced a mismatch between the best step-up and step-down models. The former model did not differ from the earlier one, having the same goodness-of-fit (R^2=0.652) dropping all pairwise interactions. But the latter model (R^2=0.658, see Table 26 below) revealed three significant fixed interactional effects, namely Group:Style (p=1.56e-08), Group:Phonation (p=0.000104), and Group:Place (p=0.0137). Thus, to determine the $EngVOT_2$ model that produced a better fit to the comparison English VOT data, a chi-square test was performed. The result [χ^2=57.36, d.f.=7, p=5.07e-10] suggested that the step-down model produced a better fit, with a lower deviance of 25547.94 (d.f.=15).

Turning to the variation in English f_0 onset, the best $EngF0_2$ model (R^2=0.301) with Phonation:Place as the only fixed interaction revealed three significant predictors, namely Phonation (p=5.15e-17), Group (p=0.000133), and Style (p=0.0249). The overall goodness-of-fit of the $EngF0_2$ model, however, significantly improved (R^2=0.313) when fixed interactions involving Group were added, based on a chi-square test [χ^2=52.68, d.f.=3, p=2.14e-11]. Based on Table 28 below, the significant predictors in this model were Group:Style (p=3.6e-10) and Group:Phonation (p=7.06e-05). Fixed interactions with Gender were also added, but were eventually dropped as they did not result

in any significant improvement to the overall goodness-of-fit to the data.

Table 26: Best step-down EngVOT$_2$ model of L2 English VOT.
Predictors: Participant [random, not tested] and Word [random, not tested] and Group:Style (1.56e-08) + Group:Phonation (0.000104) + Group:Place (0.0137) + Group [main effect, not tested] + Style [main effect, not tested] + Place [main effect, not tested] + Phonation [main effect, not tested] [p-values dropping from full model]

Deviance=25547.94; Log likelihood=-12773.97; d.f.=15; Grand mean=38.553ms				
Predictor variable		**Coefficient**	**Tokens**	**Mean VOT**
Group	SGKor	1.7	842	34.775
	PHKor	-1.7	2068	40.092
Style	Informal	2.658	752	32.799
	Formal	-2.658	2158	40.559
Place	Dorsal	3.979	996	46.018
	Coronal	3.426	1062	44.110
	Labial	-7.404	852	22.901
Phonation	Voiceless	25.083	1785	55.768
	Unaspirated	-4.364	369	25.067
	Voiced	-20.719	756	4.490
Group:Place	PHKor:Dorsal	1.71	730	47.417
	SGKor:Labial	1.32	282	19.832
	SGKor:Coronal	0.39	294	42.410
	PHKor:Coronal	-0.39	768	44.761
	PHKor:Labial	-1.32	570	24.419
	SGKor:Dorsal	-1.71	266	42.179
Group:Phonation	PHKor:Unaspirated	2.950	289	26.198
	SGKor:Voiceless	2.551	444	59.975
	SGKor:Voiced	0.399	318	3.060
	PHKor:Voiced	-0.399	438	5.528
	PHKor:Voiceless	-2.551	1341	54.375
	SGKor:Unaspirated	-2.950	80	20.982
Group:Style	PHKor:Formal	3.015	1461	43.824
	SGKor:Informal	3.015	145	39.876
	PHKor:Informal	-3.015	607	31.109
	SGKor:Formal	-3.015	697	33.714

Table 27: Best step-up EngVOT$_2$ model of L2 English VOT.
Predictors: Participant [random, not tested] and Phonation (3.23e-51) + Place (1.03e-06) [p-values building from null model]

Deviance=25605.3; Log likelihood=-12802.65; d.f.=8; Grand mean=38.553ms				
Predictor variable		**Coefficient**	**Tokens**	**Mean VOT**
Place	Dorsal	4.545	996	46.018
	Coronal	2.894	1062	44.110
	Labial	-7.439	852	22.901
Phonation	Voiceless	23.916	1785	55.768
	Unaspirated	-1.989	369	25.067
	Voiced	-21.927	756	4.490

Table 28: Best step-down EngF0$_2$ model of L2 English f_0 onset.
Predictors: Participant [random, not tested] and Word [random, not tested] and Group:Style (3.6e-10) + Group:Phonation (7.06e-05) + Group [main effect, not tested] + Style [main effect, not tested] + Phonation [main effect, not tested] [p-values building from null model]

Deviance=7550.86; Log likelihood=-3775.43; d.f.=11; Grand mean=0.012				
Predictor variable		**Coefficient**	**Tokens**	**Mean f_0 onset**
Group	PHKor	0.004	2068	0.007
	SGKor	-0.004	842	0.023
Style	Formal	0.008	2158	0.037
	Informal	-0.008	752	-0.062
Phonation	Voiceless	0.367	1785	0.259
	Unaspirated	0.140	369	0.039
	Voiced	-0.507	756	-0.585
Group:Phonation	SGKor:Voiced	0.150	318	-0.411
	PHKor:Unaspirated	0.110	289	0.055
	PHKor:Voiceless	0.041	1341	0.231
	SGKor:Voiceless	-0.041	444	0.341
	SGKor:Unaspirated	-0.110	80	-0.020
	PHKor:Voiced	-0.150	438	-0.711
Group:Style	PHKor:Informal	0.151	607	-0.008
	SGKor:Formal	0.151	697	0.087
	PHKor:Formal	-0.151	1461	0.014
	SGKor:Informal	-0.151	145	-0.287

Table 29: Best step-down EngPALM$_2$ model of L2 English f_0 onset.
Predictors: Participant [random, not tested] and Word [random, not tested] and Voicing (9.19e-05) + LOS (0.00888) + Group (0.0256) [p-values building from null model]

Deviance=1205.1; Log likelihood=-602.55; d.f.=6; Grand mean=-0.009				
Predictor variable		**Coefficient**	**Tokens**	**Mean f_0 onset**
Phonation	Voiceless	0.401	342	0.41
	Unaspirated	0.045	95	-0.031
	Voiced	-0.446	85	-0.590

Meanwhile, the best step-down EngPALM$_2$ model with Phonation:Place as the only fixed interaction (R^2=0.332, see Table 29 above) revealed only one significant predictor, Phonation (p=0.000177). While additional fixed pairwise interactions were also considered, the model was not significantly improved. Pairwise interactions involving Group were dropped; those involving Gender showed no significant improvement to the overall goodness-of-fit based on a chi-square test [χ^2=7.87, d.f.=5, p=0.164].

4.3.2.2 PHKor v SGKor Korean VOT and f_0 onset

A stepwise analysis of the comparison Korean VOT data (PHKor *v* SGKor) resulted in a mismatch between the best step-up and step-down models. Based on the data illustrated in Table 30 below, the best step-down $KorVOT_2$ model (R^2=0.782) comprised two significant predictors of variation in Korean VOT, namely Place (p=5.02e-12), and Group:Phonation (p=0.00244). Meanwhile, the best step-up model (R^2=0.774) also included Phonation (p=2.91e-10) and Place (p=7.04e-12), but not Group. Between them, the step-down model was the better model (with a significantly lower deviance and higher goodness-of-fit score), based on a chi-square test [χ^2=13.038, d.f.=3, p=0.00456].

Turning to the analysis of the comparison Korean f_0 onset data, the best step-down model with Phonation:Place as the only pairwise interaction (R^2=0.493) revealed only one significant predictor, Phonation:Place (or Phoneme, p=0.00974). After adding pairwise interactions involving Group (R^2=0.501), the goodness-of-fit of the model improved (see Table 30 below), based on a chi-square test [χ^2=8.59, d.f.=3, p=0.0352]. Significant predictors in this model were Phonation:Place (p=0.00857) and Group:Phonation (p=0.0136).

4.4 General discussion of results

4.4.1 Internal factors of variation

4.4.1.1 Phonation type

Based on the discussion of results in Sections 4.1.1 and 4.2.1, and on the linear mixed effects regression analysis of all 10 statistical models presented in Section 4.3, phonation type was the most significant predictor of variation in

Table 30: Best step-up KorF0$_2$ model of L1 Korean f_0 onset.
Predictors: Participant [random, not tested] and Phonation:Place (0.00857) + Group:Phonation (0.0136) + Group [main effect, not tested] + Place [main effect, not tested] + Voicing [main effect, not tested] [p-values dropping from full model]

Deviance=943.442; Log likelihood=-421.721; d.f.=14; Grand mean=0.002				
Predictor variable		**Coefficient**	**Tokens**	**Mean f_0 onset**
Group	SGKor	0.003	87	0.011
	PHKor	-0.003	328	0.000
Place	Coronal	0.025	132	0.033
	Labial	-0.007	136	0.007
	Dorsal	-0.017	147	-0.030
Phonation	Aspirated	0.708	142	0.776
	Fortis	0.034	137	0.035
	Lenis	-0.743	136	-0.838
Phonation:Place	/p*/	0.188	46	0.221
	/t/	0.147	43	-0.860
	/k/	0.063	50	-0.774
	/p^h/	0.022	47	0.620
	/t^h/	0.006	46	0.816
	/k^h/	-0.028	49	0.886
	/k*/	-0.035	48	-0.190
	/t*/	-0.153	43	0.087
	/p/	-0.210	43	-0.892
Group:Phonation	SGKor:Lenis	0.155	29	-0.582
	PHKor:Aspirated	0.132	111	0.827
	PHKor:Fortis	0.023	110	0.048
	SGKor:Fortis	-0.023	27	-0.019
	SGKor:Aspirated	-0.132	31	0.591
	PHKor:Lenis	-0.155	107	-0.908

VOT and f_0 onset for both L1 Korean and L2 English. Mean VOTs for each phonation type reflected the archetypal trend in consonantal contrast for each language: fortis < lenis < aspirated for Korean, and voiced < (voiceless) unaspirated < voiceless for English. Similarly, the overall mean f_0 onset values reflected the conventional tonal contrast patterns in English and Korean, as well as the tonal correspondences between them: lenis:voiced < fortis:unaspirated < aspirated:voiceless.

While none of the participant groups produced VOT and f_0 onset values that drastically deviated from the abovementioned production norms, they did

exhibit statistically significant inter-speaker variation, evidenced by the regression analysis of the VOT_2 and $F0_2$ models. Compared to the SGKor group, the PHKor group produced significantly shorter and longer mean VOTs for English voiceless and unaspirated stops, respectively; shorter mean VOT for Korean aspirated stops; and lower mean f_0 onset for English voiceless and unaspirated stops, and Korean lenis stops.

The PHKor group, however, was also found to produce longer mean VOT for voiced stops – which was not expected, since it appears to dissimilate from the rest of the VOT trends. A closer inspection of the data, however, revealed that 67% of the PHKor group's voiced stop tokens were produced with zero to negative VOTs – a trend that more closely resembled the production patterns of the FIL group.

4.4.1.2 Place of articulation

All participant groups followed the conventional trends in English and Korean VOT based on place of articulation: labial < coronal < dorsal. There were significant inter-speaker patterns of variation based on place of articulation, albeit not as extensive as phonation type. Place was not a significant predictor of intra-speaker (within the PHKor group) and inter-speaker variation in English f_0 onset, but it was for English VOT. Compared to the SGKor group, the PHKor group produced longer overall mean VOTs for all places of articulation; however, mean VOT difference was significant only for dorsal stops, and marginally significant for labial stops.

Place was also a significant predictor of variation in Korean VOT and f_0 onset; however, based on its pairwise interaction with Group (in the $KorVOT_2$ model), the differences in mean VOT and in mean f_0 onset between the PHKor

and SGKor groups did not appear to be significant.

4.4.1.3 Phonemic contrast

Based on the regression analysis in Section 4.3, the Phonation:Place pairwise interaction was only statistically significant to the variation in Korean f_0 onset. The results described in Sections 4.1 and 4.2, however, revealed some interesting trends in both English and Korean VOT and f_0 onset. It was observed that inter-speaker variation in VOT and f_0 onset was only significant for specific phonemes, or Phonation:Place pairwise interactions: PHKor students exhibited significantly shorter mean VOT for English /t/ and Korean /t^h/, and marginally longer VOT for Korean /p^*/.

4.4.2 External factors of variation

This subsection provides only a summary of the following external (i.e., sociolinguistic) factors of variation in VOT and f_0 onset: Style (of speech), Gender, Dialect, Age, Length of Study, Interaction with Filipino peers, and Formal learning involvement. Table 31 below (p. 109) provides a breakdown of the participants based on the abovementioned variables, except for Style and LOS. (To read more about the distribution of VOT and f_0 onset values according to Style, see Sections 4.1 and 4.2; to know more details on LOS and information on the participants' sociolinguistic background, see Appendixes 4 and 5).

4.4.2.1 Speech style

Sections 4.1 and 4.2 described the effects of speech style on English VOT and f_0 onset. The overall results showed that variation is more widespread in informal speech, where the PHKor group produced significantly shorter mean VOTs and higher mean f_0 onset than the SGKor group. Results of the regression

analysis in Section 4.3 further corroborated the earlier findings, indicating that the Group:Style pairwise interaction was significant in both the Eng VOT_2 and $F0_2$ models.

4.4.2.2 Dialect

Dialect – that is, whether the Korean speaker spoke a tonal or non-tonal dialect – was tested for all regression models that involved f_0 onset data. Based on the results, the variable was found to have no significant effects on both English and Korean.

4.4.2.3 Gender

Within the PHKor group, gender effects were found only in the production of Korean VOT within the PHKor group (p=0.0218). As illustrated in Figure 19 below, female PHKor students exhibited significantly longer mean VOT for lenis and aspirated stops. Meanwhile, at the level of inter-speaker variation, no

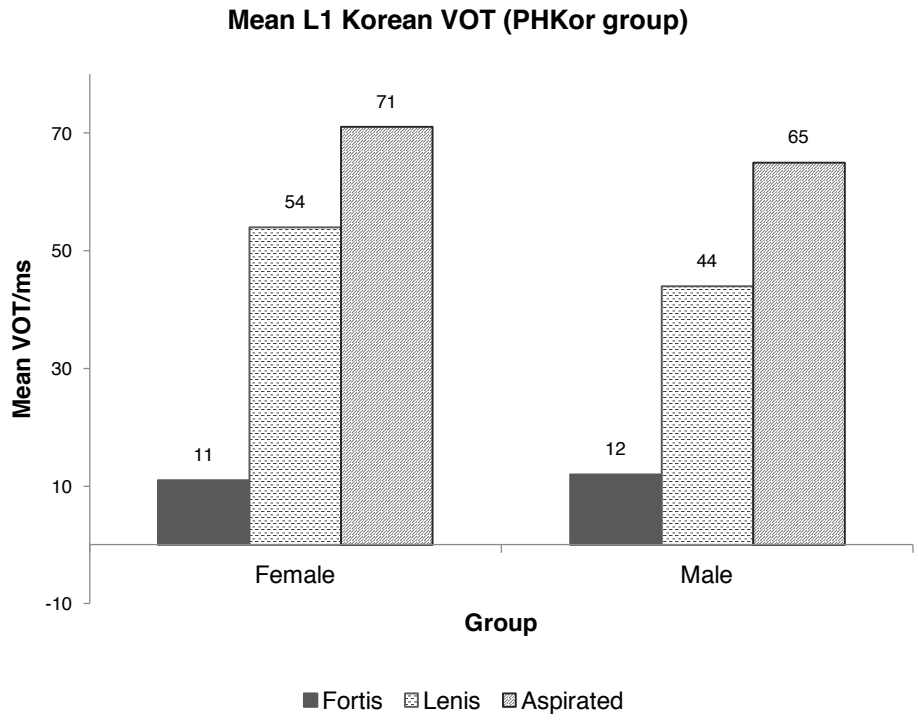


Figure 19: Female and male PHKor students' mean word-initial L1 Korean VOT values (in ms), sorted by phonation type.

significant Group:Gender pairwise interaction was observed for the English and Korean VOT_2 and $F0_2$ models. Moreover, it is interesting to note, based on the normalized *z*-scores for f_0 onset, that Gender was not a significant predictor of variation in either English or Korean f_0 onset, which indicates that female and male Korean student participants in the present study were producing similar tonal contrast patterns in both languages, despite having different glottal physiologies.

4.4.2.4 Age and Length of Study (LOS)

There was not much variation observed based on age effects, since the majority of students (across all participant groups) belonged within a rather narrow age range (17-25 years) for a variation and L2 speech acquisition study of this type. Despite this, Age appeared to be a significant predictor of variation in English VOT within the PHKor group (p=0.00476, using normalized *z*-scores). Based on the data shown in Figure 20 below, there was a significant increase in mean VOT with increasing age (R^2=0.00246). The sample data showed mean VOTs of 32ms at minimum age (17 years), and 45ms at maximum age (25 years, with overall average and median VOTs at 40ms and 39 ms, respectively.

Moreover, it is interesting to note at this point that Age is the only predictor variable in the study whose effect resulted in an increasing overall trend in mean English VOT; while this might be an effect of LOS (students typically have longer LOS with increasing age), a simple multicollinearity test produced a low variance inflation factor (v.i.f.) of 1.01, suggesting low correlation between the two variables. Indeed, as discussed earlier in Sections 4.1 and 4.2, both mean English VOT and f_0 onset (for stops followed by a PALM vowel) decreased significantly with increasing LOS. If we, however, look at the

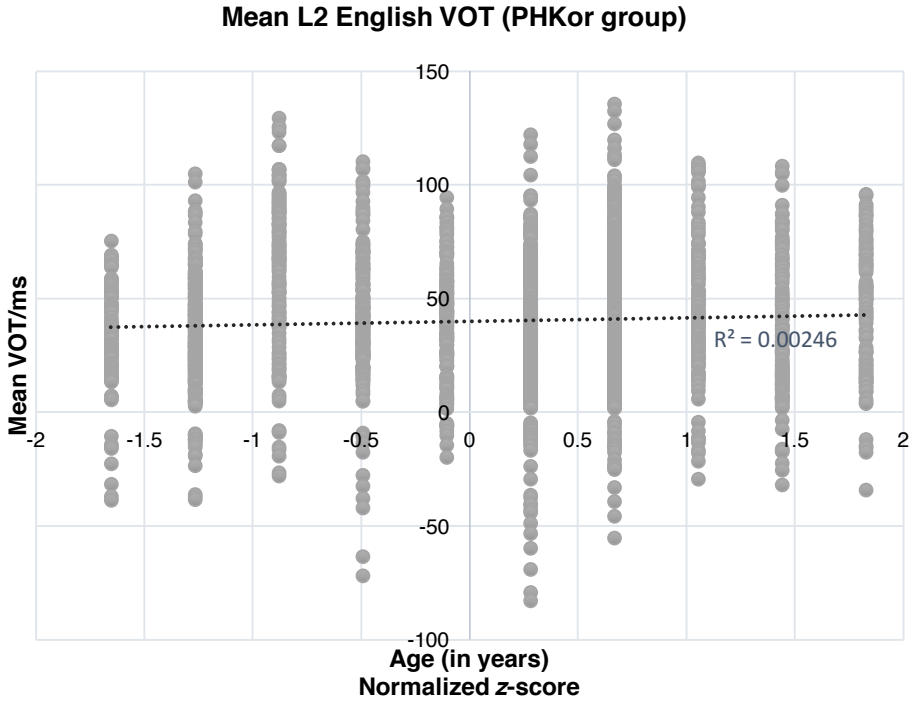


Figure 20: PHKor mean word-initial L2 English VOT (in ms) based on age (in years). The average age for the PHKor group is 20.3 years, σ= 2.59.

regression analysis in Section 4.3, LOS was only a significant predictor of decreasing VOT (p=0.00129) and not f_0 onset in English. The above results thus suggest that while the decrease in mean English VOT is apparent with increasing LOS, this trend might be affected more significantly by other variables, i.e., by how much PHKor students were interacting with Filipino peers, or their level of involvement in the classroom.

4.4.2.5 Interaction with Filipino peers

As illustrated in Figure 17 above (Section 4.3), the Interaction variable was found to influence the patterns of variation in both English and Korean VOT within the PHKor group. Regression analysis in Section 4.3, however, reveals that this interactional effect was only statistically significant in the production of English stops (p=0.0114).

Table 31: Distribution of the participants according to the following variables: Gender, Dialect, Age (years), Interaction with Filipino peers, and Formal learning involvement. LOS values (in *z*-scores) are summarized in Appendix 4.

	Participants		
Variables and their variants	PHKor **(18)**	SGKor **(5)**	FIL **(6)**
Gender			
Female	F1-F10 **(10)**	F11-F13 **(3)**	F14-F16 **(3)**
Male	M1-M8 **(8)**	M9, M10 **(2)**	M11-M13 **(3)**
Dialect			
Tonal	F4, F8, F10, M4, M5 **(5)**	F13, M9, M10 **(3)**	N/A
Non-tonal	F1-F3; F5-F7; F9; M1-M3 **(13)**	F11, F12 **(2)**	N/A
Age (years)			
17	M5, M6, M8, F10 **(4)**	-	-
18	M2 **(1)**	-	-
19	F9, M7 **(2)**	F11 **(1)**	F14 **(1)**
20	F3 **(1)**	F13 **(1)**	M12, F16 **(2)**
21	F2, F5, M1, M3 **(4)**	M10 **(1)**	M11, M13, F15 **(3)**
22	F1, F4, F6 **(3)**	F12, M9 **(2)**	-
23	M4 **(1)**	-	-
24	F8 **(1)**	-	-
25	F7 **(1)**	-	-
Interaction with Filipino peers			
Always	F1, M3, M5 **(3)**	-	N/A
Mostly	F8, M1, M6, M7 **(4)**	-	N/A
Sometimes	F3, F5, F6, F9, F10, M4 **(6)**	F12, F13 **(2)**	N/A
Never	F2, F4, F7, M2, M8 **(5)**	F11, M9, M10 **(3)**	N/A
Formal learning involvement			
Always	F5, M5 **(2)**	-	N/A
Mostly	F1-F3, F6-F8, F10, M1, M3, M4, M6, M8 **(12)**	F11, F13, M9 **(3)**	N/A
Sometimes	F4, F9, M2, M7 **(4)**	F12, M10 **(2)**	N/A

Interestingly, a significant effect of Interaction was also observed in the variation in f_0 onset for English stops followed by a PALM vowel (p=0.0365), based on Bark normalized *z*-scores. PHKor students who interacted more with their Filipino peers were found to produce lower overall mean f_0 onset (μ=-0.24) than those who interacted less (μ=0.11) and who had no interaction at all (μ=-0.02). (For the latter two groups, no significant differences in mean f_0 onset were

observed, based on a two-tailed *t*-test for unequal variances $t(187)=1.00$, $p=0.31876$.)

4.4.2.6 Formal learning involvement

As discussed in Section 4.3, the Involvement variable also significantly affected the variation in both English and Korean VOT within the PHKor group. Regression analysis of the English and Korean VOT_1 models revealed that the variable did have a significant influence in both patterns of variation [English VOT: $p=0.037$; Korean VOT: $p=0.0401$]. Students who were least involved during their formal L2 learning (those who indicated 'Sometimes' in the survey) produced the longest mean VOTs for both languages, while students were most involved ('Always') produced the shortest mean VOTs.

In summary, PHKor students who had the greatest linguistic exposure effects – that is, those who interacted more often with Filipino peers and were involved more in their formal L2 learning – produced overall shorter mean English and Korean VOTs, as well as lower mean English f_0 onset (for stops followed by a PALM vowel).

4.4.3 Conclusion

Linguistic exposure to PhilE has raised interesting issues about perceptual assimilation features and phonetic drift patterns in the interlanguage of these learners during L2 speech acquisition, since their L1, Korean, features an interesting three-way consonantal stop system combined with a significant degree of tonal interaction (to achieve maximal phonemic contrast). Thus, the main thrust of the present study was narrowed down to the analysis of both L1 and L2 consonantal stop production, focusing on patterns of variation in VOT

and f_0 onset. Table 32 below provides a rough summary of the PHKor group's categorical assimilation (or dissimilation, in some cases) and linkages between L2 English and L1 Korean, at various levels of phonological structure.

PHKor students were producing instantiations of English consonants that were more 'PhilE-like', in the sense their overall word-initial VOT durations, especially for voiceless and unaspirated stops, were significantly shorter in comparison to non-Filipino varieties of English. Furthermore, they were also producing consonants that perceptually were more 'Korean-like', evidenced by L2 stops that appear to assimilate towards L1 production norms in certain phonological environments, i.e., in [#s/ptk/_] position. Based on the findings, there appears to be considerable L1-to-L2 transfer in the interlanguage in the form of increased levels of aspiration that could be affecting patterns of stop production at the earlier stages of L2 acquisition.

The results that have been obtained so far also highlight a potential phonetic development in the interlanguage of Korean students during their L2 speech acquisition. There are substantial pieces of evidence to suggest that (1) PHKor students are experiencing phonetic interference from their ambient non-native linguistic setting and have acquired certain phonetic features of the PhilE stop system, which, as the data from the FIL group has shown, manifests significantly short to negative VOT duration; (2) PHKor learners are also exhibiting L2 speech patterns that closely resemble Korean production norms, suggesting the presence of L1-to-L2 interference; and (3) phonetic drift patterns are present not only in their (still developing) L2 phonetic inventory, but also in their (relatively developed) L1 sound system, indicating that their phonetic development is bi-directional in nature. There is also apparent-time evidence

Table 32: Observed cases of phonetic drift in the L1 and L2 speech production of Korean learners of English (PHKor group).

Phonetic feature	Level of phonological structure	Categorical assimilation/linkages between L2 English and L1 Korean
VOT	Subsegmental	Both L1 aspirated stops and L2 voiceless stops shortened in approximation to the shorter VOT of voiceless stops in the non-native L2 variety.
		L2 unaspirated stops lengthened in approximation to the longer VOT of L1 lenis stops.
		L2 voiced stops had a positive overall mean VOT, although 67% of the tokens had negative VOT values; they appear to be shortening in approximation to the zero-to-lead VOT of voiced stops in the non-native L2 variety.
	Segmental	Both L1 /t^h/ and L2 /t/ significantly shortened in approximation to the shorter /t/ found in the non-native L2 variety.
		L1 /p^*/ lengthened marginally, dissimilating from L1 norms.
f_0 onset (all vowels)	Subsegmental	f_0 onset following L2 voiced stops lowered in approximation to the lower f_0 onset of L1 lenis stops.
		In formal speech, f_0 onset following L2 voiceless and unaspirated stops lowered in approximation to the lower f_0 onset of voiceless and unaspirated stops in the non-native L2 variety.
		In informal speech, f_0 onset following L2 voiceless and unaspirated stops drifted upward, dissimilating from the lower f_0 onset of voiceless and unaspirated stops in the non-native L2 variety.
	Global	Shared control mechanism for f_0 modulation; overall L2 onset drifted lower in approximation to the lower f_0 onset of the non-native L2 variety
f_0 onset (PALM)	Subsegmental	f_0 onset following L2 voiced stops lowered in approximation to the lower f_0 onset of L1 lenis stops.
		f_0 onset following L2 voiceless and unaspirated stops lowered in approximation to the lower f_0 onset of voiceless and unaspirated stops in the non-native L2 variety.
	Global	Shared control mechanism for f_0 modulation; overall L2 f_0 onset drifted lower in approximation to the lower f_0 onset of the non-native L2 variety.

indicating that the nature of phonetic drift (assimilatory *v* dissimilatory) could change depending on the nature of the language learning program, or the length or degree of linguistic exposure in the ambient L2 setting.

Looking at the variation in f_0 onset, PHKor students produced English voiced stops that were more 'Korean-like', with mean f_0 onset values that seemed to approximate the lower f_0 onset of Korean lenis stops. But they were also producing English voiceless and unaspirated stops that were more 'PhilE-like', in the sense that their f_0 onset patterns resembled the FIL students' f_0 onset patterns more closely, evidenced by the apparent downward drift in their f_0 onset values. This trend, however, was only observed in formal speech. In informal speech, the mean f_0 values of both stop types drifted up, dissimilating from the lower f_0 onset of the same stops produced by the FIL group. Thus, like the English VOT data, the English f_0 onset data present cases of both assimilatory and dissimilatory phonetic drifts among Korean learners of English, which highlight the bi-directional nature of phonetic drift in the learners during their L2 speech acquisition.

By utilizing statistical tools to investigate sociolinguistic variation in L2 speech acquisition and to draw empirical relations between L1 and L2 speech production patterns, and using Flege's SLM to situate and frame the analysis of such patterns, the present study has highlighted the importance not only of linguistic internal factors to the variation phenomenon, but also linguistic experience. The striking evidence in consonantal and tonal variation in stop production with respect to several external factors (social, stylistic) show that the interlanguage's apparent state of flux during L2 speech acquisition is also

largely conditioned and motivated by the ambient linguistic environment in which the development takes place.

The next chapter therefore aims to expand the discussion on linguistic experience during L2 speech acquisition, particularly paying attention to the learners' sociolinguistic perception of PhilE. Studying sociolinguistic perception patterns helps to shed light not only on what students think about non-native accents and how they perceive them, but also how these perceptions may (possibly) affect their L1 and L2 speech production patterns during their L2 speech acquisition.

CHAPTER 5

SOCIOLINGUISTIC PERCEPTION OF PHILIPPINE ENGLISH

Existing Philippine-based studies on the acquisition of English as a second language focus primarily on language perception, attitudes, and ideologies, with little emphasis on actual speech production patterns. In a detailed study of language attitudes towards Filipino speakers of English among Philippine-based Korean students, Roh (2010; see also Castro & Roh, 2013) made Korean students listen to a speaker's recording of Filipino-accented English and asked them to identify the features, and evaluate the quality, of her accent. The study shown that majority of Korean learners poorly evaluated Filipino-accented English, and had reservations about choosing the speaker as their English teacher – only 23.3% of 75 respondents said yes, while 57.5% said no. The study also revealed that AmE remains the most positively regarded English variety.

In response to Castro and Roh's (2013) suggestion to keep track of the changing attitudes of Koreans towards PhilE, this paper also includes a speech perception task, which has been modified to not only measure foreign learners' language attitudes and preferences, but also the extent to which they can correctly perceive Filipino-accented speakers of English, and PhilE in general.

This chapter combines both quantitative and qualitative analyses of sociolinguistic perceptions of PhilE among the same three participant groups, PHKor, SGKor and FIL. Section 5.1 presents data relevant to the learners' perception of PhilE, while Section 5.2 cross-examines the perception data in this chapter with the speech production results presented in Chapter 4.

5.1 Learners' perception of PhilE

5.1.1 Method and participants

All individual participants who performed the elicitation (speech production) tasks described in Chapter 4 also performed a short sociolinguistic perception task. Due to the 'experimental' nature of the testing session, the sociolinguistic perception task was carried out in between the Korean and English elicitation tasks as a 'break' in between them to minimize potential order effects on L1 and L2 speech production. They listened to a speech recording of a Filipino individual under the pseudonym **Jack** (male, in his early 30s, middle-class, an alumnus of a top tertiary institution in the Philippines, and demonstrates distinguishable Standard PhilE features as described in the existing literature – see Gonzalez (1985), Llamzon (1997), Tayao (2004), and Regala-Flores (2014). The speech recording, which originally comes from the Speech Accent Archive (SAA) website (Weinberger, 2015) was designed to be short in length and to elicit most of the phonetic features of General AmE:[18]

> Please call Stella. Ask her to bring these things with her from the store: six spoons of fresh snow peas, five thick slabs of blue cheese, and maybe a snack for her brother Bob. We also need a small plastic snake and a big toy frog for the kids. She can scoop these things into three red bags, and we will go meet her Wednesday at the train station.

Jack's speech was audiotaped using the same recorder used for the production task and at the same frequency and bit rate. The sound recording was stored and during the testing sessions was played on the same computer, with the sound output connected to a Creative® Woof™ external micro wireless speaker.

There was no limit to the number of times the participants could listen to the recording. After the listening portion, a series of multiple-choice

[18] The original speech recordings can be found here: http://accent.gmu.edu/index.php

questions pertaining to the sociolinguistic background of the speaker were presented on the computer screen, which the participants were asked to answer. The entire procedure was audiotaped with the same audio recorder used in the production tasks (Zoom H1) at the same frequency and bit rate.

The identification task was carried out to test the participants' sociolinguistic knowledge of PhilE, as well as their attitudes towards Filipino-accented speakers of English. Note that this was not a speech perception task – students were not required to identify specific phones or phonetic features in the speech recording. The methodology, however, was modified to obtain more information regarding the participants' perception of PhilE accent features. For each question in the sociolinguistic perception task, they were specifically asked to comment on Jack's pronunciation features.

After interviewing and testing my sixth participant, I realized that my PHKor participants had been inevitably primed to perceive Jack as Filipino speaker of English. I believed that this was theoretically and methodologically problematic, since the aim of the identification task was to implicitly determine to what extent foreign students could identify the sociolinguistic features exhibited by Filipino-accented speakers of English.

The perception task was carried out before the L2 production task. So, after a few testing sessions, it felt more necessary to check whether revealing sociolinguistic information about a Filipino speaker of English in the perception task would affect their production patterns in the L2 speech production task. Because it was a tad too late to incorporate a matched guise experiment during the limited time I was granted to conduct my fieldwork, I instead decided to add another criterion, Place of origin (i.e., Philippines or Other) to the identification

task. Eventually, for the next 12 PHKor participants, six were (randomly) selected and informed about the speaker's nationality at the beginning of their task, while the remaining ones were not. In the end, the PHKor students were divided into two groups: the *informed* group, who were informed prior to the task that Jack is a Filipino and from the Philippines, and the *uninformed* group, who were required to identify Jack's nationality/place of origin by answering the question "Do you think Jack is Filipino/from the Philippines?" (*Yes/No, other*) at the beginning of the perception task. When the uninformed group participants identified Jack as non-Filipino (i.e. not originating from the Philippines), I asked them to guess where he was from. These students were not informed about Jack's place of origin until the end of the session, in order not to influence their answers to the next few questions. (Moreover, the present study was also interested in investigating the extent to which learners of other sociolinguistic or education backgrounds can identify (Standard) Filipino-accented English. All FIL and SGKor students were, therefore, also asked to identify Jack's place of origin.)

After informing them about or asking them to identify Jack's place of origin, all participants were asked to answer a series of multiple-choice questions. They were asked to judge the speaker's social background based on the following criteria: (1) **Gender** (*Male, Female,* or *Other*); (2) **Profession** (*Engineer, Doctor, Teacher, Office Worker,* or *Other*); and (3) **Socioeconomic class** (*Poor, Middle-class,* or *Wealthy*). Then, they were asked (4) to rate Jack's **English skills** (*1–Poor, 2–Average, 3–Good, or 4–Very Good*), and (5) if they would like Jack to be their **English teacher** (*Yes, No,* or *Maybe*).

5.1.2 Results

5.1.2.1 General perception of PhilE

As mentioned earlier, six PHKor students were randomly selected and informed about the speaker's place of origin at the beginning of their task (hence, the informed PHKor group), while the remaining 12 were not (the uninformed PHKor group). In total, there were 23 'uninformed' participants: 12 PHKor students, and all five SGKor and six FIL students. Focusing on this group (see Figure 21 below), no majority response was obtained; participants were somewhat divided on the issue of origin. In fact, only a third of the students (*n*=8) could correctly identify Jack's place of origin. Six were uncertain and unable to make a rough guess about it, and approximately the same number of them (*n*=5) thought Jack sounded American (and therefore from the USA). The remaining students gave other answers: UK, China, as well as broader geographic areas like Asia (not including China or the Philippines), even South America.

More interesting observations are found within each participant group. Zooming into the PHKor group, it is worth mentioning that only four of the 11 students – **F4**, **F9**, **M1**, and **M8** – could accurately identify Jack's place of origin. Four of these students reported that they made this identification because of his pronunciation:

1. <*Philippines*> …pronounce some words like a Filipino. [**M1**, PHKor]
2. <*Philippines*> I think he's Filipino because his pronunciation is not like American… but it's more close to Filipino. [**M8**, PHKor]

One SGKor student, **F12**, also correctly identified Jack's place of origin, indicating stereotypical pronunciation and intonation features of PhilE, despite not having any considerable length or degree of exposure to PhilE:

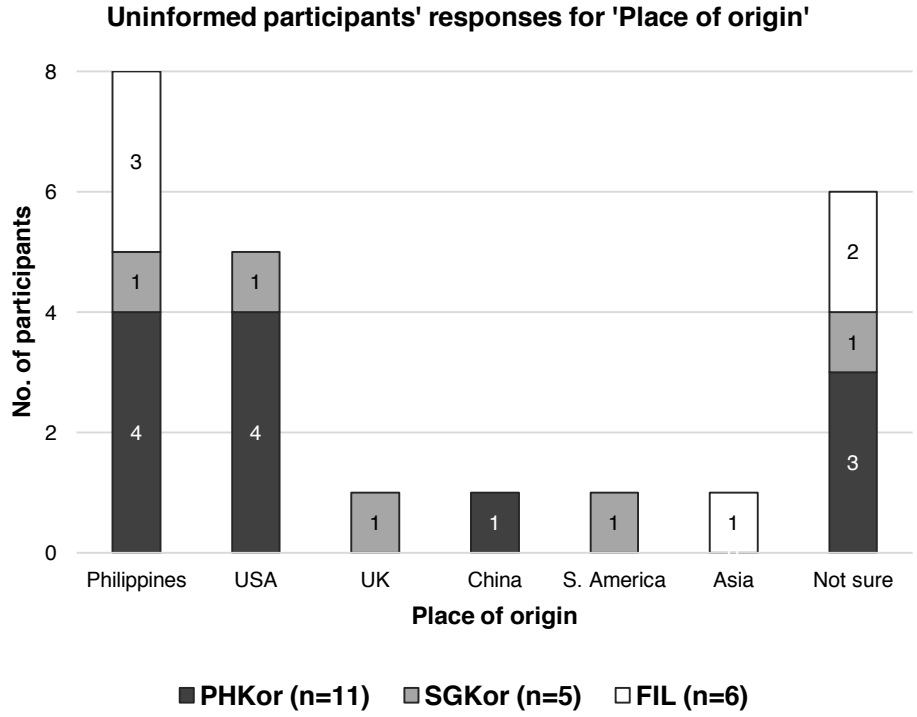


Figure 21: PHKor, SGKor, and FIL students' perception of Jack's place of origin.

3. **F12**; <*Philippines*> Because the "t" sound was kind of like "d"… yeah. Really strong and… just the tone? Sounded like ((Filipino)).
   Interviewer; So you have knowledge of how Filipino accent sounds like?
   F12; Not really but just, just have a vague idea.
   Interviewer; Have you heard Filipinos speak before?
   F12; Once in Singapore. [**F12**, SGKor]

Based on the above conversation with F12, she was probably to inspired to mention the Philippines because I am Filipino.

Meanwhile, all Korean students who perceived Jack as American pointed out the speaker's American-sounding accent:

4. <*USA*> When I was in school, we have listening test. There is ((a)) turn on like this… almost the same. [**M2**, PHKor]
5. <*USA*> I think pronounce… like American. [**M6**, PHKor]
6. <*USA*> He's not Filipino… because I think he's American, he's from America. [**M7**, PHKor]
7. <*USA*> Well I never think that kind of things but I don't think the person is Filipino. Like the person who's speaking right? I think like just normal American. [**M10**, PHKor]

Furthermore, students who gave guesses other than Filipino/American provided

a variety of reasons for doing so. Several PHKor students noted that Jack's accent was different from PhilE accent norms, while a few SGKor students could not identify whether the accent was Filipino-sounding – because they have had little to no contact with PhilE or Filipino-accented English speakers:

8. <*Not sure*> He don't use the Philippine accent… but I'm not sure he's native. Actually I think he's not Filipino [**M4**, PHKor]
9. <*Not sure*> …because it's different pronunciation with Filipino. [**M5**, PHKor]
10. <*China*> Because their pronunciation is not Filipino, but also not American. [**F10**, PHKor]
11. <*South America*> I think he come from the South America. Because his accent like more Spanish... honestly I never heard a Filipino accent ((before)), that's why I cannot differentiate. [**M9**, SGKor]
12. <*Not sure*> I'm not sure but… not from America. [**F13**, SGKor]
13. <*UK*> I think he's from like United Kingdom… I think his accent is a little bit strong compared to the United States accent… I think um the United States accent is a little bit smoother than his accent. [**F11**, SGKor]

Focusing on the FIL group, it is interesting to note that only 3 of the 6 FIL students could identify Jack as Filipino. This was a surprising finding because we would expect Filipino speakers of English to easily identify a Standard PhilE accent due to its distinctive features. Those who couldn't correctly identify Jack's place of origin expressed uncertainty regarding the nature of accent:

14. <*Asia*> I guess other Asian country… in the Southeast Asian region, I think - um can I enumerate some? Maybe Thai, Thailand. Or Singapore, or English proficient Japanese. [**M13**, FIL]
15. <*Not* sure> If a Filipino speaks in English, *parang*, *parang di siya*, it's not really that twang… but I'm not sure.[19] [**F15**, FIL]
16. **F16**, FIL; <*Not sure*> The way he speaks is different. A foreigner. It's different when you listen to it.

    Interviewer; Can you describe the way he speaks?
    F16; The way he says the words it's different. Because when a Filipino says those words there's an accent. [**F16**, FIL]

Based on the above findings, it is also important to note that uninformed PHKor

[19]The Tagalog phrase *parang di siya* has an equivalent English translation "it does not seem".

students identified Jack as a Filipino at about the same rate as the FIL group, so there is no evidence here that the Korean students are bad at the given task – in fact, they seem about as good as Filipino speakers of English.

5.1.2.2 Perceptions of occupation and socioeconomic class

Data from the perception task suggests that the participants' perception of Jack's sociolinguistic background was mostly accurate. Based on the findings in Figure 22 below, 10 out of the 29 participants correctly identified the speaker's previous and current occupations, i.e., Teacher (4 PHKor, 2 SGKor, and 4 FIL students), and Office worker (8 PHKor students). Some participants who chose *Teacher* pointed out the speaker's (relatively) slow speech rate and instructional tone:

17. <*Teacher*> I think he =the way he speaks is like quite organized and yeah, and I don't know how to explain but that's ((how he sounds like)) [**F8**, PHKor]
18. <*Teacher*> It seems to me like he was saying something to his students with slow ((pronunciation))… yeah. [**F11**, SGKor]
19. <*Teacher*> I think the way he speaks it's kind of… he do it slowly, and then um more of the deep =he is making some kind of details when he's pronouncing the words... [**M11**, FIL]
20. <*Teacher*> The way he says instructions, gives instructions, very detailed. [**F16**, FIL]

Meanwhile, some students were a little less certain of what response to give, while others based their answers more on the content of the speech recording:

21. <*Office worker*> I don't know actually, just feeling… [**M3**, PHKor]
22. <*Office worker*> I think he's not teaching in the report, so I think he's office worker. [**M7**, PHKor]
23. <*Teacher*> Because they let Stella buy some #, but they doctor they don't need like cheese… and also engineers, professor, student, office worker… but they… if the classroom has a party, like one student is birthday then I think they are preparing a birthday party. [**F10**, PHKor]
24. <*Engineer*> Just sounds like it. [**F12**, SGKor]
25. <*Student*> I think he's just a student. [**M12**, FIL]

(It is clear from the interview excerpts above that the content of the speech extract may have influenced some of the students' perceptions of the speaker. Nonetheless, the overall data does show a considerable range of responses, suggesting that other students were searching for or paying attention to other cues (linguistic or non-linguistic) that are not necessarily or directly related to the nature of the content found in the sample speech extract. It is also highly possible that other students interpreted the text differently, which yielded different individual responses. These issues will be addressed in greater detail in Chapter 6.)

The findings in Figure 22 below also show that Jack was perceived as someone who belonged to the middle-class by 22 (76%) of the total 29 participants (13 PHKor, 4 SGKor, and 5 FIL). What is interesting about this finding is that many of them chose *Middle-class* by benchmarking Jack's socioeconomic class against their expected notions of accent differences between low-income and high-income socio-economic backgrounds. Several students associated being poor with the lack of certain personality traits such as confidence, elegance, and calmness; lack of education and fluency in speech; and the strength and type of accent:

26. <*Wealthy*> …if poor, voice is very weak and pitiful. [**F3**, PHKor]
27. <*Wealthy*> From his voice… very was calm, and something is very comfortable… Yeah so I think the sound is from a rich person. [**M8**, PHKor]
28. <*Middle-class*> I think not poor because his voice is not bad =I think the poor people um accent is a little strong. But accent is not strong, little American. But I don't know he is rich so I choose ((middle-class)) [**F4**, PHKor]
29. <*Middle-class*> Because his accent was not that strong. Usually people have really local sounds when they speak… but I think he kind of was educated a little bit about his pronunciation. [**F12**, SGKor]
30. <*Middle-class*> I think the rich =the wealthy =the sound is a bit higher and

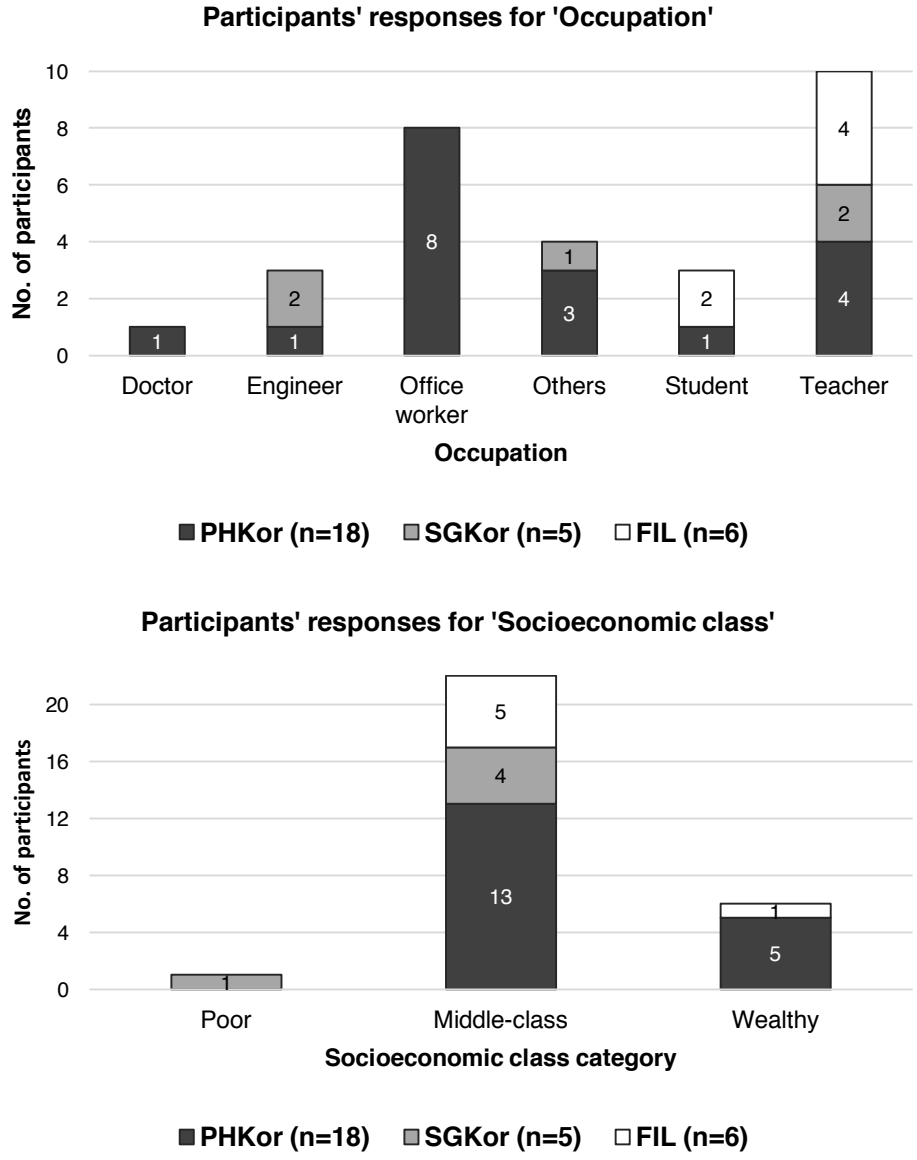


Figure 22: PHKor, SGKor, and FIL students' perception of Jack's occupation and socioeconomic class.

> then more trying to be elegant like… or slow accent. Here this accent is like just normal accent… And the poor… the poor= I think his first language is not English. I think so. So, the poor... maybe the poor is that ((someone who)) cannot take the lesson properly, his English fluency ((is not as)) well. **[M9**, SGKor]

Some students also associated their perception of Jack's socioeconomic status with their answers to the previous question on his occupation:

31. <*Teacher*, *Middle-class*> Because he is a poor then he can't buy… and if he's rich then maybe he has secretary. [**F10**, PHKor]
32. <*Teacher*, *Middle-class*> Well suppose that he's a teacher I think he's middle @class. @_<DUR=2s> [**F11**, SGKor]

FIL students were also likely to associate socio-economic differences with certain personality traits and accent features:

33. <*Middle-class*> get the impression that the person is an average type. Like um, if wealthy people can have this vibe, that radiates from them. So, wealthy people have this specific vibe that you can interpret that they have some class… Like um rich voice, yeah... the quality, the diction, the intonation... yeah. [**M13**, FIL]
34. <*Wealthy*> Wealthy, the pronunciation is quite good. [**F15**, FIL]
35. <*Middle class*> Because maybe if it's a wealthy, the accent will be more =more like American or other not Filipino accent. [**M12**, FIL]

FIL participant **M11**'s response below is also worth noting. **M11** believes that many middle-class Filipinos are now able to speak like wealthy Filipinos, thanks to (technological) advancement and education opportunities. He, however, drew a line for lower-income Filipinos, implying that they may not find it easy to assimilate English accent features commonly associated with wealthy Filipinos – even if they are educated or have access to technology:

36. **M11**; <*Middle class*> …when it comes to my perspective maybe um he is a wealthy man… But um in today's era many middle-class persons can speak the way he speak also and=

Interviewer; =Why do you think so?
M11; Because um, it's kind of like today we're advanced and then we can we can learn for example, I'm a middle-class person and then I can um... maybe the status kind of status not a hindrance to when it comes to learning.
Interviewer: It doesn't matter whether you are rich, or middle class, or poor?
M11; Poor? @Maybe @so-so. @_<DUR=2s> [**M11**, FIL]

5.1.2.3 Rating (Philippine) English accent

Data from the perception task shows that the participants overall exhibited a positive response towards Jack's English accent (see Figure 23 below for a summary of the findings). 26 (90%) of the total 29 participants rated the speaker's English accent as *Good* (12 PHKor, 5 SGKor, and 4 FIL) and *Very Good* (3 PHKor and 2 SGKor). Meanwhile, the remaining three participants (all

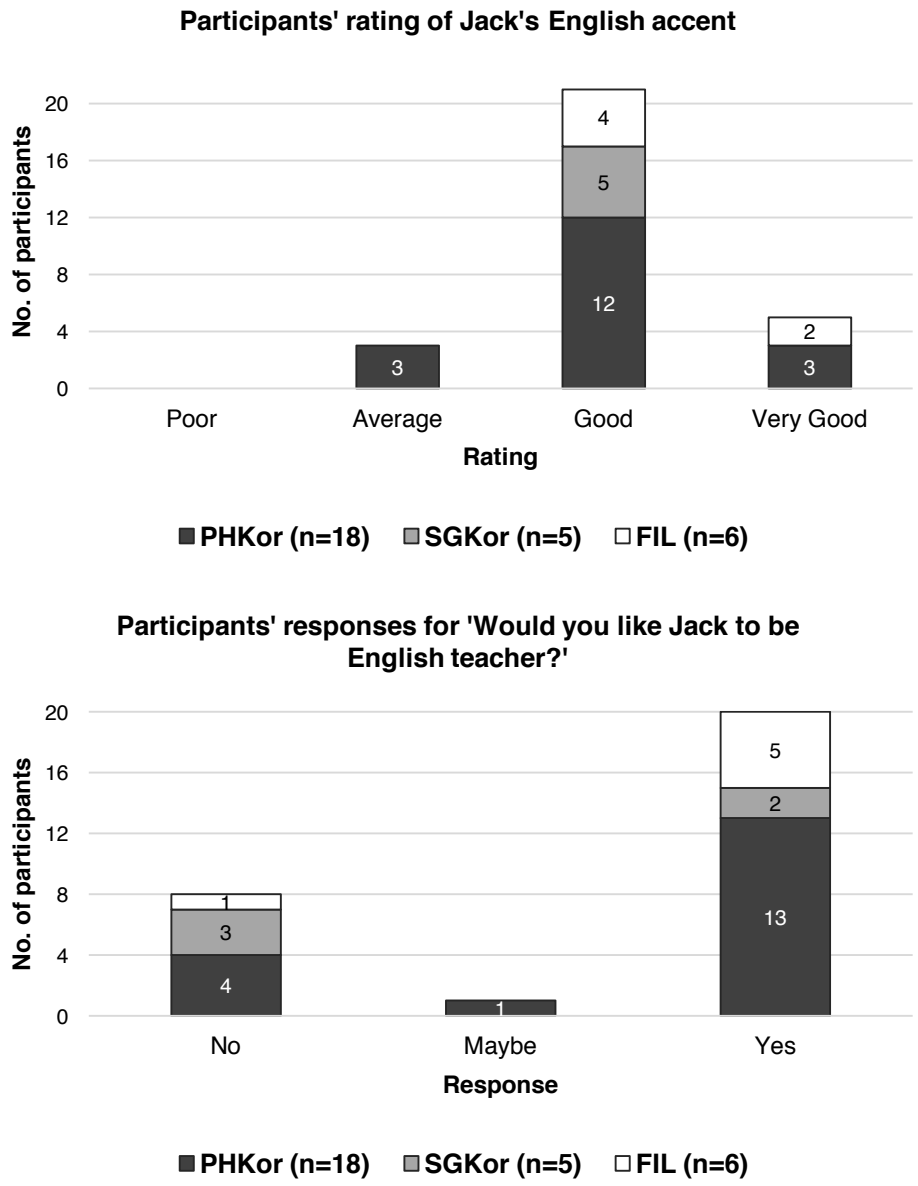


Figure 23: PHKor, SGKor, and FIL participants' perception of Jack's English.

PHKor) gave an *Average* rating. PHKor students who gave Jack an *Average* rating had various reasons for doing so. For instance, **M3**, who was in his sixth and final month of intensive short-term ESL at the time of our interview, pointed out the 'non-nativeness' of Jack's English accent:

37. **M3**; <*Average*> I can understand…
Interviewer; But why is just average =what makes good English?
M3; I think his pronunciation, his phrasing... just not good.
Interviewer; What do you think a good pronunciation is like?
M3; Similar to a native speaker.
Interviewer; What native speakers, from where?

M3; Ah, some part of America, British. Those two kind. [**M3**, PHKor]

Meanwhile **M8**, who has been living and studying full-time in Baguio City for five years, gave a rather more general comment on the comprehensibility or intelligibility of an English accent:

38. <*Average*> Because if somebody very good at speaking English, really I can understand. But I cannot understand this one. And I don't think he's poor but average. [**M8**, PHKor]

M8 already exhibits a considerable level of proficiency in L2 English given his length of exposure to the language; to him, the onus is on the speaker to produce an English accent that is intelligible and comprehensible to his interlocutor.

Meanwhile, students who gave a *Good* or *Very Good* rating generally liked Jack's English accent:

39. <*Good*> He can say very clearly, and I can listen and understand. That's why… or grammar, grammar is good. [**F1**, PHKor]
40. <*Good*> Because his pronunciation is already trained, and… I can understand and I think better than Korea =Korean. [**F2**, PHKor]
41. <*Good*> I can hear his voice very well, and I like to watch movie =American movie. So he's same with American =American (movie) stars. [**M7**, PHKor]
42. <*Very Good*> I think I answered =I answered he is a professor ((teacher)) and he is wealthy so maybe I think his English is good, I mean very good. **[F8**, PHKor]
43. <*Very Good*> Pronunciation is like American. [**M6**, PHKor]
44. <*Very Good*> I can understand easily… I think his pronounce =“pronounciation” ((is good)). [**M4**, SGKor]

We can surmise from these responses that the students gave positive ratings due to a variety of reasons. For example, participants **M6** and **M7** – unlike **M3** – perceived Jack as having an US English accent, which made them give the speaker positive ratings. On the other hand, some participants (e.g., **F2**) gave Jack a positive rating primarily because it sounded better than Korean-accented English. Furthermore, just as participants **F10** and **F11** drew associations

between Jack's occupation and socio-economic status, some participants (e.g., **F8**) gave ratings based on Jack's perceived sociolinguistic background.

While the responses towards Jack's English accent were positive overall, they didn't come without reservations. Several students pointed out the presence of a somewhat different 'accent', and expressed doubts on the 'naturalness' of this accent:

45. <*Good*> When he speak English, uh he don't want… ((he is not)) afraid. His pronunciation also good but not very natural. [**F4**, PHKor]
46. <*Good*> He had some accent, but his speaking skills are good. [**M1**, PHKor]
47. <*Good*> …especially Filipinos' pronunciation, they =“apple” is [ɑ:pəl]… and Korean can't pronunciation well ((the)) "r"… but he spoke well, like, not really American but they # like English pronunciation. [**F10**, PHKor]
48. <*Good*> Because I cannot feel the accent of like really weird something like really strong accent compared to Indian or Singaporean. So I thought his accent was really similar to normal Standard English. So accent is good. [**M10**, SGKor]

Meanwhile, several students who gave a *Good* rating focused on intelligibility issues:

49. <*Good*> Some parts I couldn't understand. So it's just good. [**M2**, PHKor]
50. <*Good*> Because um I didn't pick *Very Good* because I didn't understand some words… It can be my problem but I think uh pronunciation was not that accu– clear to me. [**F11**, SGKor]
51. <*Good*> …I don't know well but hmm… his pronunciation was not the exact. [**F13**, SGKor]

Looking at the FIL group, the students gave mainly positive ratings (3 *Good* and 2 *Very Good*), and generally expressed the view that his accent was good, but not flawless:

52. <*Good*> He's good… because for me um… speaking English is about the content of what he's speaking. And then um, it's more of the... if we understand what he's saying, I =maybe I can say he's a good speaker of English. [**M11**, PHKor]
53. <*Good*> From my perception, he can pronounce the words well, but not that good. [**M11**, PHKor]

54. <*Good*> …the pronunciation is quite good, but it is not that… that quite fast. When you speak in English you are quite sure what you're saying. [**F15**, FIL]

55. <*Very Good*> He pronounce it well, every word. And it's a nice accent even though it's Filipino. [**M12**, FIL]

FIL students thought Jack's English accent was good, but also expressed certain reservations. Participants **M13** and **F15** echoed several of the Korean participants' opinions, pointing out that Jack's accent was good – but not good enough, and associating fluency with increased speech rate. **M11**, however, gave a rather different response. Instead of pointing out Jack's pronunciation or accent features, **M11** chose to focus on the actual content of his speech, arguing that content was more important. He suggested that it does not matter whether an accent is good if it is comprehensible or intelligible to the hearer, a view that appears to stand in opposition with PHKor **M8**'s (see above).

Moving on to the participants' responses regarding whether they would like Jack to be their English teacher, only 19 (66%) of the total 29 students said *Yes* (12 PHKor, 2 SGKor, and 5 FIL). Meanwhile, eight students (5 PHKor, 3 SGKor, and 1 FIL) said *No,* for reasons being due mainly to the speaker's accent:

56. <*No*> Because he has some accent. I know what he's saying but he has some accent… [**M1**, PHKor]

57. <*No*> Just very slow. [**M8**, PHKor]

58. <*No*> Cause like… I think… maybe it's hard to =sometimes it's hard to understand to what he's saying cause like accent is a bit different from what I'm saying, used ((to))… I'm not sure what kind of thing I can take or I can learn from him. [**M9**, SGKor]

M9's response is further exemplified by **F11**, who believes that her language teacher's accent is important because it will affect her learning and development, especially in terms of speaking the language:

59. <*No*> Because… as I said before the pronunciation was not clear to me. Even though he was good at English. So if he's a teacher to me, I think he should be like more clear. Yeah. To understand =to make me understand more. And I will definitely follow his accent if he is a teacher to me. Yeah, then it will definitely affect my pronunciation as well. [**F11**, SGKor]

M12, a FIL participant, also highlighted that importance not only of the teacher's accent, but also his/her knowledge of the language:

60. **M12**; <*No*> Maybe there's someone better.
Interviewer; So you think that this person's accent is very good but if you have someone who speaks with a better accent, you would choose that over this person?
M12; Not just the accent, but of course if English teacher, more knowledge about English. [**M12**, FIL]

Based on the statement above, **M12** regarded Jack's accent positively, but rejected him as a teacher because there are better and more qualified people than him. On the other hand, **F9**, who initially answered *Maybe,* changed her mind and said *No* when asked about Jack's pronunciation. She expressed an even stronger view, rejecting Jack as a potential English teacher because his pronunciation sounded Filipino:

61. **F9**; <*Maybe*> Maybe, because I want to =I like this person to be my English teacher because I think he knows about the English grammar or words, something like that.

Interviewer; How about the way he sounds like, would you want this person to be your teacher, listening to him?
F9; <*No*> Oh I'm gonna say that I don't want this person to be my teacher because of his pronunciation... because it sounds really @Filipino. @_<DUR=1s> [**F9**, PHKor]

M10 also expressed a similar view, describing his idea of a "really good" English teacher:

62. **M10**, SGKor; <*No*> Because I really wanna be educated by really like upper class person who speaks really good English.

Meanwhile, most of the students who wanted Jack to be their English teacher positively regarded Jack's pronunciation and overall voice quality. There is a general indication that the speaker has the potential to teach or explain things

well:

63. <*Yes*> He can deliver well and I... the important in language is to deliver what they think and the thoughts. [**F1**, PHKor]

64. <*Yes*> First I understand his meaning, and pronunciation and accent. When I heard his voice and his personality, I feel kind and not uh bad. [**F4**, PHKor]

65. <*Yes*> Maybe he's good in teaching and his pronunciation is better than mine, yes… and maybe he's good in explaining grammars, something like that. [**F8**, PHKor]

66. <*Yes*> Because his voice, I like that voice… Not so difficult, not so easy. **[M2**, PHKor]

67. <*Yes*> He can show her - his knowledge. Can easily explain, explain easily. **[M4**, PHKor]

A few participants also pointed out that they would like Jack to be their English teacher because he sounds like a native speaker of English:

68. <*Yes*> Good voice, and he can speak =he can speak like American. [**M7**, PHKor;]

69. <*Yes*> I think he's from the country ((of)) English users… so it's better for @me. @_<DUR=2s> [**F13**, SGKor]

Based on the present study's findings, we can say that all three participant groups (PHKor, SGKor, and FIL) are good at perceiving and identifying Jack's sociolinguistic background. Focusing on the PHKor group, of the total 18 students, eight identified Jack as an office worker, and four identified him as a teacher. Moreover, 13 of these 18 participants thought he belonged to the middle-class; and of these 13 participants, 10 (56%) correctly identified *both* Jack's previous/current occupation and socioeconomic class.

The three participant groups also expressed overall positive views towards Jack's English accent. 26 (90%) of the total 29 participants rated the speaker's English accent as *Good* (12 PHKor, 5 SGKor, and 4 FIL) and *Very Good* (3 PHKor and 2 SGKor), while the remaining three participants (all PHKor) gave an *Average* rating. Focusing on the PHKor group, of the total 18

participants, 15 gave *Good* (*n*=12) and *Very Good* (*n*=3) ratings. These positive ratings, however, did not come without reservations. Several participants noted that Jack's accent was good but sounded either different or unnatural. Some participants also found it difficult to follow or understand the spoken text due to Jack's accent. These disinclinations towards Jack's non-native (but Standard) PhilE accent were also further seen in some of the participants' responses when they were asked whether they would like Jack to be their English teacher.

5.2 Relating speech production and sociolinguistic perception

5.2.1 Statistical analysis

It has been established in Chapter 4, based on the descriptive and statistical analyses of PHKor, SGKor, and FIL L2 speech production patterns, that phonation type is the most salient and significant feature that distinguishes the PhilE stop system from 'native' varieties of English (e.g., AmE and BrE), and even from Korean. The PhilE stop system is primarily characterized by significantly short aspiration for voiceless stops, and very short to negative voicing for voiced stops. Bearing these in mind, how do the PHKor group's phonation patterns in L2 English stop production relate to their sociolinguistic perception of PhilE?

Linear regression analyses of VOT were performed with fixed predictor variables drawn from both speech production and sociolinguistic perception data. Like the regression analyses performed in Chapter 4, FIL data was excluded since the main objective of the present study is to analyze the speech production and perception patterns of Korean learners of English. Two regression models were carried out – $EngVOT_3$, which involves VOT tokens from all PHKor students (both informed and uninformed), and $EngVOT_4$, which

included only VOT tokens produced by the uninformed PHKor group. (The subscripts **3** and **4** respectively refer to the third and fourth series of VOT models used in the present study.) The six PHKor students who were informed of Jack's nationality/place of origin were excluded from the second VOT model as they produced empty cells in the data spreadsheet (they were not asked the question "Do you think Jack is Filipino/from the Philippines?").

The following predictor variables for the two English VOT regression models are: **Profession** (*Teacher/Office Worker* or *Other*); **Socioeconomic class** (*Middle-class* or *Wealthy*); participants' **Rating** of Jack's English accent (*Low* or *High*); and whether they would like him to be their **English teacher** (*Yes* or *No*). The variable **Informed/Uninformed** was added to $EngVOT_3$ to account for any variation in VOT between informed and uninformed PHKor students. Meanwhile, the variable **Place of origin** (*Philippines* or *Other*) was added to $EngVOT_4$. The most significant predictor variable based on the regression models in Chapter 4, **Phonation**, was also included in both $EngVOT_3$ and $EngVOT_4$ models. Fixed interactions between Phonation and each of the other predictors were factored in during the stepwise analysis of the models. (It must be noted Gender was excluded from all regression models since all participants identified Jack as male.) Finally, **Participant** was added as a random variable in both regression models.

Before I present the regression models and the results of the stepwise analyses of these models, allow me to first provide a detailed account of the variation in English VOT based on the fixed pairwise interactions involving Phonation and the predictor variables drawn from the sociolinguistic perception data.

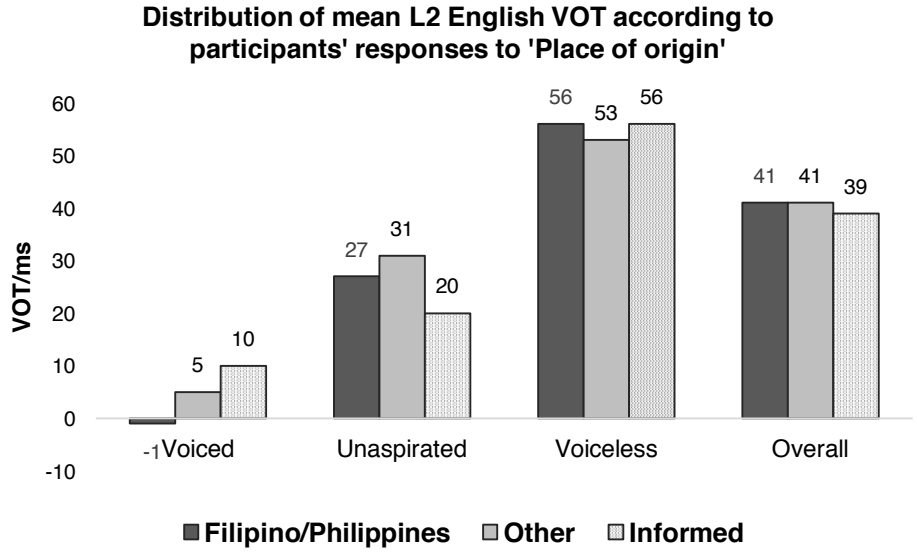


Figure 24: Mean word-initial L2 English VOT values (in ms) sorted by PHKor participants' responses for 'Place of origin'. The data is further distributed by Phonation type. L2 English VOT data comprises stop tokens produced in both formal and informal speech styles.

An initial series of simple *t*-tests revealed that mean English VOTs varied significantly for each predictor variable except **Place of origin**, wherein no significant difference was found between participants who thought Jack was Filipino/from the Philippines (μ=40.52, σ=32.50) and participants who did not think so (μ=40.76, σ=32.50) [t(917)=0.13292, p=0.89428].[20] More insightful patterns of variation, however, were found in the interactions of Phonation type with each of the other predictor variables. Based on the findings summarized in Figure 24 above, PHKor students who thought Jack was from the Philippines produced significantly longer English voiceless stops than those who did not think so [t(944)=2.01, p=0.02244]. Between the two sub-groups, however, mean VOT differences in the production of voiced stops and unaspirated stops were deemed only marginally significant [voiced: t(130)=1.85, p=0.06664; unaspirated: t(194)=1.7024, p=0.09028].

[20] Due to the small number of tokens for each variant of **Place of origin**, the variants were collapsed and recoded into two main sub-categories, namely *Philippines* and *Other*.

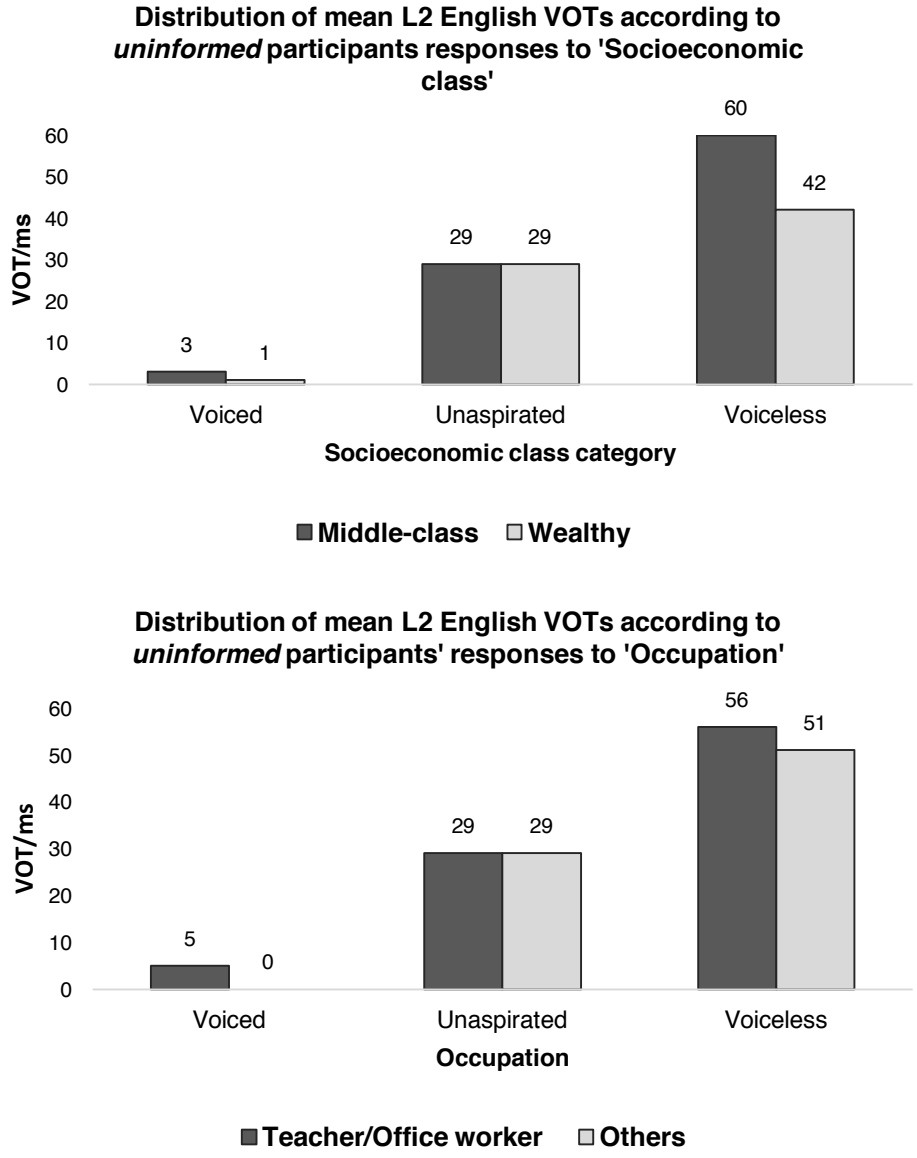


Figure 25: Mean word-initial L2 English VOT values (in ms) sorted by uninformed PHKor participants' responses for 'Socioeconomic class' and 'Occupation'. The data is further distributed by Phonation type. L2 English VOT data comprises stop tokens produced in both formal and informal speech styles.

Because I wanted to check whether revealing sociolinguistic information about a Filipino speaker of English in the perception task would affect their production patterns in the elicitation tasks, the variable Informed/Uninformed was added. Based on the *t*-test results, the uninformed PHKor group did not produce significantly different overall mean VOT from the informed PHKor group [$t(2066)=1.29, p=0.19757$], although the production

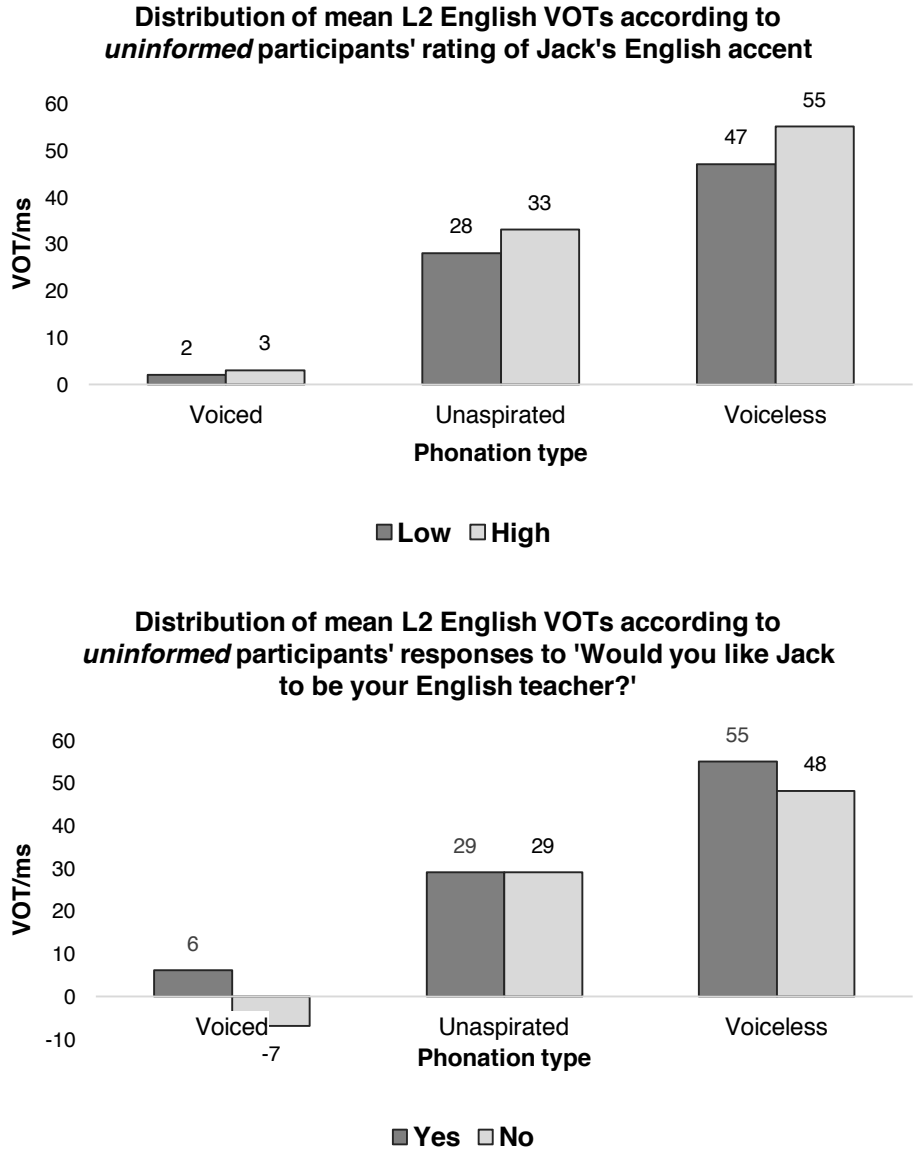


Figure 26: Mean word-initial L2 English VOT values (in ms) sorted by the PHKor participants' rating of Jack's English accent, and responses for 'Would you like Jack to be your English teacher?'. The data is further distributed by Phonation type. L2 English VOT data comprises stop tokens produced in both formal and informal speech styles.

of voiceless stops was marginally so [$t(829)=1.70$, $p=0.08908$]. The findings suggest that voiceless stops with significantly longer mean VOTs (compared to uninformed PHKor students who did not think Jack was from the Philippines) were also produced by informed PHKor students. (In fact, these students even produced significantly longer mean VOTs for voiced stops [$t(436)=3.41$, $p=0.00071$] and unaspirated stops [$t(287)=4.61$, $p<0.0001$].)

Overall, English voiceless stops with significantly longer mean VOTs were produced by PHKor students who (1) correctly identified Jack's place of origin, or (2) who had prior knowledge of his nationality. Based on these overall trends, it appears that students who are made aware of or are more sensitive to the features of the PhilE accent are less likely to assimilate to PhilE norms in their L2 speech production.

Interestingly, the findings summarized in Figure 25 above also show that uninformed students who correctly identified Jack's socioeconomic class produced significantly longer mean VOTs for English voiceless stops [$t(883)=12.60$, $p<0.0001$]. A similar trend was also observed in the interaction between Phonation and Occupation [$t(944)=2.71$, $p=0.00679$]. Furthermore, as seen in Figure 26 above, significantly longer mean VOTs for English voiceless stops were observed among PHKor students who gave Jack's English accent a High rating (*Good* and *Very Good*) [$t(944)=4.31$, $p<0.0001$]. PHKor students who expressed willingness to have Jack as their English teacher also produced longer mean VOTs for voiceless stops [$t(408)=4.04$, $p<0.0001$], and even voiced stops [$t(79)=3.33$, $p=0.00133$].[21]

We now look at the regression models $EngVOT_3$ and $EngVOT_4$. Stepwise analysis of the $EngVOT_3$ model produced a mismatch between the best step-up and step-down models, with the latter model ($R^2=0.59$) showing a significantly better fit [$\chi^2=26.73$, d.f.=3, $p<0.0001$]. In the step-down model, the significant predictor variables were Participant [random, not tested] and the

[21] Later in this section, for the purposes of modelling English VOT data using Rbrul, variants of the predictor variable **Rating** were collapsed into two categories, i.e., ***High*** (*Good* and *Very Good*) and ***Low*** (*Poor* and *Average*). Similarly, for the predictor variable **English teacher**, VOT tokens from Participant F1, who answered *Maybe* to the question 'Would you like Jack to be your English teacher?', were added into the *'Yes'* column in the Rbrul spreadsheet.

Table 33: Best step-down $EngVOT_3$ model of L2 English VOT.
Predictors: Participant [random, not tested] and Phonation:Informed/Uninformed (1.51e-06) + Phonation:Socioeconomic class (1.32e-05) + Socioeconomic class [main effect, not tested] + Informed/Uninformed [main effect, not tested] + Phonation [main effect, not tested] [p-values dropping from full model]

Deviance=18502.87; Log likelihood=-9251.435; d.f.=11; Grand mean=40.092ms				
Predictor variable		**Coefficient**	**Tokens**	**Mean VOT**
Phonation	Voiceless	25.069	1341	54.375
	Unaspirated	--3.083	289	26.198
	Voiced	-21.985	438	5.528
Socioeconomic class	Middle-class	3.365	1462	42.620
	Wealthy	-3.365	606	33.992
Informed/ Uninformed	No	0.195	1409	40.675
	Yes	-0.195	659	38.845
Phonation: Socioeconomic class	Voiceless:Middle-class	3.218	941	58.378
	Voiced:Wealthy	1.0802	118	3.546
	Unaspirated:Wealthy	1.416	88	24.972
	Unaspirated:Middle-class	-1.416	201	26.734
	Voiced:Middle-class	-1.802	320	6.259
	Voiceless:Wealthy	-3.218	400	44.959
Phonation:Informed/ Uninformed	Unaspirated:Uninformed	4.565	198	29.198
	Voiced:Informed	3.735	173	9.822
	Voiceless:Informed	0.829	395	55.974
	Voiceless: Uninformed	-0.829	946	53.708
	Voiced:Uninformed	-3.735	265	2.726
	Unaspirated:Informed	4.565	91	19.669

interactions of Phonation with Socioeconomic class and with the Informed/Uninformed variable [both $p<0.0001$]. Meanwhile, the best step-down $EngVOT_4$ model revealed Participant to be a significant predictor [random, not tested], as well as the interactions of Phonation with English teacher and Place of origin [$p<0.0001$].

5.2.2 Discussion and conclusion

The regression models corroborate the earlier observation that patterns of L2 English stop production vary across participants who manifest a range of perceptions or attitudes towards (non-native) speakers of English. Students who were better at identifying or perceiving accent features that index sociolinguistic

Table 34: Best step-down $EngVOT_4$ model of L2 English VOT.
Predictors: Participant [random, not tested] and Phonation:Socioeconomic class (1.04e-06) + Phonation:English teacher (1.23e-06) + Phonation:Place of origin (8.52e-06) + Socioeconomic class [main effect, not tested] + English teacher [main effect, not tested] + Place of origin [main effect, not tested] + Voicing [main effect, not tested]

Deviance=12,5633.966; Log likelihood=-6281.983; d.f.=14; Grand mean=40.675ms				
Predictor variable		**Coefficient**	**Tokens**	**Mean VOT**
Phonation	Voiceless	22.685	946	53.708
	Unaspirated	4.349	198	29.198
	Voiced	-27.034	265	2.726
Socioeconomic class	Middle-class	3.499	936	44.296
	Wealthy	-3.499	473	33.510
English teacher	Yes	4.338	1078	42.547
	No	-4.338	331	34.577
Place of origin	Filipino/Philippines	2.397	492	40.523
	Other	-2.397	917	40.756
Phonation: Socioeconomic class	Voiceless:Middle-class	4.215	619	59.754
	Voiced:Wealthy	2.868	79	1.150
	Unaspirated:Wealthy	1.347	67	28.953
	Unaspirated:Middle-class	-1.347	131	29.323
	Voiced:Middle-class	-2.868	186	3.395
	Voiceless:Wealthy	-4.215	327	41.262
Phonation: English teacher	Unaspirated:No	9.012	51	29.407
	Voiced:Yes	4.618	200	5.919
	Voiceless:Yes	4.394	731	55.268
	Voiceless:No	-4.394	215	48.404
	Voiced:No	-4.618	65	-7.100
	Unaspirated:Yes	-9.012	147	29.152
Phonation: Place of origin	Unaspirated:Other	7.178	118	30.765
	Voiceless:Filipino	4.350	320	55.913
	Voiced:Filipino	2.828	92	-1.147
	Voiced:Other	-2.828	173	4.785
	Voiceless:Other	-4.350	626	52.581
	Unaspirated:Filipino	-7.178	80	26.887

features like socioeconomic class or occupation, or those who expressed more positive attitudes towards the non-native accent (regardless of whether they were aware of it), produced significantly longer VOTs across all phonation types. Moreover, stepwise analysis of the $EngVOT_3$ model showed that patterns of stop production, primarily of voiced and unaspirated stops, vary significantly between the informed and uninformed PHKor groups; there was even significant variation within the uninformed PHKor students themselves, in their

production of voiceless stops.

Overall, English voiceless stops with significantly longer mean VOTs were produced by PHKor students who had prior knowledge of or correctly perceived and/or identified Jack's accent. Based on the empirical evidence gathered from both speech production and speech perception data, and the positive correlation between accuracy of L2 speech perception and L2 VOT production, it seems tempting to conclude at this stage of the present study that students who are more aware or better at identifying and/or perceiving **Standard** PhilE are less likely to assimilate to non-native L2 norms during their L2 speech acquisition. Nonetheless, if we are to accept this claim and discuss it further, some important ramifications relating to Flege's SLM and theories of L2 speech acquisition must be addressed.

First, PHKor students were just good as FIL students at identifying accent features that index certain sociolinguistic backgrounds, like socioeconomic class or occupation; they were also just as good at detecting the presence of a foreign (i.e., non-native) English accent, or "divergences from English phonetic norms" (Flege, 1995, p. 233), even overtly expressing their awareness and understanding that regional varieties of English differ in terms of their accent features. The findings reflect Flege's (1984) observation that even with short speech samples, phonetically untrained listeners can identify foreign accents. But the majority of participants failed to correctly identify or distinguish Jack's Standard PhilE accent from non-native regional varieties or even (General) AmE norms. It is important to note, however, that PHKor students identified Jack as a Filipino at about the same rate as the FIL group, so there is no evidence here that the Korean students are bad at the given task – in

fact, they seem about as good as Filipino speakers of English.

Second, the SLM postulates that higher rates of perceptual accuracy of L2 speech norms positively correlate with lower rates of L2 speech production errors. Given the nature of the data collected and participants involved in the present study, we would expect the PHKor group's L2 speech production patterns (i.e., the L2 they acquire in Philippine-based ESL context, PhilE), to correlate with their rate of perceptual accuracy of PhilE speech norms. Considering this, PHKor students who are better at identifying and/or perceiving the L2 accent (Standard PhilE) should produce speech patterns that assimilate closer to that L2 variety. VOT data from the PHKor group, however, suggests otherwise; PHKor students were producing L2 speech patterns that dissimilated from PhilE production norms even with increasing perceptual accuracy of the Standard PhilE accent. There are several plausible reasons as to why this might be happening; I surmise that they involve deeply-rooted language learning and teaching ideologies. First, although PHKor students generally show neutral-to-positive dispositions or attitudes towards PhilE most of them, like participants **F1** and **F7** (see their excerpts below), would not want to acquire it, since they aspire to acquire inner-circle norms and achieve native-like proficiency:

70. If I stay with Korean students, I follow their accent when I speak English. So I watch English movies and study more vocabulary. [**F1**, PHKor]
71. If I can speak English well, I can go to abroad with confidence because I can talk with abroad people. Also, we can get a good job we want. Our choice can be wide. [**F7**, PHKor]
72. How to remove Korean accent? [**M1**, PHKor]

Even if PhilE is now increasingly being regarded as a 'native' variety by many speakers (especially Filipinos), most Koreans studying ESL do not think that is

the case. SGKor students like F13 also share similar sentiments regarding prestige differences between inner-circle and outer-circle English varieties:

73. I think it is important to live in countries which use English to learn real English. [**F13**, SGKor]

Second, hegemonic ideologies of native-speakerism that permeate Philippine-based English language education continue to complicate the nature of non-native L2 speech acquisition: pedagogically, General AmE remains the target language of acquisition, even though Standard PhilE is the main perceptual input (as most teachers of English are Filipinos). In this setting, L2 speech production errors are inevitably viewed as deviances or divergences from General AmE norms. It could be the case that, while most PHKor students wish to avoid acquiring PhilE, the students who are better at identifying and/or perceiving PhilE accent features were better able to avoid acquiring PhilE features in their English speech production.

Regarding the idea of 'avoidance' of PhilE features in L2 speech, it may be useful to view it under the notion of *phonetic talent* (Lewandowski, 2012) which is:

> ...composed of a bundle of abilities, some located at the input processing stage - starting with undisturbed auditory abilities as a premise and the capacity to notice important linguistic information and tell it apart from mere noise or blur - to the more central processing stages of encoding and storage, and ending with the output stage, where stored phonetic information needs to be retrieved from memory. (p. 65)

Summarizing, Lewandowski claims that phonetic talent bears a direct influence on the mechanism of phonetic convergence, with possible underlying attentional and memory components (p. 205); in a dialog, phonetic talent becomes a decisive factor in the amount of phonetic convergence that non-native speakers display toward their native speaking partners. Bearing in mind

this notion, we would expect students who are better able to avoid acquiring PhilE features in their L2 to be more talented – that is, more attentive to (and perhaps more careful and cautious about) their speech production – because they might hesitate or be reluctant to sound 'Filipino'.[22]

Third, and finally, the potential influence of L1 in the interlanguage during L2 speech acquisition should not be ignored. The SLM postulates that given two L2 sounds, the sound that is less dissimilar from an existing L1 sound in their phonetic inventory should be acquired by L2 learners more easily in the short term.[23] Since VOTs for Korean aspirated, lenis, and fortis stops are less dissimilar from VOTs for native English voiceless, unaspirated, and lenis stops (L1 Korean and (General) AmE stops have significantly longer mean VOTs than PhilE stops), Korean ESL learners should be able to acquire the stop system of a native English variety like AmE more easily than the stop system of PhilE. But as mentioned earlier, PHKor students are much less exposed to native English accents since the speech perceptual input in their ambient formal learning environment is almost always PhilE. Hence, drawing from the SLM perspective, it is conceivable that L1 transfer has a greater effect on PHKor students who are better at identifying and/or perceiving Standard PhilE, thus accounting for the difference between the ST and LT PHKor groups.

This chapter has highlighted the importance of language perception in L2 speech acquisition, and has utilized statistical tools to draw empirical

[22] This invites a plethora of other related research questions that involve other issues in language acquisition research, such as *attention* and even *motivation* during (second) language acquisition. In the case of the PHKor students, who are exposed to a non-native ambient learning environment, such issues are crucial and equally important; however, they lie beyond the scope of the present study.

[23] In the long-term, the SLM posits the opposite namely, that the less dissimilar / more similar sound will be harder to acquire to a native-like level, because it continues to be influenced inappropriately by the phonetic norms of a close L1 sound.

relations between L2 speech production and speech perception patterns, situating and framing the analysis within Flege's SLM. It has also attempted to raise several issues addressing Flege's caveat regarding his initial version of the SLM: that is, that "not all L2 production errors are perceptually motivated" (1995, p. 238). For example, strong and deeply-rooted language learning and teaching ideologies involving prestige differences between Inner and Outer Circle varieties of English, and between native- and non-native English speakers, were proposed to exert a strong influence on how Korean L2 learners perceive and even acquire PhilE.

In the next and final chapter, I provide an overall summary of the results presented in Chapters 4 and 5, and attempt to further address the key theoretical and conceptual issues surrounding L1 and L2 speech production and sociolinguistic perception of non-native varieties of English; discuss the strengths and limitations of the present study; provide suggestions for further research; and present ideas on how sociophonetic approaches can be utilized in the Philippines, a potentially rich site of language data, to advance and integrate the fields of sociolinguistics, SLA, ESL, and applied linguistics.

CHAPTER 6

CONCLUSION

In this study, I attempted to advance sociolinguistic variationist and SLA research by providing a descriptive and statistical analysis of L1 and L2 speech production and L2 sociolinguistic perception patterns among Philippine-based ESL learners. This is perhaps the first research of its kind that analyzes sociolinguistic variation in second language acquisition in the Philippines.

6.1 Summary of results

In Chapter 4, analysis of L1 and L2 VOT and f_0 onset reveals that PHKor students are (1) assimilating phonetic features of the PhilE stop system across segmental and subsegmental levels; (2) exhibiting L1-to-L2 interference, evidenced by L2 stops that appear to assimilate towards Korean production norms in certain phonological environments; and (3) producing dissimilatory phonetic drift patterns in their L1 sound system, indicating bi-directional sound change and development. For a summary of the L1 and L2 categorical assimilation/linkages at the segmental and subsegmental levels, please refer to Table 31 in Chapter 4, Section 4.4.3.

There is apparent-time evidence of significant stylistic variation in English f_0 onset with respect to differences in speech style, as well as evidence that phonetic drift can vary or even change (e.g., from assimilatory to dissimilatory) depending on the nature of the language learning program, or degree of linguistic exposure in the ambient L2 setting. In fact, PHKor students who experienced greater linguistic exposure effects – that is, those who

interacted more often with Filipino peers and were involved more in their formal L2 learning – produced overall shorter English and Korean VOTs across all types of phonation, as well as lower mean English f_0 onset (for stops followed by a PALM vowel). These findings suggest that phonetic drift during L2 speech acquisition may be environmentally conditioned and motivated, echoing Dickerson's (1974, p. 12) observation that phonetic variability is sensitive to not only style differences, but also to social differences of various kinds.

The results of the present study differ from other studies in several ways. First, there is no evidence of L1 aspirated-lenis merger among the Korean participants. To some extent, these findings challenge or provide counterevidence to the general claim in the current literature that Korean aspirated and lenis stops are undergoing merger in terms of VOT duration (cf. Choi, 2002; Kang & Guion, 2008; M.-R. Kim, 2008, 2011b; Oh, 2011; Silva et al., 2004, Silva, 2006a, b; Wright, 2007). Perhaps the lack of merger could be attributed to the general shortening of VOT in L1 stops due to assimilation to stops in the non-native L2 variety.

Second, significant gender effects were not observed in many cases, except in the production of L1 Korean VOT within the PHKor group (p=0.0218), wherein female PHKor students exhibited significantly longer mean VOT for lenis and aspirated stops. This finding also deviates from Oh's (2011) study, which revealed that females producing significantly shorter VOTs for aspirated stops (and therefore exhibiting greater aspirated-lenis merger).

It is also interesting to note, based on the normalized z-scores for f_0 onset, that gender is not a significant predictor of variation in either English or Korean f_0 onset, suggesting that female and male Korean student participants in

the present study were producing similar tonal contrast patterns in both languages, despite having different glottal physiologies. In fact, speech style is found to be a more significant predictor of the variation in f_0 onset: PHKor students were approximating tonal contrast patterns in their L2 to the tonal contrast patterns in the non-native L2 variety in a particular style.

Third, age is the only predictor variable in the study whose effect resulted in an increasing overall trend in mean English VOT. I believe that this has potentially relevant implications on ESL teaching based on Flege's theoretical assumptions in SLM, which was primarily created to provide an explanatory account of age-related effects in L2 speech acquisition (Chang, 2012). Assuming one of Flege's SLM postulates is correct – that older learners are more like to assimilate various sounds to the same phonetic category – then it makes sense for older PHKor learners to be more likely to assimilate non-native L2 stops to corresponding L1 sounds in their existing L1 phonetic inventory, causing them to produce longer English VOTs.

Overall, adopting a variationist perspective on second language acquisition and examining sociophonetic data from PhilE-based ESL contexts have revealed the importance of what Chang (2012, p. 251) refers to as "linguistic experience" during L2 speech acquisition. When measuring phonetic variation and change during SLA, age of learning or AOL (Chang, 2012; Flege, 1995) is generally used as the yardstick for linguistic experience; however, as the present study has revealed, socially-conditioned factors not necessarily related to age can also serve as proxies for linguistic experience, individually and interactively affecting categorical assimilation processes and phonetic drift patterns with varying levels of significance. Focusing particularly on the PHKor

group, the overall shortening of their L2 VOT and lowering of their L2 f_0 onset have been positively correlated with the length and degree of their linguistic exposure to the non-native L2 variety, illustrating that the nature of the ambient sociolinguistic environment (on top of age-related effects) during L2 speech acquisition is a crucial and necessary condition for examining variation or change in the categorical assimilation of L2 sounds and phonetic drift patterns in the interlanguage.

Chapter 5 has revealed that students who are more aware of or better at identifying and/or perceiving **Standard PhilE** are less likely to assimilate to non-native L2 production norms during their L2 speech acquisition. This highlights the importance of sociolinguistic perception and perceptual accuracy to L2 speech acquisition.

The present study utilized empirical data to draw relations between L2 speech production and speech perception patterns, situating and framing the analysis within Flege's SLM. It has also identified other key areas of potential significance to variation in L2 speech production that may or may not be necessarily, directly, nor intrinsically related to their perception of L2 sounds – addressing Flege's caveat on his initial version of the SLM, i.e., that "not all L2 production errors are perceptually motivated" (1995, p. 238).

Considering the SLM framework, however, a detailed and comprehensive account of the relationship between speech production and speech perception requires a combination of compatible elicitation and phone perception tasks. Such methods have been incorporated by several notable studies on speech perception (see Best & Tyler, 2007; Choi et al., 2013; Flege & Eefting, 1987a, b; Liberman et al., 1957; and Nearey & Rochet, 1994). The

perception task adopted in this study, however, was sociolinguistic – and not specifically phonetic – in nature, as it was designed to determine how foreign learners perceive and identify the sociolinguistic background of a speaker with a non-native but standard PhilE accent. There were no tasks specifically designed to perceptually identify non-native L2 phones (even L1 phones), or discriminate one phone from another.

Thus, from a methodological perspective, relating PHKor production trends in VOT and f_0 onset of say, English /p/ to the results of a phone perception task involving the identification or discrimination of similar phones, i.e., non-native English /p/ and even Korean word-initial /p* p and p^h/, would yield a potentially more accurate interpretation of the learners' categorical assimilation processes and phonetic drift patterns.

6.2 Limitations of the study

In this section, I outline key issues surrounding the present study that need to be addressed. I focus on the limitations of my research design, particularly paying attention to the methodology and data collection employed during my three-month fieldwork in Baguio City, Philippines.

Although the testing sessions yielded significant trends in English and Korean VOT and f_0 onset, and revealed interesting sociolinguistic perceptual patterns, there are certain aspects of the research design that can be improved upon. First, while there were three elicitation tasks – and therefore data from three speech styles – for English (wordlist, reading passage, and casual interview), there was only one for Korean (a wordlist).[24] Adding more elicitation

[24] There were in fact two Korean elicitation tasks conducted during the testing sessions, the second one being a phrase list task adopted from Kang and Guion's (2008) clear speech

tasks for Korean should be considered for further research. Second, English stop tokens were unevenly distributed in the wordlist and reading elicitation tasks. This project initially began as a study of voiceless stop production patterns in English, so there were significantly more voiceless stop tokens in the elicitation tasks for the first few testing sessions (English voiced and unaspirated stop tokens were initially included as word-initial stops in filler word tokens). It was only after a few sessions that I decided to modify the wordlist and reading passage text to add more tokens of word-initial voiced stops and unaspirated stops in [#s/ptk/_] position, after noticing interesting trends in their VOT and f_0 onset. Third, and as already mentioned earlier in Section 6.1, the perception task was sociolinguistic in nature, so perceptual assimilation of certain L1 and L2 stops could not be quantitatively measured and benchmarked against the learners' actual production of the same/similar L1 and L2 stops. Moreover, a series of matched guise sociolinguistic and/or perception tasks should be able to yield better results; having the participants listen to more PhilE speakers or types of (PhilE) accent can provide a more detailed picture of foreign learners' perceptions and attitudes towards PhilE.

In terms of the nature of data collected and how data collection procedures were conducted, there are certain aspects that can also be improved upon. First, all participants in the study were university students aged 17-25; while they fit well into Flege's SLM participant criteria (relatively older L2 learners with considerable linguistic experience and L2 language proficiency), it would have been more beneficial to obtain data from a wider age range,

material. Due to time constraints, however, not all tokens from the phrase list were measured for VOT and f_0 onset, so the data set was eventually excluded from the analysis. I would also like to mention that because I could not speak nor understand Korean, I was not able to conduct a similar sociolinguistic casual interview in their L1.

involving younger L2 learners (children and adolescents) and perhaps even older ones (adults in their 30s, and middle-aged to senior ones), to identify not only if there are age differences in L2 speech acquisition, but also to determine the extent to which the Korean stop system is undergoing generational change. Second, despite collecting language data from both short-term (ST) and long-term (LT) PH-based Korean students, the synchronic nature of the study limits our understanding of the potential rapid effects of categorically assimilated or newly acquired L2 English sounds on L1 Korean sound change during the early stages of L2 speech acquisition (cf. Chang, 2012). Collecting longitudinal data of both speech production and perception patterns from ST and LT L2 learners would shed better light on the nature of L2 speech acquisition. Third, the comparison sample group, SGKor, comprised only five participants (three females and two males) – it would have been helpful if data from more SGKor students were collected to balance the two Korean participant groups in terms of length of study (LOS, in years), language proficiency, and L1 and L2 language background.

It would have been more ideal to compare the current PHKor group with a Korean-English bilingual group that was exposed to General AmE (the target language of instruction in Philippine-based ESL) instead of Singapore English (SgE). Indeed, one might raise several issues regarding the potential rapid effects of exposure to SgE on the L2 speech production patterns among SGKor students. This is a valid concern, since SgE is an entirely different English variety with its own distinct phonological inventory (to know more about SgE phonology, see Deterding's (2007) book, *Singapore English*). But as mentioned in Ng (2005), bilingual Singaporeans generally produce English stops with

mean VOT values comparable to native English speaker norms (for mean SgE VOT values, see Figure 7, p. 50). Thus, if we assume that exposure to SgE has brought about rapid and/or short-term exposure effects to the SGKor participants' L1 and/or L2 stop production patterns, changes in VOT duration would be less perceptible.

One final point: the present study did not account for variation in L2 speech production among the PHKor participants' ESL teachers, who are all Filipinos with perceptibly distinct (Standard) PhilE accent features. It is highly possible that variation in speech and/or pronunciation teaching styles can significantly influence and even overtly alter students' L2 speech production patterns (this is particularly relevant to the ST PHKor learners, whose L2 input came mostly from their ESL teachers due to the intensive nature of the school's in-house teaching program that requires the students to live on campus). Moreover, Filipino ESL teachers can also significantly influence their students' perceptions of PhilE and acquisition of sociolinguistic knowledge of PhilE accent features through their teaching and discourse practices (cf. Starr, 2011).

6.3 Directions for future research

The most important step to advancing the present study would be to embark on longitudinal research of L2 speech acquisition in Philippine-based language learning contexts, addressing one or all the following key areas:

- L1 and L2 speech production and speech perception patterns, and
- sociolinguistic perceptions, language attitudes, and language-related ideologies towards PhilE.

This type of research should cover a larger sample population size of foreign learners. Also, depending on the main research objectives and the timeframe for

conducting fieldwork, the following criteria for participant collection may be considered:

- Collection of foreign student participants from various types of language programs other than ESL, e.g., language preparation courses for examinations like IELTS and TOEIC; courses in Business English or English Communication; and/or general education/university courses taken up by full-time foreign students in local institutions.
- Collection of foreign student participants from ESL educational settings in major Philippine urban centers, where most of them reside (see Figure 2, p. 10).
- Collection of immigrant population samples. In general, we would expect immigrants, who are more likely to have already assimilated or integrated into Filipino society, to speak a variety of English that closely resembles PhilE. Immigrants are also more likely to be able to speak Tagalog and, depending on their place of residence, another Philippine language variety and/or dialect.

Another potentially relevant topic regarding SLA in Philippine-based ESL contexts is phonological variation in teacher speech. As already mentioned, it is highly possible that variation in speech and/or pronunciation teaching styles can significantly influence and even overtly alter students' L2 speech production patterns. Teachers, as active speaker agents, can exploit the social meanings of standard and non-standard variants to construct styles appropriate to different classroom tasks (Starr, 2011, p. 293); however, in the case of English language education in Outer Circle countries like the Philippines, such styles continue to perpetuate hegemonic ideologies of native-speakerism, which may contribute

to why foreign learners of English are still expressing reluctance towards acquiring non-native production norms, despite the general increase in neutral-to-positive dispositions or attitudes towards non-native English varieties.

Finally, the present study has only investigated a small part of the *interlanguage*; phonetic drift manifests across segmental and subsegmental levels, and can vary from one acoustic correlate to another. While tonal contrast has been investigated in this study, the production and perception of L1 and L2 vowels – which are more prone to synchronic variation and generational change – during L2 speech acquisition is worth investigating in the context of Philippine-based ESL learning.

6.4 Final remarks

The current predominant narrative on Philippine-based ESL education is that the Philippines is an ideal place to learn English mainly because it is a good "first step in preparing for school in English-speaking countries down the road" (Strother, 2015). Choe (2016) refers to Philippine-based ESL learning as a *bridge* to tertiary education in the Inner Circle countries. Furthermore, the Philippines has become a viable low-cost option for ESL education (Gomez, 2013), since school rates and overall living expenses are cheaper than in Korea and in other English-speaking countries (Jamir, 2015). Taking a sociolinguistic perspective and incorporating sociophonetic approaches to SLA research, however, the present study has revealed that Korean ESL learners now show more neutral-to-positive attitudes towards PhilE as a medium of learning and instruction (cf. Castro & Roh, 2013; Roh, 2010), but remain reluctant to acquire PhilE accent features in their speech production. Even though Koreans are putting more economic and social value into Philippine-based ESL education,

many of them continue to regard PhilE as a less prestigious, 'non-native' variety of English, and still aspire to achieve 'native-like' English norms in speech.

It is my hope that this research has illuminated several important issues surrounding L2 speech acquisition, language ideologies, and language teaching and pedagogy in the Philippines. I wish that the results of this study can provide key industry players – Filipino English teachers and curriculum planners, foreign and local education think-tanks and investors, and most importantly, the L2 English learners themselves – important insights on the role of (Standard) Philippine English as a medium of instruction; and ways to reimagine, reposition, or even challenge predominant language ideologies, while providing avenues to help students improve their language proficiency skills.

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APPENDIXES

Appendix 1. Language background questionnaire (LBQ) for Philippine-based Korean student participants

언어환경 설문지

Contact Information (연락처 정보)

Name(성함)	_____	Email (이메일)	_____
Mobile No. (핸드폰번호)	_____	Today's date (오늘 날짜)	_____

PART A

1. Sex (성별) _____
2. Date of birth (생년월일) _____ (year 년) _____(month 월) _____(day 일)
3. Nationality (국적) _____
4. Native Language (모국어) _____
5. Highest education attainment (최종학력):

Elementary school (초등학)	☐
Middle school (중학)	☐
High school (고등학)	☐
University (대학)	☐
Others (기타):	_____

6. Please state your current address in Baguio City.
(바기오 내 주소를 기입해 주세요)

_____

7. How long have you been living in the Philippines? _____ (years) _____(months)
(필리핀에서 얼마 동안 사셨습니까?) (년) (개월)

8. List all the countries you have lived in for six months or more. Also indicate the duration (in number of years and months) of your stay in each country.
(6개월 이상 거주했던 모든 도시를 기입해주세요. 각 나라에 거주했던 기간도 기입바랍니다.)

	Duration (거주기간)	
Country (국가)	Years (년)	Months (개월)
_____	_____	_____
_____	_____	_____
_____	_____	_____

9a. Where is your family living right now? _____
(현재 당신의 가족들은 어디에서 살고 있습니까?)

9b. Where in Korea are you (and your family) from?
(한국의 어느 지역 출신입니까?)

Seoul (서울)	☐	Gyeonggi-do (경기도)	☐
Busan (부산)	☐	Gangwon-do (강원도)	☐
Daegu (대구)	☐	N. Chungcheong (충청북도)	☐
Incheon (인천)	☐	S. Chungcheong (충청남도)	☐
Gwangju (광주)	☐	N. Jeolla (전라북도)	☐
Daejeon (대전)	☐	S. Jeolla (전라남도)	☐
Ulsan (울산)	☐	N. Gyeongsang (경상북도)	☐
Jeju (제주)	☐	S. Gyeongsang (경상남도)	☐
Others (기타):	_____		

9c. How long did you live there? _____(years) _____(months)
(그 곳에서 얼마 동안 사셨습니까?) (년) (개월)

10. Please state your parents' occupation:
(부모님의 직업을 기입해주세요.)

Father's occupation (아버지 직업): _____

Mother's occupation (어머니 직업): _____

PART B

11. How long have you been studying English? _____(years) _____(months)
(영어를 얼마나 공부해오셨습니까?) (년) (개월)

12a. List all the places (cities/countries) where you had previously learned English. Also, list the nationalities of your previous English teachers. You may arrange them in the chronological order.
(이전에 영어를 배웠던 모든 곳(도시/나라)과 영어선생님의 국적을 기입해 주세요. 순서대로 적어주시길 부탁드립니다.)

City/Country (도시/국가)	Duration (거주기간) Years (년)	Months (개월)	Nationality of your English teacher (영어선생님의 국적)
_____	_____	_____	_____
_____	_____	_____	_____

12b. In your opinion, which nationality best taught you English language?
(어느국적의 선생님이 영어를 제일 잘 가르쳤다고 생각하십니까?)

My _____ (nationality 국적) teacher best taught me English Language.
( )출신 선생님이 영어를 제일 잘 가르쳤다고 생각합니다.

13a. Have you studied any languages other than Korean and English?
(한국어와 영어 이외에 다른 언어를 공부하신적이 있으십니까?)

☐ Yes (네) ☐ No (아니오)

If your answer is No, please proceed to Question 16.
(만약 아니라면, 16번문항부터 진행해주세요.)

13b. Please list the other languages you have studied and rate your language ability for each.
(당신이 할 수 있는 다른외국어의 종류와 능력정도를 기입하여 주시기 바랍니다.)

Language (언어)	Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
1. _____	☐	☐	☐	☐
2. _____	☐	☐	☐	☐

14. How have you been learning English up to this point?

	Always (항상)	Most of the time (대부분)	Sometimes (가끔)	Never (전혀)
Formal classroom instruction *(정규 학교 수업)*	☐	☐	☐	☐
Learning independently using textbooks/educational materials *(교과서와 교육자료로 개인적으로 공부함)*	☐	☐	☐	☐
Interacting with my family *(부모님과 함께)*	☐	☐	☐	☐
Interacting with my Korean friends *(한국 친구와 함께)*	☐	☐	☐	☐
Interacting with my Filipino friends *(필리핀 친구와 함께)*	☐	☐	☐	☐
Through the Internet: *(인터넷을 통해)*				
SNS (Kakao Talk, Facebook, Naver, etc.) *(SNS (카카오톡, 페이스북, 네이버 등)*	☐	☐	☐	☐
Reading websites written in English *(영어로 쓰여진 웹사이트를 읽으며)*	☐	☐	☐	☐
Through online English learning websites *(온라인 인터넷 강의를 통해)*	☐	☐	☐	☐

(지금의 수준까지 영어를 배우기까지 어떻게 영어를 배우셨습니까?)

15a. Please rate your English Language skills:
(당신의 영어능력 정도를 표기해 주세요)

Skill (능력)	Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
1. Reading (읽기)	☐	☐	☐	☐
2. Writing (쓰기)	☐	☐	☐	☐
3. Speaking (말하기)	☐	☐	☐	☐
4. Listening (듣기)	☐	☐	☐	☐

15b. What do you think is the most important skill that you want to develop? You may rank the choices below, 1 – highest; 4 – lowest.

(어떠한 능력을 개발하는데 가장 중요하다고 생각하십니까? 1위부터 4위까지 숫자로 표기해 주세요)

Reading (읽기) _____ Writing (쓰기) _____

Speaking (말하기) _____ Listening (듣기) _____

16a. Please rate your Korean Language skills:
(당신의 한국어구사 능력을 표기해 주세요)

Skill (능력)	Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
1. Reading (읽기)	☐	☐	☐	☐
2. Writing (쓰기)	☐	☐	☐	☐
3. Speaking (말하기)	☐	☐	☐	☐
4. Listening (듣기)	☐	☐	☐	☐

16b. Do you think your Korean accent is good?
(당신의 한국어 억양은 좋다고 생각하십니까?)

Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
☐	☐	☐	☐

17a. Do you think you have a Korean accent in your English? If so, please rate the strength of your accent according to the following scale:
(당신의 한국어 억양이 영어를 말할 때 반영된다고 생각하십니까? 만약 그렇다면 얼마나 많이 반영이 된다고 생각하는지 표기해 주시기 바랍니다.)

No accent (한국어억양 없음)	Very Little (거의 없음)	A Little (조금)	Intermediate (중간)	Heavy (많이)	Very Heavy (아주 많이)
☐	☐	☐	☐	☐	☐

17b. Do you think you have a Filipino accent in your English? If so, please rate the strength of your accent according to the following scale:
(필리핀 발음 억양이 영어를 말할 때 반영되있다고 생각하십니까? 만약 그렇다면 얼마나 많이 반영이 되었다고 생각하는지 표기해 주시기 바랍니다.)

No accent (한국어억양 없음)	Very Little (거의 없음)	A Little (조금)	Intermediate (중간)	Heavy (많이)	Very Heavy (아주 많이)
☐	☐	☐	☐	☐	☐

18. What are your reasons for studying English? Please check the appropriate response.
(영어를 공부하는 목적이 무엇입니까? 적절한 답변을 체크해 주시기 바랍니다.)

	Strongly disagree (절대 동의하지 않음)	Disagree (동의하지 않음)	Agree (동의함)	Strongly agree (매우 공감)
I need English to speak with anybody from anywhere in the world.	☐	☐	☐	☐

(나는 세계각지의 여러 사람과 이야기하기 위해 영어공부를 한다.)				
I need English to get high grades in school. *(나는 학교에서 좋은 성적을 받기 위해 영어공부를 한다.)*	☐	☐	☐	☐
I need English to enter a good school and to get a better job. *(나는 좋은 학교에 들어가고 좋은 직업을 갖기 위해 영어공부를 한다.)*	☐	☐	☐	☐
I need English because I enjoy talking to foreign friends. *(나는 외국인 친구들과 대화하는 것을 좋아해서 영어공부를 한다.)*	☐	☐	☐	☐
I don't know why I need English. *(나는 영어가 왜 필요한지 모르겠다.)*	☐	☐	☐	☐
Other reasons? (기타 이유)	_____			

19. What are your reasons for studying in Baguio? Please check the appropriate response.
(바기오에서 공부하는 이유가 무엇입니까? 적절한 답변을 체크해 주시기 바랍니다.)

	Strongly disagree (절대 동의하지 않음)	Disagree (동의하지 않음)	Agree (동의함)	Strongly agree (매우 공감)
The schools are good in Baguio. *여기의 학교가 좋아서*	☐	☐	☐	☐
It is a good escape from Manila and other busy cities/towns in the country. *마닐라나 다른 복잡한도시/마을에서 멀기 때문에*	☐	☐	☐	☐
The cost of living here is low. *물가가 낮아서*	☐	☐	☐	☐
The cool climate is ideal for studying. *시원한 기후가 공부하기에 이상적이라서*	☐	☐	☐	☐
The people are nice and friendly. *사람들이 친절하고 친근감있어서*	☐	☐	☐	☐
Other reasons? *(기타 이유)*	_____			

20. If there is anything else that you feel is interesting or important about your language background or language use, please comment below.
(당신의 언어환경과 언어사용에 있어서 흥미있는 점이나 중요하다고 생각하는 점이 있다면, 아래에 답변에 주시기 바랍니다.)

PART C

21. Do you have additional questions that you feel are not included above? If yes, please write down your questions and answers on separate sheets.
(위에 포함되지 않은 추가적인 문항이 있으십니까? 만약 그렇다면 당신의 질문과 답을 따로 나눠드린 시트에 적어주시기 바랍니다.)

Appendix 2. Language background questionnaire (LBQ) for Filipino student participants

Contact Information:

Name:	_____	Email:	_____
Mobile No.:	_____	Today's date:	_____

Please answer the following questions to the best of your knowledge.

PART A

1. Sex: _____
2. Date of birth: _____ (year) _____(month) _____(day)
3. Nationality: _____
4. Native Language: _____
5. Highest education attainment:

Elementary school	☐
Middle school	☐
High school	☐
University	☐
Others, please specify:	_____

6. Please state your current address in Baguio City.

_____

7. Have you ever lived abroad?

☐ Yes ☐ No

If your answer is No, please proceed to Question 9.

8. List all the countries you have lived in for six months or more. Also, indicate the duration (in number of years and months) of your stay in each country.

	Length of stay	
Country	Years	Months
_____	_____	_____
_____	_____	_____
_____	_____	_____

9a. Where is your family living right now?

_____

9b. Where in the Philippines are you (and your family) from?

Region I	☐	Region VIX	☐
Region II	☐	Region X	☐
Region III	☐	Region XI	☐
Region IV-A	☐	Region XII	☐
Region IV-B	☐	NCR	☐
Region V	☐	CAR	☐
Region VI	☐	CARAGA	☐
Region VII	☐	ARMM	☐

Region VIII ☐ Others: _____

9c. How long did you live there? _____(years) _____(months)

10. Please state your parents' occupation:
Father's occupation: _____
Mother's occupation: _____

PART B

11. How long have you been studying English? _____(years) _____(months)

12. List all the places (cities/countries) where you had previously learned English. Also, list the nationalities of your previous English teachers. You may arrange them in the chronological order.

	Length of study		
City/Country	Years	Months	Nationality of your English teacher
_____	_____	_____	_____
_____	_____	_____	_____

13a. Have you studied / Do you speak any languages other than English and Filipino?

☐ Yes ☐ No

If your answer is No, please proceed to Question 14.

13b. Please list the other languages you have studied and then rate your language ability for each.

Language	Poor	Average	Good	Very Good
1.	☐	☐	☐	☐
2.	☐	☐	☐	☐
3.	☐	☐	☐	☐

14. Please rate your English Language skills:

Skill	Poor	Average	Good	Very Good
1. Reading	☐	☐	☐	☐
2. Writing	☐	☐	☐	☐
3. Speaking	☐	☐	☐	☐
4. Listening	☐	☐	☐	☐

15. What do you think is the most important skill that you want to develop? You may rank the choices below, 1 – highest; 4 – lowest.

Reading _____ Writing _____
Speaking _____ Listening _____

16a. Do you think you have a Filipino accent in your English? If so, please rate the strength of your accent according to the following scale:

No accent	Very Little	A Little	Intermediate	Heavy	Very Heavy
☐	☐	☐	☐	☐	☐

16b. Do you think you have an American accent in your English? If so, please rate the strength of your accent according to the following scale:

No accent	Very Little	A Little	Intermediate	Heavy	Very Heavy
☐	☐	☐	☐	☐	☐

17. How have you been learning/practising English up to this point?

	Always	Most of the time	Sometimes	Never
Formal classroom instruction	☐	☐	☐	☐
Learning independently using textbooks/educational materials	☐	☐	☐	☐
Interacting with my family	☐	☐	☐	☐
Interacting with my Korean friends	☐	☐	☐	☐
Interacting with my Filipino friends	☐	☐	☐	☐
Through the Internet:				
Social networking (Facebook, Twitter, etc.)	☐	☐	☐	☐
Reading websites written in English	☐	☐	☐	☐
Through online English learning websites	☐	☐	☐	☐

18. What are your reasons for studying in Baguio? Please check the appropriate response.

	Strongly disagree	Disagree	Agree	Strongly agree
The schools are good in Baguio.	☐	☐	☐	☐
It is a good escape from Manila and other busy cities/towns in the country.	☐	☐	☐	☐
The cost of living here is low.	☐	☐	☐	☐
The cool climate is ideal for studying.	☐	☐	☐	☐
The people are nice and friendly.	☐	☐	☐	☐
Other reasons?	_____			

19. If there is anything else that you feel is interesting or important about your language background or language use, please comment below.

PART C

20. Do you have additional questions that you feel are not included above? If yes, please write down your questions and answers on separate sheets.

Appendix 3. Language background questionnaire (LBQ) for Singapore-based Korean participants

언어환경 설문지

Contact Information (연락처 정보)

Name(성함)	_____	Email (이메일)	_____
Mobile No. (핸드폰번호)	_____	Today's date (오늘 날짜)	_____

PART A

1. Sex (성별) _____
2. Date of birth (생년월일) _____ (year 년) _____(month 월) _____(day 일)
3. Nationality (국적) _____
4. Native Language (모국어) _____
5. Highest education attainment (최종학력):

Elementary school (초등학)	☐
Middle school (중학)	☐
High school (고등학)	☐
University (대학)	☐
Others (기타):	_____

6. Please state your current address in Singapore.
(싱가포르 내 주소를 기입해 주세요)

_____

7. How long have you been living in Singapore? _____ (years) _____ (months)
(싱가포르에서 얼마 동안 사셨습니까?) (년) (개월)

8. List all the countries you have lived in for six months or more. Also indicate the duration (in number of years and months) of your stay in each country.
(6개월 이상 거주했던 모든 도시를 기입해주세요. 각 나라에 거주했던 기간도 기입바랍니다.)

	Duration (거주기간)	
Country (국가)	Years (년)	Months (개월)
_____	_____	_____
_____	_____	_____

9a. Where is your family living right now? _____
(현재 당신의 가족들은 어디에서 살고 있습니까?)

9b. Where in Korea are you (and your family) from?
(한국의 어느 지역 출신입니까?)

Seoul (서울)	☐	Gyeonggi-do (경기도)	☐

Busan (부산)	☐	Gangwon-do (강원도)	☐
Daegu (대구)	☐	N. Chungcheong (충청북도)	☐
Incheon (인천)	☐	S. Chungcheong (충청남도)	☐
Gwangju (광주)	☐	N. Jeolla (전라북도)	☐
Daejeon (대전)	☐	S. Jeolla (전라남도)	☐
Ulsan (울산)	☐	N. Gyeongsang (경상북도)	☐
Jeju (제주)	☐	S. Gyeongsang (경상남도)	☐
Others (기타):	_____		

9c. How long did you live there? _____(years) _____(months)
(그 곳에서 얼마 동안 사셨습니까?) (년) (개월)

10. Please state your parents' occupation:
(부모님의 직업을 기입해주세요.)

Father's occupation (아버지 직업): _____

Mother's occupation (어머니 직업): _____

PART B

11. How long have you been studying English? _____(years) _____(months)
(영어를 얼마나 공부해오셨습니까?) (년) (개월)

12a. List all the places (cities/countries) where you had previously learned English. Also, list the nationalities of your previous English teachers. You may arrange them in the chronological order.
(이전에 영어를 배웠던 모든 곳(도시/나라)과 영어선생님의 국적을 기입해 주세요. 순서대로 적어주시길 부탁드립니다.)

City/Country (도시/국가)	Duration (거주기간) Years (년)	Months (개월)	Nationality of your English teacher (영어선생님의 국적)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

12b. In your opinion, which nationality best taught you English language?
(어느국적의 선생님이 영어를 제일 잘 가르쳤다고 생각하십니까?)

My _____ (nationality 국적) teacher best taught me English Language.
( )출신 선생님이 영어를 제일 잘 가르쳤다고 생각합니다.

13a. Have you studied any languages other than Korean and English?
(한국어와 영어 이외에 다른 언어를 공부하신적이 있으십니까?)

☐ Yes (네) ☐ No (아니오)

If your answer is No, please proceed to Question 16.
(만약 아니라면, 16번문항부터 진행해주세요.)

13b. Please list the other languages you have studied and rate your language ability for each.
(당신이 할 수 있는 다른외국어의 종류와 능력정도를 기입하여 주시기 바랍니다.)

Language (언어)	Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
1. _____	☐	☐	☐	☐
2. _____	☐	☐	☐	☐

14. How have you been learning English up to this point?
(지금의 수준까지 영어를 배우기까지 어떻게 영어를 배우셨습니까?)

	Always (항상)	Most of the time (대부분)	Sometimes (가끔)	Never (전혀)
Formal classroom instruction *(정규 학교 수업)*	☐	☐	☐	☐
Learning independently using textbooks/educational materials *(교과서와 교육자료로 개인적으로 공부함)*	☐	☐	☐	☐
Interacting with my family *(부모님과 함께)*	☐	☐	☐	☐
Interacting with my Korean friends *(한국 친구와 함께)*	☐	☐	☐	☐
Interacting with my Singaporean friends *(싱가포르 친구와 함께)*	☐	☐	☐	☐
Through the Internet: *(인터넷을 통해)*				
SNS (Kakao Talk, Facebook, Naver, etc.) *(SNS (카카오톡, 페이스북, 네이버 등)*	☐	☐	☐	☐
Reading websites written in English *(영어로 쓰여진 웹사이트를 읽으며)*	☐	☐	☐	☐
Through online English learning websites *(온라인 인터넷 강의를 통해)*	☐	☐	☐	☐

15a. Please rate your English Language skills:
(당신의 영어능력 정도를 표기해 주세요)

Skill (능력)	Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
1. Reading (읽기)	☐	☐	☐	☐
2. Writing (쓰기)	☐	☐	☐	☐
3. Speaking (말하기)	☐	☐	☐	☐
4. Listening (듣기)	☐	☐	☐	☐

15b. What do you think is the most important skill that you want to develop? You may rank the choices below, 1 – highest; 4 – lowest.
(어떠한 능력을 개발하는데 가장 중요하다고 생각하십니까? 1위부터 4위까지 숫자로 표기해 주세요)

Reading (읽기) _____ Writing (쓰기) _____
Speaking (말하기) _____ Listening (듣기) _____

16a. Please rate your Korean Language skills:
(당신의 한국어구사 능력을 표기해 주세요)

Skill (능력)	Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
1. Reading (읽기)	☐	☐	☐	☐
2. Writing (쓰기)	☐	☐	☐	☐
3. Speaking (말하기)	☐	☐	☐	☐
4. Listening (듣기)	☐	☐	☐	☐

16b. Do you think your Korean accent is good?
(당신의 한국어 억양은 좋다고 생각하십니까?)

Poor (부족함)	Average (보통)	Good (잘함)	Very Good (매우 잘함)
☐	☐	☐	☐

17a. Do you think you have a Korean accent in your English? If so, please rate the strength of your accent according to the following scale:
(당신의 한국어 억양이 영어를 말할 때 반영된다고 생각하십니까? 만약 그렇다면 얼마나 많이 반영이 된다고 생각하는지 표기해 주시기 바랍니다.)

No accent (한국어억양 없음)	Very Little (거의 없음)	A Little (조금)	Intermediate (중간)	Heavy (많이)	Very Heavy (아주 많이)
☐	☐	☐	☐	☐	☐

17b. Do you think you have a Singaporean accent in your English? If so, please rate the strength of your accent according to the following scale:
(싱가포르 발음 억양이 영어를 말할 때 반영되있다고 생각하십니까? 만약 그렇다면 얼마나 많이 반영이 되었다고 생각하는지 표기해 주시기 바랍니다.)

No accent (한국어억양 없음)	Very Little (거의 없음)	A Little (조금)	Intermediate (중간)	Heavy (많이)	Very Heavy (아주 많이)
☐	☐	☐	☐	☐	☐

18. What are your reasons for studying English? Please check the appropriate response.
(영어를 공부하는 목적이 무엇입니까? 적절한 답변을 체크해 주시기 바랍니다.)

	Strongly disagree (절대 동의하지 않음)	Disagree (동의하지 않음)	Agree (동의함)	Strongly agree (매우 공감)
I need English to speak with anybody from anywhere in the world. *(나는 세계각지의 여러 사람과 이야기하기 위해 영어공부를 한다.)*	☐	☐	☐	☐

I need English to get high grades in school. *(나는 학교에서 좋은 성적을 받기 위해 영어공부를 한다.)*	☐	☐	☐	☐
I need English to enter a good school and to get a better job. *(나는 좋은 학교에 들어가고 좋은 직업을 갖기 위해 영어공부를 한다.)*	☐	☐	☐	☐
I need English because I enjoy talking to foreign friends. *(나는 외국인 친구들과 대화하는 것을 좋아해서 영어공부를 한다.)*	☐	☐	☐	☐
I don't know why I need English. *(나는 영어가 왜 필요한지 모르겠다.)*	☐	☐	☐	☐
Other reasons? (기타 이유)	_____			

19. What are your reasons for studying in Singapore? Please check the appropriate response.
(싱가포르에서 공부하는 이유가 무엇입니까? 적절한 답변을 체크해 주시기 바랍니다.)

	Strongly disagree (절대 동의하지 않음)	Disagree (동의하지 않음)	Agree (동의함)	Strongly agree (매우 공감)
The schools are good in Singapore. *싱가포르에 서학교가 좋아서*	☐	☐	☐	☐
It is a good escape from Korea/other cities. *대한민국나 다른 복잡한도시/마을에서 멀기 때문에*	☐	☐	☐	☐
The cost of living here is low. *물가가 낮아서*	☐	☐	☐	☐
The weather is nice. *날씨가 좋은*	☐	☐	☐	☐
The people are nice and friendly. *사람들이 친절하고 친근감있어서*	☐	☐	☐	☐
Other reasons? *(기타 이유)*	_____			

20. If there is anything else that you feel is interesting or important about your language background or language use, please comment below.
(당신의 언어환경과 언어사용에 있어서 흥미있는 점이나 중요하다고 생각하는 점이 있다면, 아래에 답변에 주시기 바랍니다.)

PART C

21. Do you have additional questions that you feel are not included above? If yes, please write down your questions and answers on separate sheets.
(위에 포함되지 않은 추가적인 문항이 있으십니까? 만약 그렇다면 당신의 질문과 답을 따로 나눠드린 시트에 적어주시기 바랍니다.)

Appendix 4. Some participant responses from PART A (LBQ)

Group	Participant ID	Sex	Age (at time of interview)	Nationality	Native Language	Program	LOS (z-value)	Lived abroad?	Country lived in for 6 months or more	Current residence of family	Place of origin	Korean dialect	Occupation (Father)	Occupation (Mother)
PHKor	F1	F	22	SK	Korean	LT	0.72349059	Yes	KOR, PHI	KOR	Gyeonggi-do	Non-tonal	Entrepreneur	Entrepreneur
	F2	F	21	SK	Korean	ST	-0.72752118	Yes	KOR	KOR	Gyeonggi-do	Non-tonal	Office worker	Housewife
	F3	F	20	SK	Korean	ST	-0.74565883	Yes	KOR	KOR	Daejeon	Non-tonal	Banker	Volunteer
	F4	F	22	SK	Korean	ST	-0.74565883	Yes	KOR	KOR	Daegu	Tonal	Entrepreneur	Housewife
	F5	F	21	SK	Korean	LT	3.11766002	Yes	KOR, PHI	KOR, PHI	Gangwon-do	Non-tonal	Missionary	Missionary
	M1	M	21	SK	Korean	LT	1.17693177	Yes	KOR, PHI	KOR	Seoul	Non-tonal	Entrepreneur	Entrepreneur
	F6	F	22	SK	Korean	LT	-0.58242	Yes	KOR, AUS, PHI	KOR	Gyeonggi-do	Non-tonal	Entrepreneur	Sales exec.
	M2	M	18	SK	Korean	LT	-0.47359412	Yes	KOR, PHI	KOR	N Jeolla	Non-tonal	Engineer	Housewife
	M3	M	21	SK	Korean	ST	-0.69124589	Yes	KOR, PHI	KOR	Gyeonggi-do	Non-tonal	Engineer	Housewife
	M4	M	23	SK	Korean	ST	-0.74565883	Yes	KOR	KOR	N Gyeongsang	Tonal	Retired	Housewife
	F7	F	25	SK	Korean	ST	-0.72752118	Yes	KOR	KOR	Seoul	Non-tonal	Interior Designer	Housewife
	F8	F	24	SK	Korean	LT	0.10681059	Yes	KOR, CHN, PHI	CHN, KOR	Busan	Tonal	Missionary	Missionary
	F9	F	19	SK	Korean	LT	0.94114236	Yes	KOR, PHI	PHI	Seoul	Non-tonal	Tour guide	Executive adviser
	M5	M	17	SK	Korean	LT	-0.23780471	Yes	KOR, PHI	KOR	S Gyeongsang	Tonal	Police officer	Housewife
	M6	M	17	SK	Korean	LT	-0.23780471	Yes	KOR, PHI	KOR	Seoul	Non-tonal	Farmer	Housewife
	M7	M	19	SK	Korean	LT	-0.67310824	Yes	KOR, PHI	KOR	Seoul	Non-tonal	Construction worker	Insurance agent
	M8	M	16	SK	Korean	LT	0.30632471	Yes	KOR, PHI	KOR	Seoul	Non-tonal	Entrepreneur	Psychologist
	F10	F	17	SK	Korean	LT	0.21563647	Yes	KOR, PHI	KOR	S Gyeongsang	Tonal	Engineer	Dentist
SGKor	F11	F	19	SK	Korean	ST	-0.73029674	Yes	KOR, NZ	KOR	Gyeonggi-do	Non-tonal	High sch. VP	Teacher
	M9	M	22	SK	Korean	ST	1.09544512	Yes	KOR	KOR	Daegu	Tonal	Entrepreneur	Artist
	F12	F	22	SK	Korean	ST	1.09544512	Yes	KOR, USA	KOR	Seoul	Non-tonal	Accountant	None
	F13	F	20	SK	Korean	ST	-0.73029674	Yes	KOR	KOR	S Gyeongsang	Tonal	Employee	Housewife
	M10	M	21	SK	Korean	ST	-0.73029674	Yes	KOR	KOR	Busan	Tonal	Engineer	Housewife
FIL	M11	M	21	PH	Filipino	LT	NA	No	PHI	PHI	CAR	NA	Real Estate	Housewife
	M12	M	20	PH	Filipino	LT	NA	No	PHI	PHI	CAR	NA	Overseas	None
	M13	M	21	PH	Filipino	LT	NA	No	PHI	PHI, CAN	CAR	NA	Sales Rep.	Nurse
	F14	F	19	PH	Filipino	LT	NA	No	PHI	PHI	Region I	NA	Pastor	Teacher
	F15	F	21	PH	Filipino	LT	NA	No	PHI	PHI	Region III	NA	Self-employed	Housewife
	F16	F	20	PH	Filipino	LT	NA	No	PHI	PHI	NCR	NA	Sales Mngr.	Housewife

Appendix 5. Some participant responses from PART B (LBQ)

Group	Participant ID	How have you been learning English up to this point?									
		Learning ESL through formal classroom instruction	Learning ESL through textbooks or educational materials	Formal learning involvement	Learning ESL by interacting with family	Learning ESL by interacting with Korean friends	Learning ESL by interacting with Filipino friends	Learning ESL through SNS	Learning ESL by reading websites in English	Learning ESL through online ESL learning websites	Online learning involvement
PHKor	F1	Always	Mostly	Mostly	Sometimes	Always	Always	Never	Never	Never	Never
	F2	Mostly	Mostly	Mostly	Never	Sometimes	Never	Sometimes	Sometimes	Mostly	Sometimes
	F3	Always	Mostly	Mostly	Never	Sometimes	Sometimes	Sometimes	Never	Mostly	Sometimes
	F4	Mostly	Sometimes	Sometimes	Never	Mostly	Never	Mostly	Never	Mostly	Sometimes
	F5	Always	Always	Always	Sometimes	Never	Sometimes	Never	Sometimes	Never	Sometimes
	M1	Always	Sometimes	Mostly	Sometimes	Never	Mostly	Sometimes	Mostly	Sometimes	Sometimes
	F6	Always	Mostly	Mostly	Never	Sometimes	Sometimes	Sometimes	Sometimes	Mostly	Sometimes
	M2	Never	Mostly	Sometimes	Never	Never	Never	Never	Never	Never	Never
	M3	Mostly	Mostly	Mostly	Never	Never	Always	Sometimes	Sometimes	Sometimes	Sometimes
	M4	Always	Mostly	Mostly	Never	Never	Sometimes	Never	Sometimes	Sometimes	Sometimes
	F7	Mostly	Mostly	Mostly	Never	Sometimes	Never	Sometimes	Sometimes	Sometimes	Sometimes
	F8	Always	Mostly	Mostly	Never	Never	Mostly	Sometimes	Sometimes	Mostly	Sometimes
	F9	Mostly	Never	Sometimes	Never	Never	Sometimes	Never	Sometimes	Never	Never
	M5	Always	Always	Always	Never	Always	Always	Always	Always	Always	Always
	M6	Always	Sometimes	Mostly	Sometimes	Sometimes	Mostly	Never	Never	Sometimes	Never
	M7	Sometimes	Sometimes	Sometimes	Never	Never	Mostly	Mostly	Mostly	Never	Sometimes
	M8	Always	Sometimes	Mostly	Sometimes	Never	Never	Never	Sometimes	Sometimes	Sometimes
	F10	Mostly	Mostly	Mostly	Never	Never	Sometimes	Sometimes	Mostly	Mostly	Mostly
SGKor	F11	Mostly	Mostly	Mostly	Never	Never	Never	Never	Sometimes	Sometimes	Sometimes
	M9	Sometimes	Always	Mostly	Never	Never	Never	Always	Always	Mostly	Mostly
	F12	Sometimes	Mostly	Sometimes	Never	Never	Sometimes	Never	Never	Sometimes	Never
	F13	Always	Mostly	Mostly	Never	Mostly	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes
	M10	Mostly	Sometimes	Sometimes	Never	Sometimes	Never	Mostly	Always	Always	Always
FIL	M11	Mostly	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes	Mostly	Sometimes	Sometimes
	M12	Mostly	Always	Mostly	Sometimes	Always	Sometimes	Mostly	Always	Never	Mostly
	M13	Always	Always	Always	Sometimes	Sometimes	Mostly	Always	Always	Sometimes	Mostly
	F14	Mostly	Always	Mostly	Sometimes	Never	Sometimes	Mostly	Mostly	Never	Mostly
	F15	Mostly	Mostly	Mostly	Sometimes	Mostly	Sometimes	Mostly	Mostly	Mostly	Mostly
	F16	Sometimes	Sometimes	Sometimes	Mostly	Sometimes	Sometimes	Mostly	Mostly	Sometimes	Mostly

Appendix 5. (continued)

Group	Participant ID	Students' perception of their own English language skills				Students' perception of their own Korean language skills				Perception of native/foreign accent in their own speech				
		Perception of English reading skill	Perception of English writing skill	Perception of English speaking skill	Perception of English listening skill	Perception of Korean reading skill	Perception of Korean writing skill	Perception of Korean speaking skill	Perception of Korean listening skill	Korean accent rating	Perception of Korean accent in English speech	Perception of Filipino accent in English speech	Perception of American accent in English speech	Perception of Singaporean accent in English speech
PHKor	F1	Average	Average	Average	Good	V. Good	Good	V. Good	V. Good	Good	A Little	Heavy	NA	NA
	F2	Poor	Poor	Poor	Average	Average	Average	Average	Good	Average	Heavy	A Little	NA	NA
	F3	Average	Average	Poor	Poor	V. Good	V. Good	V. Good	V. Good	Good	Intermediate	Intermediate	NA	NA
	F4	Average	Average	Average	Average	Good	Good	V. Good	V. Good	Good	Intermediate	Very Little	NA	NA
	F5	V. Good	V. Good	V. Good	V. Good	V. Good	Good	V. Good	V. Good	V. Good	No accent	No accent	NA	NA
	M1	Good	Good	Good	Good	V. Good	Good	Good	Good	Average	Intermediate	Intermediate	NA	NA
	F6	Poor	Poor	Poor	Poor	Good	Average	Good	Good	Average	Intermediate	Heavy	NA	NA
	M2	Average	Average	Average	Poor	V. Good	V. Good	V. Good	V. Good	Good	Very Little	A Little	NA	NA
	M3	Poor	Average	Good	Average	Average	Good	V. Good	V. Good	Good	Heavy	Very Little	NA	NA
	M4	Poor	Poor	Average	Average	Good	Average	Good	V. Good	Good	Intermediate	Very Little	NA	NA
	F7	Average	Average	Average	Average	Good	Good	Good	Good	Good	Intermediate	Intermediate	NA	NA
	F8	Poor	Average	Average	Average	V. Good	Good	Good	V. Good	V. Good	A Little	A Little	NA	NA
	F9	Average	Poor	Poor	Average	V. Good	Average	Average	V. Good	Average	A Little	Heavy	NA	NA
	M5	Good	Good	Good	Good	Good	Good	Good	Good	V. Good	Very Heavy	Intermediate	NA	NA
	M6	Average	Average	Average	Average	Good	Good	Good	Good	Good	Intermediate	Intermediate	NA	NA
	M7	Average	Average	Average	Poor	V. Good	V. Good	V. Good	V. Good	V. Good	A Little	A Little	NA	NA
	M8	Average	Poor	Good	Good	Average	Average	Average	Average	Average	Very Little	A Little	NA	NA
	F10	Average	Average	Average	Average	V. Good	V. Good	V. Good	V. Good	V. Good	Intermediate	Very Little	NA	NA
SGKor	F11	V. Good	Average	Good	Good	V. Good	Good	V. Good	V. Good	Good	A Little	NA	NA	Very Little
	M9	V. Good	Average	Good	Good	V. Good	V. Good	V. Good	V. Good	Good	Intermediate	NA	NA	Very Heavy
	F12	Good	Average	Good	Good	V. Good	Good	V. Good	V. Good	V. Good	A Little	NA	NA	No Accent
	F13	Average	Average	Average	Average	V. Good	V. Good	V. Good	V. Good	V. Good	Very Little	NA	NA	No Accent
	M10	V. Good	Good	Good	Average	V. Good	V. Good	V. Good	V. Good	Good	Intermediate	NA	NA	Very Little
FIL	M11	Good	Good	Good	Good	NA	NA	NA	NA	NA	NA	A Little	Intermediate	NA
	M12	Good	Good	Good	V. Good	NA	NA	NA	NA	NA	NA	A Little	No Accent	NA
	M13	Good	Good	Good	Good	NA	NA	NA	NA	NA	NA	Intermediate	Very Little	NA
	F14	V. Good	V. Good	V. Good	V. Good	NA	NA	NA	NA	NA	NA	Intermediate	Intermediate	NA
	F15	Good	Average	Average	Good	NA	NA	NA	NA	NA	NA	Intermediate	A Little	NA
	F16	V. Good	Good	Good	Good	NA	NA	NA	NA	NA	NA	A Little	No accent	NA

Appendix 5. (continued)

Group	Participant ID	What are your reasons for studying English?					What are your reasons for studying in the Philippines/in Singapore?				
		To speak English with anybody from anywhere in the world	To get high grades in school	To enter a good school and get a better job	Enjoy talking to foreign friends	I don't know	The schools are good in Baguio/ Singapore	Good escape from Manila/Korea	Cost of living is low	Climate ideal for studying	People are nice and friendly
PHKor	F1	Strongly Agree	Strongly Agree	Strongly Agree	Agree	Strongly Disagree	Disagree	Agree	Strongly Disagree	Strongly Agree	Agree
	F2	Strongly Agree	Agree	Strongly Agree	Strongly Agree	Disagree	Agree	Agree	Agree	Strongly Agree	Agree
	F3	Strongly Agree	Agree	Agree	Strongly Agree	Strongly Disagree	Agree	Disagree	Disagree	Strongly Agree	Agree
	F4	Strongly Agree	Agree	Agree	Agree	Disagree	Agree	Disagree	Disagree	Strongly Agree	Agree
	F5	Agree	Agree	Agree	Strongly Agree	Strongly Disagree	Disagree	Agree	Agree	Agree	Agree
	M1	Strongly Agree	Agree	Agree	Strongly Agree	Strongly Disagree	Agree	Strongly Agree	Disagree	Strongly Agree	Disagree
	F6	Strongly Agree	Agree	Agree	Agree	Strongly Disagree	Disagree	Agree	Strongly Agree	Agree	Agree
	M2	Disagree	Agree	Agree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree	Disagree
	M3	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Disagree	Strongly Agree	Agree	Strongly Agree	Strongly Agree	Agree
	M4	Strongly Agree	Disagree	Agree	Agree	Strongly Disagree	Strongly Agree	Strongly Agree	Disagree	Strongly Agree	Strongly Agree
	F7	Agree	Agree	Agree	Agree	Strongly Disagree	Agree	Agree	Agree	Agree	Agree
	F8	Strongly Agree	Agree	Strongly Disagree	Agree	Strongly Disagree	Disagree	Agree	Agree	Agree	Agree
	F9	Agree	Agree	Agree	Agree	Strongly Disagree	Disagree	Agree	Agree	Agree	Agree
	M5	Strongly Agree	Strongly Agree	Strongly Agree	Agree	Strongly Disagree	Agree	Agree	Strongly Disagree	Agree	Agree
	M6	Agree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Agree
	M7	Strongly Agree	Strongly Agree	Strongly Agree	Disagree	Disagree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
	M8	Agree	Strongly Disagree	Strongly Agree	Strongly Disagree	Strongly Disagree	Disagree	Strongly Agree	Disagree	Agree	Strongly Agree
	F10	Strongly Disagree	Agree	Agree	Agree	Strongly Disagree	Agree	Agree	Agree	Agree	Agree
SGKor	F11	Strongly Agree	Agree	Agree	Agree	Strongly Disagree	Strongly Agree	Agree	Strongly Disagree	Strongly Disagree	Agree
	M9	Strongly Agree	Disagree	Agree	Strongly Agree	Strongly Disagree	Strongly Agree	Strongly Disagree	Strongly Disagree	Strongly Disagree	Agree
	F12	Strongly Agree	Disagree	Agree	Agree	Strongly Disagree	Agree	Strongly Disagree	Strongly Disagree	Disagree	Agree
	F13	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Disagree	Strongly Agree	Disagree	Disagree	Disagree	Strongly Agree
	M10	Strongly Agree	Disagree	Strongly Agree	Strongly Agree	Strongly Disagree	Agree	Disagree	Disagree	Agree	Strongly Agree
FIL	M11	NA	NA	NA	NA	NA	Strongly Agree	Strongly Agree	Agree	Agree	Agree
	M12	NA	NA	NA	NA	NA	Strongly Agree	Agree	Strongly Agree	Strongly Agree	Strongly Agree
	M13	NA	NA	NA	NA	NA	Strongly Agree	Strongly Agree	Agree	Strongly Agree	Strongly Agree
	F14	NA	NA	NA	NA	NA	Agree	Strongly Agree	Agree	Strongly Agree	Strongly Agree
	F15	NA	NA	NA	NA	NA	Agree	Strongly Agree	Agree	Agree	Agree
	F16	NA	NA	NA	NA	NA	Agree	Strongly Agree	Strongly Agree	Agree	Agree