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UTSC 2nd Undergraduate Linguistics Conference
28 February 2015

**VOT as a cue for voicing contrast in word initial voiced and voiceless stops of Native and Heritage Tagalog speakers**

**Abstract**

The present study examines the Voice Onset Time (VOT) of word initial voiced (/b/, /d/, /g/) and voiceless (/p/, /t/, /k/) stops of Native and Heritage Tagalog speakers and how these are used as cues for voicing contrast. There is currently limited research on this topic, and as such, the purpose of this project is to expand the body of literature on Tagalog VOT. Data was gathered from two groups of speakers – Native and Heritage – and their average negative and positive VOTs were calculated. Given that English is an aspirating language and Tagalog is a voicing language, we predicted that Native speakers would signal the voicing contrast with long negative VOTs for voiced stops and short positive VOTs for voiceless stops. In contrast, Heritage speakers would signal the voicing contrast by having long positive VOTs for voiceless stops and short negative VOTs for voiced stops.

Our results for the Native speakers supported our hypothesis; voiced stops had long negative VOTs and voiceless stops had short positive VOTs. However, our hypothesis for Heritage speakers was not supported. Interestingly, we discovered that Heritage speakers also produced long negative VOTs and short positive VOTs for voiced and voiceless stops, respectively. Even more surprisingly, it was found that Heritage speakers produced a combination of both a negative and positive VOT within a single token. Nineteen of these “mixed” tokens, as they have now been termed, were seen only in coronal /d/ and velar /g/ voiced stops across different speakers and genders. This could be interpreted as the result of English VOT properties exerting their influence on the Heritage speakers’ Tagalog, however, further research is needed to determine whether or not this theory can be validated.

*Keywords*: Tagalog, voice onset time, voicing contrast, Heritage speakers, Native speakers
1. Introduction

1.1 Background Information

Tagalog is an Austronesian language and one of the two official languages of the Philippines (the other being English). According to the Ethnologue, the Tagalog speaking population in the Philippines is estimated to be around 21.5 million. In Canada alone there are approximately 384,000 speakers of Tagalog, among the 24 million speakers worldwide.

Most of the world’s languages can be categorized as being either a voicing language or an aspirating language. Lisker and Abramson (1964) established this subdivision in their cross-linguistic study of initial stops in voicing languages, using Voice Onset Time or VOT (defined as “the relative timing of the burst release and onset of voicing”) as a primary acoustic cue to differentiate these language types. Spanish is an example of a voicing language. It has a relatively long negative VOT for voiced word-initial stops (-138 ms in bilabial position) and a short positive VOT for voiceless word-initial stops (4 ms in bilabial position) (See Figure 1). In contrast, English is an example of an aspirating language. The language has a more complex VOT realization whereby word-initial voiced stops can have a negative VOT or a short positive VOT (-101 ms to 1 ms in bilabial position, respectively), and word-initial voiceless stops have a relatively long positive VOT appears (58 ms in bilabial position) (See Figure 2).

| Table 2. Voice Onset Time in Msec: Spanish (2 speakers) |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                             | /b/ | /p/ | /d/ | /t/ | /g/ | /k/ |
| Av.                          | -138 | 4 | -110 | 9 | -108 | 29 |
| R.                           | -235: -60 | 0:15 | -170: -75 | 0:15 | -165: -45 | 15:55 |
| N.                           | 17 | 20 | 16 | 16 | 14 | 20 |

Figure 1: A table listing the VOTs of word-initial voiced and voiceless bilabial, alveolar and velar stops in Spanish (Lisker and Abramson 1964).
Figure 2: A table listing the VOTs of word-initial voiced and voiceless bilabial, alveolar and velar stops in English (Lisker and Abramson 1964).

One of the goals of the present study was to investigate whether Tagalog falls into the voicing or aspirating language category. Perceptually, through exposure and production of Tagalog stops, we hypothesized that Tagalog would fall into the voicing language category. Additionally, Schacter and Otanes (1972) list the Tagalog stop inventory (See Table 1), and state that Tagalog phonemes are unaspirated in all positions. The first of the paper’s multiple hypotheses has been provided below:

a) **Tagalog language category**: The VOTs of Tagalog stops will pattern similar to that of the ones in Spanish as a voicing language. Its voiced stops will have long negative VOTs and its voiceless stops will have short positive VOTs.

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1 They also go on to mention that voiceless stops /t/ and /k/ are pronounced differently in Tagalog than in English; Tagalog /t/ is often articulated in dental position (cf. English alveolar), and Tagalog /k/ is retracted further back in velar position than English velars (cf. English /k/ can also be in palatal position depending on the vowel following it).
Table 1. The Tagalog stop inventory as provided by Schacter and Otanes (1972).

<table>
<thead>
<tr>
<th></th>
<th>Labial</th>
<th>Labiodental</th>
<th>Dental</th>
<th>Alveolar</th>
<th>Palatal</th>
<th>Velar</th>
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<tbody>
<tr>
<td><strong>Stop Voiceless</strong></td>
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<td>Voiceless</td>
<td>p</td>
<td>t</td>
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<td>k</td>
<td>?</td>
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<tr>
<td><strong>Stop Voiced</strong></td>
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<tr>
<td>Voiced</td>
<td>b</td>
<td>d</td>
<td></td>
<td></td>
<td>g</td>
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<td></td>
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<tr>
<td><strong>Nasal (Voiced)</strong></td>
<td>m</td>
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<tr>
<td><strong>Fricative (Voiceless)</strong></td>
<td>(f)</td>
<td>s</td>
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<td></td>
<td>h</td>
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<tr>
<td><strong>Affricate (Voiceless)</strong></td>
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<td>ts</td>
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<td><strong>Lateral (Voiced)</strong></td>
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<tr>
<td><strong>Tap or Trill (Voiced)</strong></td>
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<td>r</td>
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<tr>
<td><strong>Glide (Voiced)</strong></td>
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<td>j</td>
<td>w</td>
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</tbody>
</table>

1.1.1 Native speakers vs. Heritage speakers

An additional goal of the study was to investigate the way in which Native and Heritage speakers of Tagalog differ in their production of Tagalog stops.

Maria Polinsky defines Heritage speakers as bilingual individuals who grew up speaking a minority L1 (Tagalog in our case) which was later influenced by the presence of a majority L2 upon entering the wider community (English in our case) (2011). The dominant language of Heritage speakers is thus their L2; English. Unlike Heritage speakers, whose L1 would have been influenced by the L2 at an early age, Native speakers hold an L1 that is relatively untouched by the L2. The dominant language of Native speakers is thus their L1; Tagalog.
Moving forward, we can view Heritage and Native speakers in terms of the language in which they are dominant, that is English and Tagalog respectively.

1.2 Literature Review

1.2.1 Native Hypothesis

The literature on the language of Tagalog as a whole is rather limited, and as such, we looked to the corpus of literature on a similar voicing language (i.e. Spanish) to draw an appropriate hypothesis about Native speakers of Tagalog. Thus, as an extension of hypothesis (a), we predicted that Native speakers of Tagalog would produce stops with VOTs akin to that of the ones observed for Spanish; long negative VOTs for voiced stops, and short positive VOTs for voiceless stops:

b) Tagalog stops of Native speakers: Native speakers of Tagalog will signal the voicing contrast of Tagalog stops with long negative VOTs for voiced stops and short positive VOTs for voiceless stops.

1.2.2 Heritage Hypothesis

A number of studies on the organization of a Heritage speaker’s language inventories have brought forth three competing hypotheses. The first of these is a view of interference, whereby the stops of both languages interfere with and influence one another (Fowler et. al. 2008). Standing in stark contrast to this, is the view of independence, whereby the stops of both language inventories are well partitioned such that the phonetic categories of both languages are separate and do not influence one another (Antoniou et al. 2010). The third view is that of overcompensation, whereby Heritage speakers exaggerate the VOT differences of their respective language’s stops so as to ensure succinct categories and no overlap between the phonetic categories of their two language inventories (Chang et al. 2011).
The following paper will take on the hypothesis of interference. We predict that Heritage speakers of Tagalog will produce the voiced and voiceless stops of Tagalog differently relative to the influence of their dominant language:

c) Tagalog stops of Heritage speakers: Heritage speakers of Tagalog will signal the voicing contrast of Tagalog stops with shorter negative VOTs for voiced stops and longer positive VOTs for voiceless stops relative to the Tagalog stops produced by their Native speaker counterparts.

Despite the fact that there have been a number of studies on the nature of a Heritage speaker’s language inventory organization, there remains a sense of ambiguity over which of the three competing theories is most correct. Equal support for each of the theories has diluted the evidence and blurred the answer. In looking at the Heritage speakers of Tagalog, the present paper can begin to disambiguate the issue as well as make a meaningful contribution to the body of literature on Tagalog as a whole, which is relatively understudied.

2. Experiment

2.1 Participants

Participants were invited to participate in the study by word-of-mouth, advertising and poster announcements at the University of Toronto Scarborough campus. 10 Native Tagalog speakers (5 male, 5 female), and 10 Heritage Tagalog speakers (5 male, 5 female) were recorded if they fulfilled the participant criteria listed in Table 2.
Table 2. Criteria for Native and Heritage Tagalog speakers.

<table>
<thead>
<tr>
<th>Native Speakers</th>
<th>Heritage Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Living in Canada for 5 years or less</td>
<td>• Born in Canada/US OR Arrived in Canada before age 3</td>
</tr>
<tr>
<td>• At least lived until age 15 in Philippines</td>
<td>• Both parents Native speakers of Tagalog</td>
</tr>
<tr>
<td>• Both parents Native speakers of Tagalog</td>
<td>• Did not live in Philippines for longer than 6 months</td>
</tr>
<tr>
<td>• From Metro Manila Area</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Stimuli

A randomized wordlist of 36 bi-syllabic Tagalog words were presented to the speaker along with its English definition underneath the word. The tokens elicited 6 stops (/p/, /t/, /k/, /b/, /d/, /g/) in word initial, medial and final position and in both first syllable stress position and second syllable stress position. See Appendix A for complete word list and definitions.

2.3 Procedure

Participants were recorded in a soundproof room using a Zoom H4N digital recorder to obtain high quality acoustic data. Participants first underwent a “familiarization” phase, which consisted of: 1) familiarization with the word list, where a research assistant fluent in Tagalog presented the words and noted whether or not the participant was familiar with them and; 2) a short story reading where the participant was asked to read a Tagalog short story (See Appendix B) in a normal and comfortable speaking rate. During the test phase, the participant was presented with the word list via an iPad. The words were randomized so as to ensure that no minimal pairs occurred next to one another. The participants were instructed to read the
presented word three times in isolation with a short pause in between each repetition. They were asked to swipe the screen for the next available word and were also given a short break in the middle of the word list session. The participants were then asked to read English words in a similar manner (3 repetitions with a pause in between each repetition). A language background questionnaire was completed after the recording phase (See Appendix C). All participants were monetarily compensated for their time.

The data was extracted from the recorder’s SD card after each participant’s session and backed up onto an external computer. The files were spliced into blocks of 4 on Audacity to be coded on Praat.

2.4 Acoustic Analysis

The duration of negative and positive VOTs for voiced and voiceless stops in initial, medial and final position was measured. The fundamental frequency (F0) of the corresponding vowels was also measured. This paper, however, will only focus on the VOTs of word-initial voiced and voiceless stops. Using Praat software, aspiration was measured from the release of the stop (burst) to the onset of voicing for the following vowel (See Figure 3). Pre-voicing was measured from the onset of closure voicing to the beginning of the following vowel (See Figure 4).
Figure 3: Spectrogram of positive VOT duration (ms).

Figure 4: Spectrogram of negative VOT duration (ms).
3. Results

3.1 Native Tagalog VOT

3.1.1 Count of Native VOT

Native Tagalog speakers produced voiceless tokens with complete aspiration (positive VOT) (Count = 180). There was no pre-voicing (negative VOT) in any of the word-initial voiceless tokens (See Figure 5).

In contrast, a majority of the voiced tokens were produced with pre-voicing (Count = 155), with only a few of them produced with aspiration (Count = 21) (See Figure 5).

Upon acoustical analysis a “mixed” variety of tokens was also found. Such mixed tokens were cases where both positive and negative VOT – not one or the other – were produced within the stop. While mixed tokens will be discussed later on in the present paper (See Section 5.3), it is clear that there are few of them produced within the voiced stops of Native speakers (Count = 4).

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2 It is important to note that such results may not be significant, as statistical tests have not been yet completed for this study.
Figure 5: Proportion of VOTs (positive, negative mixed) for voiced and voiceless tokens produced by Native speakers.

3.1.2 Average Duration of Native VOT

The average duration of positive VOT for voiceless and voiced tokens was nearly equal and both relatively short, averaging at around 20 ms (See Figure 6).

The average duration of negative VOT for voiced stops, however, was rather long, at around -65 ms.

The average duration of negative VOT for the mixed tokens was also substantial at around -45 ms.
Average Duration of Native VOT

Figure 6: Average VOT duration of voiced and voiceless stops produced by Native speakers.

3.2 Heritage Tagalog VOT

3.2.1 Count of Heritage VOT

Like Native speakers, Heritage speakers produced all of their voiceless stops with positive VOT (Count = 180). None were produced with negative VOT (See Figure 7).

Differences between the Heritage and Native speakers were seen in the voiced tokens. Heritage speakers produced a greater number of their voiced tokens with positive VOT (Count Heritage = 98, cf. Count Native = 21), and a fewer number of their voiced tokens with negative VOT (Count Heritage = 52, cf. Count Native = 155) (See Figure 7).

Heritage speakers also produced a greater number of mixed tokens in comparison to the small amount produced by Native speakers (Count Heritage = 29, cf. Count Native = 4).
3.2.2 Average Duration of Heritage VOT

The average duration of positive VOT for voiceless stops (~35 ms) was nearly double that of the positive VOT for voiced stops (~18 ms) in Heritage speakers.

The average duration of negative VOT for the voiced stops produced by Heritage speakers was also longer than the Native speaker average; -78 ms and -65 ms respectively (See Figure 8).

The negative VOT of the mixed tokens produced by Heritage speakers was also double what the Native speakers produced; Heritage speakers averaged at around -86 ms while Native speakers’ VOT averaged at around -43 ms.

Figure 7: Proportion of VOTs (positive, negative mixed) for voiced and voiceless tokens produced by Heritage speakers.
Figure 8: Average VOT duration of voiced and voiceless stops produced by Heritage speakers.

3.3 Mixed Tokens

Figures 5 and 7 indicate that there were a greater number of mixed tokens in Heritage speakers than in Native speakers (Count = 29 and 4 respectively).

To further investigate Heritage production of mixed tokens, the average duration of these tokens’ positive and negative VOTs were measured. Overall, the average duration of negative VOT in the 29 mixed Heritage tokens was -85.74 ms, while the positive duration was 21.27 ms (See Figure 9).
**Figure 9:** Average positive and negative VOT duration of mixed tokens produced by Heritage speakers.

Such mixed tokens also appeared across all speakers and stop places of articulation suggesting that this is a collective occurrence, rather than a single speaker phenomenon (See Figure 10).

**Heritage Mixed VOT By Speaker**

**Figure 10:** Average Duration of Voice Onset Time in Mixed Tokens produced across Heritage Speakers of Tagalog in all places of articulation.
5. Discussion

5.1 Native Data

The data from Native speaker VOTs support 2 out of the 3 hypotheses, hypotheses (a) and (b). For hypothesis (a): Native speakers did produce word-initial voiced stops with long negative VOTs and word-initial voiceless stops with short positive VOTs, suggesting a clear influence from their dominant language of Tagalog. At the same time, such results validated the language category in which Tagalog falls (hypothesis (b)). The VOT values indicate that Tagalog behaves in a manner similar to Spanish, and as such, is a voicing language and not an aspirating one.

5.2 Heritage Data

Hypothesis (c), on the production of Tagalog stops by Heritage speakers, was only partially supported. Relative to the Native VOT data, we hypothesized that Heritage speakers would produce voiced and voiceless stops with VOT values closer to the positive end of the continuum given the influence of their dominant language, English. Their voiced stops would have shorter negative VOT and their voiceless stops would have longer positive VOT. While Heritage speakers did produce voiceless stops with longer positive VOT, their voiced stops were not produced with shorter negative VOT as was hypothesized, rather longer negative VOT. In other words, the negative VOT of voiced stops produced by Heritage speakers was greater than what was observed in Native speakers for the same stop categories. Given this, it appears that English, the dominant language of the Heritage speakers, was only having an influence on the voiceless stops of Tagalog. Hypothesis (c) and the view of interference as a whole, is therefore only partially supported in Heritage speakers.
5.3 Mixed Token Data

As mentioned, the results from the experiment brought forth a particular type of token that was not anticipated at the start of the study. These “mixed” tokens were cases where voiced stops were produced with both negative and positive VOT prior to the onset of the vowel (See Figure 11).

![Figure 11: A waveform and spectrogram of a mixed token; a stop that was produced with negative and positive VOT. “m” is coded to represent negative VOT, “h” is coded to represent positive VOT and v1 is coded to represent the first vowel in the bi-syllabic word.](image)

Tokens of a similar nature were also observed in a handful of other studies (See Caverlé 2014, Van Alphen & Smits 2004). Similar to the mixed tokens of the present study, they were a finding that researchers stumbled upon by chance. Such papers left these mixed tokens for further research.

While it is our intention to further research such mixed tokens, it is also our goal to propose an explanation for their occurrence relative to our hypothesis about the nature of a Heritage speaker’s phonetic inventory organization, in hopes that we may begin to gain a better understanding of them.
Earlier, we saw that our hypothesis for Heritage speakers was only half borne out in our data. Relative to their Native speaker counterparts, Heritage speakers produced voiceless stops with longer positive VOTs; but did not produce shorter negative VOTs for voiced stops. It appeared as if English was only having an influence on the voiceless stops, leaving the voiced stops untouched (See Section 5.2).

A look at these mixed tokens, however, lead us to believe that English is in fact having an effect on the voiced stops, just not in the way that we expected. Instead of pulling the negative VOT of voiced stops closer to the positive end of the VOT continuum, and shortening the negative VOT in that respect, English is instead inserting a portion of positive VOT into the voiced tokens after the negative VOT so as to influence the voiced stops in a more robust manner. Under this view, interference is borne out completely. The dominant language of the Heritage speakers, English, is not only having an effect on the voiceless stops of Tagalog, but also on the voiced stops, in such a way that is more deliberate.

5.4 Concluding Remarks

The results from the present study have provided further insight into the voicing tendencies of the stops and speakers of Tagalog. The language itself is ultimately a voicing language on account of its long negative VOTs for voiced stops, and short positive VOTs for voiceless stops. Native speakers themselves demonstrate this precisely by producing such VOT values for voiced and voiceless stops. The VOT results obtained for Heritage speakers were a bit more surprising. The lack of a reduction in the negative VOT of voiced stops first led us to believe that English was only interfering with the voiceless stops of Tagalog. Later on, however, the emergence of mixed tokens in the voiced stops led us to believe otherwise; that the dominant
language of the Heritage speakers, English, was interfering with the VOT tendencies of the voiced Tagalog stops as well as the voiceless Tagalog stops.

We acknowledge that the present study cannot make a concrete conclusion in support of an interference model of Heritage speaker language inventory organization, as there lacks a Native English control group. Further research will broach this area by beginning with an analysis of medial and final stop data collected from the experiments and considering fundamental frequency (F0) and stress as other acoustic cues to differentiate Native and Heritage speakers of Tagalog.
Works Cited


Appendix A

Word list – Stops in Tagalog

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<tr>
<th>Stress 1</th>
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<td>to pass</td>
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<td>map</td>
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<tr>
<td>hanap</td>
<td>to look for</td>
</tr>
<tr>
<td></td>
<td>pasa</td>
</tr>
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<td>dapa</td>
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<td>harap</td>
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<tr>
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Tagalog Story

Tagalog:

Ito ang kwento tungkol sa unang lalake at unang babe ayon sa alamat ng Pilipinas. Noong unang panahon, bago pa lang ginawa ni Bathala ang daigdig, may isang makulay na ibon na lumilipad sa langit. Ang pangalan ng ibon na ito ay Ibong Adarna.

Ang Ibong Adarana ay pagod na pagod. Matagal na itong lumilipad, naghahanap ng lugar na puede siyang kapagpahinga. Pero ang nakikita lang niya ay puro karagatan.

Sa wakas nasulyap ng Ibong Adarna ang maraming berdeng isla kumikinang na parang mga esmeralda. Ang pangalan ng grupong isla na ito ay Pilipinas.

Ang Ibong Adarna ay bumaba sa puno ng kawayan na makapal. Tinuka niya ito dahil gusto niyang malaman kung ano ang nasa loob ng kahoy.

Laking gulat ng ibon ng bumuka ang punong kawayan at lumabas ang isang lalake at isang babae. Ang pangalan ng lalaki ay Malakas. Ang pangalan ng babae ay Maganda. At dito magwawakas ang kwento ng unang lalaki at unang babae sa Pilipinas.

English translation:

This is the story of the first man and woman according to Philippine legends. Once upon a time when the world was still newly created by a god called Bathala, a colorful bird was flying in the sky. The name of this bird was Ibong Adarna. Ibong Adarna was very tired. He has been flying for a long time. He was looking for a place to rest. But all he could see were oceans. At last, Ibong Adarna spotted a cluster of green islands, sparkling like emeralds. It was called The Philippines. Ibong Adarna landed on a bamboo tree with trunks that were very thick. He pecked
the trunk because he wanted to see what was inside it. The bird was very surprised when the bamboo tree broke open and out came a man and a woman. The name of the man is Malakas. The name of the woman is Maganda. This is where the story of the first man and the first woman of the Philippines ends.

Source: Malakas at Maganda (Filipino Story: First Man and Woman).

https://www.youtube.com/watch?v=wuTncnbzWQc
Appendix C

Speaker questionnaire

Age: ________ Date: ____________________
Gender: Male Female E-mail: ____________________

1) Class standing: 1st Year 2nd Year 3rd Year 4th Year Graduate Unclassified

2) Program: ____________________________

3) Do you have any history of known hearing/speech problems or difficulties? __________

4) Have you studied Tagalog as a foreign language at a post-secondary institute?

   Yes No

   4 – a) If yes:

   ▪ How long? _____ year(s) _____ month(s)
   ▪ Institution ____________________________
   ▪ Course(s) ____________________________

5) Place of birth: Canada Other ____________________

   □ If other, at what age did you come to Canada? _________ years old

6) Father’s ethnic background: ____________________________

7) Mother’s ethnic background: ____________________________

8) Circle all the family members who you have lived with for over 3 years that are Native speakers of Tagalog.

   Grandfather Grandmother Mother Father
   Brother(s) Sister(s) Spouse
   Other(s): ____________________
9) What was your first language(s)? Check all that apply. (e.g., if your parents spoke to you in Tagalog before you were 5, Tagalog is your first language.)

- Tagalog
- English
- Other(s): ____________________

10) Have you ever lived/visited the Philippines?  

- Y  
- N

  - If yes, (list all occurrences if more than one):
    - At what age: _____  
    - Duration: _____ year(s)  
    - _____ month(s)
    - At what age: _____  
    - Duration: _____ year(s)  
    - _____ month(s)
    - At what age: _____  
    - Duration: _____ year(s)  
    - _____ month(s)

11) Have you ever studied in the Philippines?  

- Y  
- N

  - 10 – a) If yes:
    - School level (e.g., K-6, junior high, senior high, Post-secondary, summer, abroad etc…): ____________________
    - Duration: _____ year(s)  
    - _____ month(s)

For the following questions, please circle:

1 – never  
2 – rarely  
3 – sometimes  
4 – often  
5 – always

11) How often do you speak Tagalog with the following people?

- Friends  
  - N/A  
  - 1  
  - 2  
  - 3  
  - 4  
  - 5

- Spouse  
  - N/A  
  - 1  
  - 2  
  - 3  
  - 4  
  - 5
12) How often do the following people speak Tagalog to you?

- Filipino Classmates/Teacher: N/A 1 2 3 4 5
- Grandparent(s): N/A 1 2 3 4 5
- Mother: N/A 1 2 3 4 5
- Father: N/A 1 2 3 4 5
- Sibling(s): N/A 1 2 3 4 5
- Relatives: N/A 1 2 3 4 5
- Other(s): _______________ N/A 1 2 3 4 5

13) I am confident communicating in:

- Tagalog: 1 2 3 4 5
- English: 1 2 3 4 5
- Other(s): _______________ 1 2 3 4 5
14) I am confident in the following Tagalog language skills:

- Speaking 1 2 3 4 5
- Listening 1 2 3 4 5
- Reading 1 2 3 4 5
- Writing 1 2 3 4 5
- Grammar 1 2 3 4 5
- Polite style (Official Use – ex. News, official documents, etc.) 1 2 3 4 5
- Conversation style 1 2 3 4 5
- Other(s): _______________ 1 2 3 4 5