

RECOGNIZING FOREIGN LANGUAGES IN PRE-LEXICAL STAGE: THE CASE OF VIETNAMESE AND FILIPINO LISTENERS

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Abstract. The study presented in this article is one of the attempts to find out whether adult learners can consistently distinguish unknown languages spoken by the same talker and thus whether they are subconsciously aware of the acoustic – phonetic characteristics of these languages in the pre-lexical stage of learning. It also seeks to find out if the learners' L1 phonetic background may have any influence on the unknown language discrimination task. It is found out that the Filipino and Vietnamese listeners can generally perform above chance in the language discrimination task. Moreover, it is also revealed in the study that the Vietnamese students, whose L1 is a tonal language, performed better in the group with tone as a contrast feature. The findings serve as an evidence for the listeners' ability to abstract language features from the talker voice characteristics in order to accomplish the language discrimination task. They also provide evidence to argue for the adaptation of the optimal silence period in the CLT to get the learner acquire the suprasegmental features of the target language in a more effective way. Finally, the study proves the influence of the learners' L1 phonetic background on acquiring the acoustic – phonetic features of a foreign language.

1. Introduction

It is obvious that human beings are endowed with the capability to make the distinction between different kinds of sound in the surrounding physical environment. We can tell the difference of melodies, animal cries, musical instruments, machines and other unintelligible sounds. We can of course tell which sound pattern is possible in our native language though no meaning is assigned to it (e.g. *sprot* in English) and which is not (e.g. *grtot* in English). This possible sound pattern in language is later referred to as 'phonotactics' by linguists (George Yule, 1996, p. 57). But do people have the ability to distinguish unknown languages which are highly abstract, arbitrary and loaded with nuances in the sound system? Updated results from recent studies in the field of psycholinguistics and speech communication tend to give a positive answer to that question. They even further posit that we human can characterize the 'sound' peculiar to each language (also called *acoustic signature* by Muthusamy et al., 1994) and sometimes make reliable identification judgments of foreign languages. How can people,

from infants, young children to adult listeners, learn to discriminate and identify languages? To what characteristics of languages do listeners attend? Those are fascinating questions that have inspired recent empirical work in the field. Researchers have so far conducted studies to elicit the responses to unknown languages from different types of participants including infants, children and adults in a variety of tasks.

It is argued that both infants and young children can perform well in the language discrimination task. However, this performance is somewhat degraded when they grow more mature. Burnham and Torstesson (as reported in Bond et al. 1995) gave a Same-Different judgment test to three groups of subjects including preschoolers (four and five years old), school age children (seven and eight year old) and adults. The researchers came to realize that although all three groups performed at above chance levels, the adult group did not perform as well as the other groups. Some attempts have been made to shed more light on the adult performance in this task, yet, there has been a scarcity of research on these subjects.

In one of the studies conducted by Lorch and Meara (1989), adult listeners were requested to describe how each of the languages in the recordings was different from English when they were listening to samples of six languages. The listeners were found to be rather sensitive to talker voice and rate of speech. They could report to the researchers afterwards specific sounds and sound patterns as well as spontaneously and correctly guess the identity or the family of some languages.

In an effort to find out if exposure to the languages in a short time could make any improvement in the listeners' performance, Lorch and Meara continued another study using the Same-Different judgments on paired samples of Greek and Farsi. They came to find out that although the listeners could perform above chance, they still produced the same results at their second hearing of the samples. Apart from language discrimination, adults are also investigated on the ability to identify the language samples. Bond and Fokes (1991, as cited in Bond et al., 1995, p. 354) made their listeners to choose among the list of languages the one that they can identify while listening to the two-second samples of those languages. It was then reported that the listeners made no mistakes in identifying their native languages. They all could identify the foreign languages at above chance rate, but, as concluded by the researchers, the performance may be enhanced by more language exposure.

Although listeners have been so far reported to perform above chance in language discrimination task, they are to a certain extent influenced by extralinguistic characteristics such as talker voice, gender, speech type and rate. Actually, listeners to unknown languages have no access to lexical as well as grammatical information; they can thus only rely not only on phonetic representations but also on talker-specific information. In addition, talker voice quality or "voice-setting" – "a term used to

describe the auditory impression made by a certain mechanical setting of the speech organs over a stretch of speech” (Stockmal, 2000, p.348) – may serve to characterize a speaker as well as a language or a speaking style associated with the language. Influential as it may be, talker voice has not been paid enough consideration in previous studies. Samples of the different languages have been produced by different talkers and therefore, language characteristics and talker characteristics have been confounded. This has thus prompted Stockmal, Moates and Bond (2000) to conduct a study wherein listeners were checked whether they could separate talker voice from language characteristics. In the study, Stockmal et al. employed talkers fluent in two languages to produce the language samples in the Same-Different task. The researchers came to find out that listeners were able to separate voice quality characteristics from language-specific characteristics. That is to say despite the fact that the spoken samples were provided by the same talkers, listeners were able to discriminate the languages they did not know. Talker gender, as they found out, did not emerge as an influential factor in the listeners’ discrimination of the languages.

However, it is noticed that the languages spoken in the test recording of their study was *non-categorical*, without any deliberate classification. Moreover, Stockmal’s study did not address the potential influence of the listeners’ L1 phonetic characteristics on their performance of the language discrimination. Would listeners from different L1 background perform differently in the discrimination task? In an effort to deal with the aforementioned issues of Stockmal’s research, this study is designed to investigate whether learners can discriminate language pairs of equal closeness. It also examines the influence that listeners’ L1 phonetic properties may exert on the discrimination task. Hence, it aims to validate the conclusions made in Stockmal’s research and also to further the knowledge of pre-lexical phonetic acquisition in learners of foreign languages. Specifically, the study seeks for the answers to the following research questions:

Can Filipino students and Vietnamese students discriminate unknown languages above chance?

Does the fact that the pairs of languages were produced by the same talker degrade these listeners’ performance in language discrimination task?

To which pairs of unknown languages – with and without tone as a contrast feature - do Vietnamese students perform better? How about Filipino students? What will be the plausible explanation?

2. How was the study conducted?

2.1. Materials

Two male talkers and two female talkers with good proficiency in two languages

needed for the study were invited to do the recordings. All of them came from multilingual environment and were international graduate students in DLSU-Manila. These talkers have clear and well-modulated voice, with no abnormality in psychomotor capability. They all claimed good proficiency in the languages that they spoke in the recordings, besides the fact that they were all competent communicators in English. Further characteristics of the four talkers are presented in the following table:

Table 2. *Talker characteristics*

	Talker 1	Talker 2	Talker 3	Talker 4
Gender	Male	Male	Female	Female
Age	29	26	37	29
Mother tongue	Khmer	Spanish	Chinese	Indonesian Bahasa
Second language	Thai	Portuguese	Japanese	Javanese

The passages used for recording in the study were excerpts taken from online newspapers, magazines or reliable sources. (See appendix 2 for more information). The talkers read the sample of each language in a moderate manner, not too slow, not too fast. They were also asked to rehearse the excerpts two times before the recording to make sure there was a smooth flow of sound in the process of articulation.

Two test recordings were created, one of which contains the language samples produced by the two male speakers, and the other contains the ones produced by the female talkers. Each recording includes eight pairs of languages spoken by two talkers. Each language excerpt in a pair would appear only once in the recording. The arrangement of the two recordings is presented in the following table:

Table 3. *Test recording*

Recording 1		Recording 2	
Talker 1 - Male	Talker 2- Male	Talker 3 - Female	Talker 4 - Female
1. Khmer-Thai	5. Spanish-Portuguese	9. Bahasa-Javanese	13. Chinese-Japanese
2. Thai-Khmer	6. Portuguese-Spanish	10. Javanese-Bahasa	14. Japanese-Chinese
3. Khmer-Khmer	7. Spanish-Spanish	11. Bahasa-Bahasa	15. Chinese-Chinese
4. Thai-Thai	8. Portuguese-Portuguese	12. Javanese-Javanese	16. Japanese-Japanese

(See appendix 2 for access to the above-mentioned recordings).

2.2. Participants

There were two groups of students participating in the study. In one of the groups, there were 15 Vietnamese students who were following their undergraduate

study in De La Salle University in Manila (DLSU-Manila), the Philippines. The other group includes 15 Filipino undergraduate students who were taking Computer Science programme in DLSU-Manila. According to self-reported information, none of the participants had any particular impairment with hearing ability or other physical defects. It is also noticed that none of the participants has ever learnt or extensively exposed to any of the languages in the test recordings. They might hear somehow, somewhere some of the languages but no knowledge or fluency in the languages was reported. In order to control the factor of exposure (which is obviously difficult to do), I have attained the following information on the students' exposure to each language used in the study in table 2. It is then argued that the self-reported exposure is within proper scope, from 0% to 20%, which might probably place little impact on the language discrimination task.

Table 4. *Exposure to the languages in the study*

Exposure intensity	0%		20%		40%		60%		80%		100%	
	VN	FL	VN	FL	VN	FL	VN	FL	VN	FL	VN	FL
Spanish	100	73.4	0	26.6	0	0	0	0	0	0	0	0
Portuguese	100	100	0	0	0	0	0	0	0	0	0	0
Chinese	60	66.7	40	33.3	0	0	0	0	0	0	0	0
Japanese	86.7	73.4	13.3	26.6	0	0	0	0	0	0	0	0
Khmer	100	100	0	0	0	0	0	0	0	0	0	0
Thai	80	100	20	0	0	0	0	0	0	0	0	0
Bahasa	100	100	0	0	0	0	0	0	0	0	0	0
Javanese	100	100	0	0	0	0	0	0	0	0	0	0

(FL: Filipino students, VN: Vietnamese students).

2.3. Procedures

Listeners were tested in two groups, Vietnamese group and Filipino group. They were asked to listen attentively to each recording item twice, monitored by the researcher himself with an ECS laptop and amplification devices. The recordings were presented to each group of listeners separately. As they listened, the students also indicated by ticking in an answer sheet (see Appendix 1) showing that the pair of languages in each particular item is the Same or Different. At the end of each item, the students were asked to try to identify the languages in that specific item. The subjects also had a debriefing after the session to discuss questions related to their performance in the test, their general impressions when hearing the languages, their reasons for identifying any of the languages.

2.4. Data analysis

The performance scores of a particular subject, on both the first and the second trial, were calculated according to the formula proposed by Lorch and Meare (1995):

$$\frac{\# \text{ correct 'Same' + \# correct 'Different' responses}}{\text{total number of items (N = 16)}}$$

It has been agreed that chance performance was taken as 50 % (ibid). If a subject scores below fifty percent of the expected correct answers, s/he may be playing the guessing game which gives little information to the research issues of the study.

In addition, performance across language pairs and participant groups was also tabulated to form comparison. The results were then presented in percentage and in graphs.

3. What are the characteristics of the languages used in the study?

The languages used in the study can be classified into two subgroups: one group with tone as a contrast feature between the two languages (e.i. tonal and non – tonal languages are juxtaposed) and the other without tone as a contrast feature. The former group consists of two pairs of language: Khmer (non tonal)-Thai (tonal) and Japanese (non tonal) – Chinese (tonal). The latter includes two pairs: Bahasa (non tonal) – Javanese (non tonal) and Spanish (non tonal) – Portuguese (non tonal). According to Crystal (1990, p.174), tonal languages are defined as the one in which the meaning of the word is changed when the pitch level changes. In Mandarin Chinese, there are four possible tones that can be associated with the same word to produce four different meanings. Thai has five tones working in the similar way. In the non tonal languages, tone does not have the function of lexical or grammatical distinction. The pattern of tones (called intonation) in Spanish, Portuguese, Bahasa and Javanese just signifies the change from statement to question or to emphasize different words. Khmer and Japanese, though much related to tonal languages, also show no tonal feature (DeLancey, 1997).

4. What can be observed and discovered in the study?

4.1. Individual performance

The results of the study show that the listeners were able to discriminate the language pairs used in the test recordings at pretty high level above chance. As can be seen from table 5, the mean score for the Filipino listeners is 70.9 % while that of the Vietnamese listeners is 62.5%. Basically this result is in consonance with the findings in other studies by Lorch and Meara (1995) and Stockmal et al. (2000). It lends support to the claim made by Stockmal et al. (2000) that listeners can discriminate language samples produced *by the same*.

Table 5. *Individual performance on discrimination task*

Filipino students				Vietnamese students			
Subject	Performance		Subject	Performance			
	*Tokens (N = 16)	%		*Tokens (N = 16)	%		
!	1	7	43.8	16	11	68.8	
	2	12	75	!	17	8	50
	3	9	56.3		18	9	56.3
	4	13	81.3		19	12	75
	5	10	62.5		20	13	81.3
	6	10	62.5		21	10	62.5
	7	14	87.5	!	22	7	43.8
	8	11	68.8	!	23	6	37.5
	9	12	75		24	11	68.8
	10	12	75		25	9	56.3
	11	12	75		26	13	81.3
	12	14	87.5		27	12	75
!	13	7	43.8		28	9	56.3
	14	14	87.5		29	10	62.5
	15	13	81.3		30	10	62.5
M = 70.9				M = 62.5			

(Note: ! indicates performance at chance or below chance.

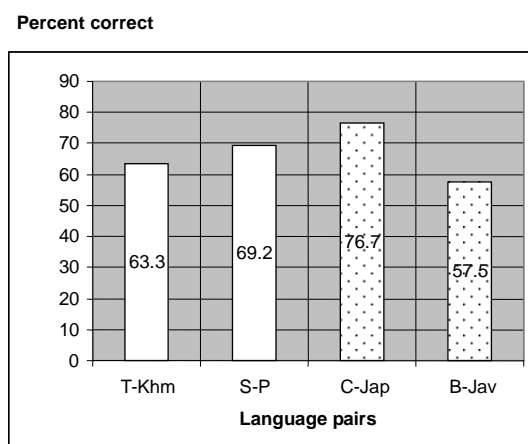
Tokens indicate the number of correct judgments listeners made).

It is also noticed that the mean scores of the Filipino group is 8.4 % higher than the Vietnamese group. Besides, there were only two Filipino listeners (number 1 and 13) who failed to perform above chance in the listening test (indicated by “!” in table 5) whereas there were three Vietnamese students (number 17, 22 and 23) performed below chance. The figures in table 5 also reveals that there were four Filipinos (number 7, 12, 14) who could attain relatively high scores in the test (87.5%) while the highest scores of the Vietnamese group was 81.3 %. Superficially, it might appear that there may be a gap in the sensitivity to the *acoustic-phonetic effect* – i.e. the influence of the sound features of a language perceived by a listener at the pre-lexical stage - of the languages between the two groups of listeners. In other words, the Filipino students seemed a bit more sensitive to the phonetic characteristics of unknown languages than the Vietnamese ones. However, as it would be revealed later, this might probably not be the case. Actually, the acoustic-phonetic effect may be more likely to depend at some length

on the L1 phonetic background of the listeners rather than on the general capability of individuals or the subconscious exposure to languages.

4.2. Task performance across language pairs and language groups

The ability to discriminate the sound of unknown languages, even geographically-close languages, can be seen from another angle. Fig. 1, established upon the data in table 6, shows how the listeners' performance differs regarding the language pairs engaged. It is then realized that the most distinguishable pair of languages is Chinese – Japanese, which received 76.7 % correct judgment. Actually this language pair is to some extent familiar to many Asians even though they do not master the languages.



1: Thai-Khmer; 2: Spain-Portuguese; 3: Chinese-Japanese; 4: Bahasa-Javanese

White: Male voice; Dotted: Female voice.

Fig. 1. Performance between language pairs and talker gender

Table 6. Performance results as database for figure 1 and 2.

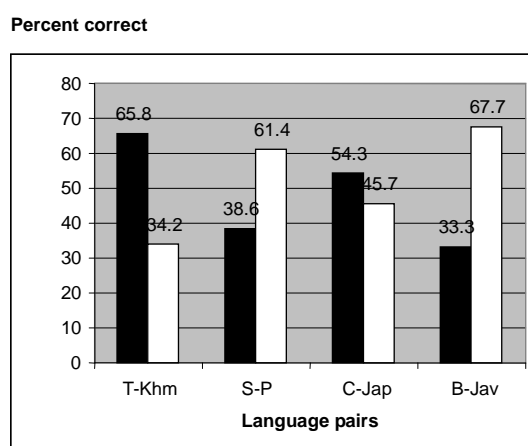
Language pairs	Both		Vietnamese		Filipino	
	Tokens	Percent	Tokens	Percent	Tokens	Percent
T-Khm	76	63.3	50	65.8	26	34.2
S-P	83	69.2	32	38.6	51	61.4
C-Jap	92	76.7	50	54.3	42	45.7
B-Jav	69	57.5	23	33.3	46	67.7

Note that in the previous section, it was presented in table 4 that the exposure of the two listener groups to Chinese and Japanese is relatively high in comparison to other pairs of languages. This might probably have affected the ability of the listeners in discriminating the languages. In addition, the phonetic signature (or the typical sound

system) of Chinese and Japanese is a bit different, since Chinese is a monosyllabic language and there is a tone carried with each phoneme, whereas Japanese is a multisyllabic language with the peculiar rhythmic properties of the only mora-timed language (Bond, 1998, p.365) (Mora is the unit of sound usually consisting of one consonant and one vowel or just one syllabic nasal like /N/ or the choked sound /Q/). This finding is obviously not applicable to Western linguistic context. The language pair was claimed to be difficult for, say, American speakers to discriminate, according to the study of Bond et al. (1998), because American listeners may not be able to distinguish the pitch changes across syllables (in Japanese) and within syllables (in Chinese).

In the meantime, the language pair that seemed to make listeners confused most is Bahasa-Javanese. There was only 57.5 % correct judgment, only a little bit above chance, for this language pair. As it was mentioned in the section of Language Characteristics, Javanese and Indonesian Bahasa are the two languages widely spoken in Indonesia communicative environment. They are quite similar in terms of phonotactic rules, grammar structures and prosodic pattern. As a matter of fact, during the evolution process, a lot of words would be borrowed and then would be used interchangeably in both languages, such as *kota* (city), *kamar* (room), *took* (shop). This might cause difficulty for listeners to discriminate the language pair at suprasegmental level.

In short, basing on the results in Fig. 1, it is possible to say that listeners have performed above chance for all the language pairs in the study. It might be therefore possible that the listeners can distinguish subtle nuances in the pre-lexical phonetic properties of languages. However, within each language pair, the performance of the listeners would dramatically differ between the two groups of listeners. As mentioned earlier, the acoustic-phonetic perception of the listeners seems to be much dependent on their first language (L1) phonetic background, as can be seen from Fig. 2:



Black: Vietnamese students, White: Filipino students

Fig. 2. Performance of the Filipino students and Vietnamese students

The information presented in Fig. 2 (also drawn from table 6) reveals that the Vietnamese listeners seemed to perform better in the two pairs of Thai-Khmer and Chinese-Japanese, of which the most significant contrast feature between the language pair is tone, while the Filipino listeners appeared to be more effective in the two pairs of Bahasa-Javanese and Spanish-Portuguese, which do not have tone as a differentiating feature. The percentage of correct judgment may not be very obvious in the case of Chinese-Japanese pair (54.3% for VN listeners vs. 45.7% for FL listeners), since the two languages are to some extent familiar in Asian setting. But for other language pairs, the contrast is more conspicuous. Take Thai-Khmer pair for instance, the Vietnamese listeners' percent of correct judgment was almost twice as much as the Filipino ones (65.8% vs. 34.2%), where as in the case of Bahasa-Javanese and Spanish-Portuguese, the situation is almost reversed.

Therefore, it may be tentatively implicated from this finding of the study that the Vietnamese listeners might have the advantage of being more sensitive to the presence or absence of tonal feature and thus might perform better in the group of language that has tone as a contrast feature. This may be accountable in terms of phonetic differences between the listeners' L1 language background. In fact, Vietnamese is a tonal language belonging to Mon-Khmer language (Thompson, 1991, p.40). It employs five tones to differentiate meanings among words. Vietnamese listeners might thus develop a sound processing system that is more sensitive to tonal languages and thus can attend to the nuances in sound and prosody patterns among the tonal languages. Meanwhile, the Filipino listeners' mother tongue (Tagalog), a member of Austronesian languages, just employs tone as a means of conveying non-lexical meaning and thus as a non-salient suprasegmental element in the phonetic system. On the contrary, the Filipino listeners may be more comfortable, to some extent, in discriminating Bahasa from Javanese (although the overall performance is not very significant) than their Vietnamese counterparts, probably because of the similarity in the sound patterns and stress style between Tagalog and other Austronesian languages, including Bahasa and Javanese (Katzner, 2002, p.23). The Filipino listeners were also reported to make more correct judgments for the Spanish-Portuguese language pair. There are many rules of pronunciation shared by Tagalog and Spanish, resulted from years of Hispanic ruling in the country. Tagalog speakers share some prominent features of Spanish/ Portuguese phonetic properties, such as the palatal nasal sound /*ɲ*/ as in *Espanya* (Spain), *Los Baños*, or the consonant *ll* as in *llave* (key), *mantequilla* (butter). Moreover, unlike in other tonal languages, Tagalog can allow two or three consonants to come together, coalescing with one or more vowels in the same syllable (Ledonyco, 1909, p.17). Thus it brings forth a prosody character that come nearer to Spanish and Portuguese. Owing to such phonetic background, the Filipino listeners tend to be more sensitive to the suprasegmental differences among the two languages in Spanish-Portuguese pair than the Vietnamese listeners.

It is, however, advisable to take the findings in the study with caution, since there might be some other variables affecting the performance of the listeners. It is a matter of fact that listeners might have no clue of their subconscious exposure to the languages in the study and hence might underestimate their familiarity with those languages which exerts some influence on their performance.

5. How is this study connected to a foreign language classroom?

The findings in this study lend support to the claim by Bond et al. (1998) and Stockmal (2001) that adult learners can make quite accurate distinction between different unknown languages, even between closely related languages. At further extent, adult learners can differentiate talker characteristics from language characteristics in order to accomplish the discrimination judgment task. Although it is true that the talkers employed in the study produced somewhat different voice setting in their second languages, e.g. higher pitch or slower rate of speech, the basic voice characteristics of the talkers remained constant and thus may minimize the influence of those factors.

The significance of the findings in this study and in other research of the same issue is reflected in their contribution to the knowledge of learners' phonetic acquisition. It is obvious that learners of a certain foreign language first process the language at suprasegmental level. In other words, learners at *prelexical stage* tend to analyze (and then subconsciously familiarize themselves with) the prosody, stress, pitch pattern, intonation contour and the phonotactic properties of that language, basing on the phonetic background of the first language. This may serve as a favourable argument for what is known as *optimal silence period* in Community Language Learning (CLL) and *audio-lingual method* (Richards, 2001, p.83) in which learners just listen to the input and internalize the suprasegmental features of the language until the moment they think that they are ready to talk. Although these methods are no longer as popular as they used to be, they still have the potentiality of effectiveness in a certain teaching context and thus could be adapted and employed in Communicative Language Teaching (CLT), especially in ESL setting. The teacher therefore should pay more attention to developing the learners' suprasegmental perception in the early stage of learning a language by exposing learners to the peculiar sound system of the language for a certain period of time before entering the lexical and syntactical stage. The study also tentatively shows that learners are more sensitive to the phonology features of those languages that bear more similarities with their L1. It means that teachers need to be aware of possible difficulties of learners whose L1 is phonetically distant from the target language and thus need to spend more time and effort in developing and training their capability in hearing and speaking the target language.

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Appendix 1: Answer Sheet for Discrimination Task

A. Personal data

1. Which of the following languages have you learnt (either at school or at home)?

- French Spanish Portuguese Chinese Vietnamese
- Khmer Korean Thai Lao Bahasa
- Batak Japanese German Arabic Javanese

2. Which of the following languages do you often hear (on TV, radio, internet)? To which extent (0%, 20%, 40%, 60%, 80% or 100%)?

- French.....% Spanish.....% Portuguese...% Chinese....% Vietnamese...%
- Khmer...% Korean....% Thai...% Lao% Bahasa.....%
- Batak....% Japanese....% German....% Arabic....% Javanese.....%

3. In your opinion, what is the status of your hearing ability?

Very good Not very good Bad Very bad

B. You are going to discriminate pairs of languages as SAME or DIFFERENT as you listen to each test item. Please indicate your answer by checking (✓) the appropriate box. (Kindly write down the name of the languages if you can identify.)

Item	LISTENING TEST		
	<i>Same</i>	<i>Different</i>	<i>Language identification</i>
1			/
2			/
3			/
4			/
5			/
6			/
7			/
8			/
9			/
10			/
11			/
12			/
13			/
14			/
15			/
16			/

Appendix 2: Transcripts for all recordings used in this research can be found at the following address:

https://docs.google.com/document/d/1ExfbIDU2mNG6rKROWOWnVUrauUBKh7aZTlIpA9CRhG4/edit?hl=en_US

Recordings for this research can be found at the following address:

https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0BwGAWiwi9R_cZTU2YjA3MjltYmI0Yi00NTNiLTg0YWQ0tNWVIMjI1Nzk1OTEx&hl=en_US