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A Comparison of the Differences of the Chinese Language and the English Language Using Voice Analysis

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**A COMPARISON OF THE DIFFERENCES OF THE CHINESE LANGUAGE AND
THE ENGLISH LANGUAGE USING VOICE ANALYSIS**

by

Chia-Lin Hsieh

**A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Master of Music
School of Music**

**Western Michigan University
Kalamazoo, Michigan
June 1994**

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Finally, I dedicate this thesis to my family specially to my parents Chu-Chang and Li-Hwa and my best friend Po-Chang for all of your love and encouragement.

Chia-Lin Hsieh

A COMPARISON OF THE DIFFERENCES OF THE CHINESE LANGUAGE AND THE ENGLISH LANGUAGE USING VOICE ANALYSIS

Chia-Lin Hsieh, M.M.

Western Michigan University, 1994

The purpose of this study was to see if differences exist in Taiwanese students when speaking in their native Chinese language as compared to a secondary language (English) using voice analysis. Not only was the study intended to compare pitches and octaves of 2 languages, but it also hoped to identify the possible factors that influenced the voices of 2 languages.

Fifty Chinese students were randomly selected from a population of 84 Chinese students who were from Taiwan, had established residence in the USA for at least 6 months, and were enrolled in WMU with TOEFL score of at least 450. The chromatic tuner and a microphone were used to measure subjects' voices for pitches and octaves. Data were compared between speaking in Chinese and in English.

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CHAPTER I

INTRODUCTION

Voice analysis is an approach to identifying notes or sounds that are distinctive for each individual. Signature Sound Technologies associated with voice analysis and therapeutic sound replacement were developed by Sharry Edwards in 1978. According to Edwards' theory, missing, broken, multiple, minor, or stressed notes from people's speaking voices indicate a lack of inner harmony which may be associated with current or potential health problems.

There are many different speaking languages in the world and each one has its own unique speech sound production (articulation) encompassing pitch, intensity, and quality, which may influence the voice analysis of Chinese speaking people. Chinese language has been studied in detail by Connell, Hogan, & Rozsypal (1983) and Howie (1976) and is regarded as a good example of "contour-tone" language which processes four tones.

Signature Sound technologies primarily applies to English speaking people. Will it influence the result, when a native Chinese individual's voice is analyzed in the Chinese language and in the English language? Will the individual's missing, broken, multiple, minor, or stressed notes be different between his/her speaking in Chinese and in English? If the result is different, what influences the differences? What are the cultural factors between Taiwan and America?

Statement of the Problem

The purpose of this study is to see if differences exist in Taiwanese students when speaking in their native Chinese language as compare to a secondary language (English) using voice analysis. Not only is the study intended to compare pitches and octaves of 2 languages, but it also hopes to identify the possible factors that influence the voices of 2 languages.

Definition of Terms

Terms of voice analysis were defined for the purpose of this study as follow.

Chromatic Tuner: An analog instrument normally used by a piano tuner to measure the frequency integrity of musical notes. For this study: the instrument will be used with an attached microphone that depicts the stressed notes in a person's voice. **KORG DTM-12:** A digital model to be used for initial voice assessment (Edwards, 1993).

Missing note: A musical note that is not registered by the KORG chromatic tuner (Edwards, 1993).

Broken note: A musical note that is missing in some octaves but present in adjoining octaves (Edwards, 1993).

Multiple note: A musical note that is registered in three or more octaves on the KORG chromatic tuner (Edwards, 1993).

Minor note: A musical note or series of notes that is registered in three or less

than three times on the KORG chromatic tuner (Edwards, 1993).

Stressed note: A musical note or series of notes that are missing, broken, multiple, or minor (Edwards, 1993).

CHAPTER II

REVIEW OF RELATED LITERATURE

Signature Sound

Sharry Edwards is the creator of Signature Sound Works, which was developed in 1978. The Signature Sound theory and techniques are associated with voice analysis and therapeutic sound replacement. Edwards believes that each individual has a Signature Sound that is distinctive. In support of Edwards theory, Heline (1970) contended that every created thing possesses a keytone of its own from molecule to man and from plant to solar system. Campbell (1989) agreed that all life is vibration. Each sense responds to distinct vibratory energies around the physical body.

Edwards (1994) believes that vocally missing tones correspond to an individual's distinctive sound and physiological and psychological status; that is when a person is experiencing physiological or psychological illness, there are missing, stressed, or multiple notes in the body's distinctive sounds. Edwards indicates that various octaves or harmonics of the sounds are related to different body system and diseases. Brodnitz (1988) reported that changes in individuals' moods particularly influences basic pitch and range. He stated that all abnormalities of speech and voice were noted as the basis of diagnosis of the patient's troubles.

A method has been developed by Edwards for analyzing the voice for missing frequencies and identifying and supplying these tones in the person's environment. A chromatic tuner is used to identify patterns of tonal occurrences such as pitches and octaves during speaking. The person uses a dual frequency generator and listens to these sounds for varying amounts of time. If these sounds can be reproduced, the body may respond by returning to balance or harmony, and may resume intrinsic production of complete distinctive sounds.

The following literature examines several factors that influence individuals' vocal utterances and effect voice analysis

Culture

For thousands of years, close family relations have been a major cornerstone of traditional Chinese culture (Hsu, 1949). In their study of 2000 respondents, from metropolitan Shanghai, towns in Qingpu, and 4 rural districts, Chu and Ju (1993) found that a large majority of respondents had frequent interaction with their parents, even though they were not living together. They also found that rural families get together more frequently than urban families. The differences in family interactions between rural and urban people may influence the voice and therefore effect voice analysis. Chu and Ju also reported that a large majority of respondents expressed a positive feeling toward their parents' concerns about their lives. The close family relations, parents' concern, and warm feedback from the children may influence individual's distinctive sound therefore effect voice analysis.

Thornicroft (1991) reported strong relationships between psychiatric disorder and social class, sex, marital status, ethnic group, and living situation, and moderate relationships with inner-city living and high degree of residential mobility. The differences of social class, gender, and inner-city living that influence psychological status, may influence the voice and effect voice analysis.

In contrast, the American cultural context tends to assume that the form and meaning of social experience are directly derived from the emotions of the person having the experiences (Potter, 1988). Personal emotion is a critical component of experience. When compared to American anthropology's referential frameworks, Potter (1988) stated that Chinese culture does not recognize itself as utilizing the emotional life of individuals in the service of the social order. The Chinese believe that an emotion is never the legitimizing rationale for any socially significant action, and there is no culture theory that social structure rests on emotional ties. In support of the Chinese refusal to recognize their emotions, Kleinman (1980) stated that revealing the Chinese's own feelings might result in shame for themselves and their families, and for that reason it was not to be revealed outside the family. Levy(1963) delineated that the display of emotional reaction was strongly inhibited in Chinese culture. The Chinese placed high value on composure, poise, and self-control. The ways of expressing emotions in Chinese culture influences people's psychological status and behavioral patterns such as refusal to recognize emotions and control of emotional reaction, and therefore may influence voice and effect voice analysis.

Millar (1991) compared different genders to their social roles and emotions.

Results indicated that both sexes described feeling tension, guilt, and frustration balancing multiple roles. Women's family roles are more incompatible with work than are men's family roles. Therefore, women experience greater tension and guilt when performing both family and work roles, whereas men experience frustration in family and work roles. Hermanson (1992) conducted a study to compare the differences in men's emotional expression as a function of gender briefs and contextual variables. Results indicated that, under gender-consistent conditions, both high and low Masculine Gender Role Stress (MGRS) scores men more expressive to female than to male. Under gender-inconsistent conditions low MGRS men would become more expressive to male than to female, while high MGRS men would be equally expressive to male and female. The differences of feelings and emotional expression between both genders may influence the voice.

Gates (1988) studied birth order and its relationship to depression, anxiety, and self-concept test scores in children. Results showed that 1st-born subjects scored significantly lower on depression than 2nd-born, 3rd-born, 4th-born, and youngest subjects. 1st borns showed significantly less trait anxiety than 3rd-born subjects; 1st-born subjects also showed significantly higher levels of self-esteem than 2nd-born and youngest subjects. Girls showed significantly more trait anxiety than boys. Another study conducted by Grosz (1968) indicated that patients diagnosed as depressed with differently-sexed siblings showed that middle or the oldest were more frequently depressed and the youngest were underrepresented. The different emotional status and self-concept in birth order may influence voice and therefore

effect voice analysis.

Influence of Emotions

Emotions are universal and personal experiences. According to Lung (1939), emotions are communicated and interpreted chiefly through the medium of overt expression in social situations. According to Objective Theory (Gray, 1935) emotions are intense but temporary bodily behavior may be initiated by some stimulation sufficient to bring about immediate action of the endocrine and resultant change in blood chemistry, visceral activity, muscle tones, and sensitivity. Freud (1989) introduced a model of human behavior in which emotions and feeling states could be hidden from conscious access yet be influential in everyday behaviors. Lazarus, Averill, & Opton (1970) also indicated that an emotion may arise as a result of bodily changes due to perception and appraisal of a stimulus, or it may be the end result of a series of both cognitive and physiological change. That emotions change physiological status and stimulate psychological feels may influence voice analysis. Scherer (1981) reported that more pronounced changes in vocal output were found under more severe stress. The reason was that vocal production became increasingly more difficult to control as stress increased, and coping became more difficult and demanding.

Pelletier (1993) reported that attitudes, beliefs, and emotional states ranging from love and compassion to fear and anger could trigger chain reactions that affect blood chemistry, heart rate, and the activity of every cell and organ system in the body-- from the stomach and gastrointestinal tract to the immune system.

Kiecolt-Glaser, and Glaser (1993) investigated 34 medical students before exam time and randomly assigned half of them to a group where they were given hypnosis and relaxation training. During exams, they compared the immune function of students in the training group with that of the other students who did not receiving such training. They found that the simple stress of exams affected a very wide range of immunological functions. The emotional status influences body function, and may influence voice utterance and therefore effect voice analysis.

Expression of Voice

Prosody refers to linguistic stress patterns as reflected in pause, inflection, juncture; melody or cadence of speech (Riper & Emerick, 1990). Ross, Edmondson, and Seibert (1986) compared the effect on acoustic measures of prosody in tone (Taiwanese, Mandarin, and Thai) languages and non-tone (English) language. The results showed that non-tone had greater freedom than tone languages in the intonational contour and tone languages overall had a reduced ability to signal affect prosodically. The differences of prosody between tone and non-tone languages may influence vocal utterances and therefore effect voice analysis.

In an interpretation of words, people respond to factors of inflection, pitch, melody, rhythm, and other more subtle characteristics of speech. These characteristics reflect not only an understanding of what a person is saying about a topic of conversation, but also what he is saying about himself (Jones, 1942). Alpert (1982) stated that prosody may be modulated by the speaker's emotional state so that people

distinguish the presence of joy, rage, disgust, fear, and grief. Therefore how the individual feels in general and towards what he is saying may also affect the way he sounds. Another study (Fairbanks & Pronovost, 1939) compared voice recordings obtained from 6 amateur male actors stimulating 5 emotional states: anger, fear, grief, indifference, and contempt. The results indicated that vocal utterances obtained in anger, fear, and grief situations tended to produce characteristic differences in contour of fundamental frequency, temporal characteristics, average speech spectrum, precision of articulation, and waveform regularity of successive glottal pulses. Cosmides (1983) reported that different individuals consistently varied their prosody for different emotional contexts, and concluded that intonational tonal patterns reflect the speaker's valuing of the relations, persons, actions and entities represented in their speech.

Scherer (1981) found that emotional states did affect voice and speech patterns and that listeners were generally able to correctly infer the affective state of the speaker. Moses (1954) investigated a type of voice analysis that involved listening to the fluctuating patterns of rhythm, timbre, and tone in a voice. By examining the speaking voice, he believed that a great deal could be learned about an individual's personality and personality problems. He also indicated that the voice reflected different phases in a person's life and vocal changes accompany the development of the individual. Alpert (1981) suggested that the affects, moods, and emotions might influence and distinguish acoustic dimensions of the speech signal. He indicated that flat affect, as seen in schizophrenia, appeared to manifest acoustically as an alteration

or absence of the normal emphasis patterns. Scherer and Scherer (1981) stated that the voice of the speaker and his speech behavior were related to his/her personality dispositions. They also suggested that speech cues were not only internal factors, but also social, psychological, and cultural factors that guided the speech behavior of a person during social interaction.

According to this literature, culture, gender, birth order, social status, emotional states, and physiological states influence the voice and speech behaviors, therefore may effect voice analysis.

Statement of Hypotheses

1. There will be no difference in the numbers of missing notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner.
2. There will be no difference in the numbers of broken notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner.
3. There will be no difference in the numbers of multiple notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner.
4. There will be no difference in the numbers of minor notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner.
5. There will be no difference in the numbers of stressed notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner.
6. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese graduate students between speaking in

Chinese and in English using the KORG chromatic tuner.

7. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese undergraduate students between speaking in Chinese and in English using the KORG chromatic tuner.

8. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese males between speaking in Chinese and in English using the KORG chromatic tuner.

9. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese females between speaking in Chinese and in English using the KORG chromatic tuner.

10. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese who stay in USA less than 2 years between speaking in Chinese and in English using the KORG chromatic tuner.

11. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese who stay in USA 2 or more than 2 years between speaking in Chinese and in English using the KORG chromatic tuner.

12. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese whose parents had lower educational level between speaking in Chinese and in English using the KORG chromatic tuner.

13. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese whose parents had higher educational level between speaking in Chinese and in English using the KORG chromatic tuner.

14. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese in English-Chinese group between speaking in Chinese and in English using the KORG chromatic tuner.

15. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese in Chinese-English group between speaking in Chinese and in English using the KORG chromatic tuner.

16. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese with religion between speaking in Chinese and in English using the KORG chromatic tuner.

17. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese without religion between speaking in Chinese and in English using the KORG chromatic tuner.

18. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese who are the first children in their families between speaking in Chinese and in English using the KORG chromatic tuner.

19. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese who are the middle children in their families between speaking in Chinese and in English using the KORG chromatic tuner.

20. There will be no differences in the numbers of missing, broken, multiple, minor and stressed notes of native Chinese who are the youngest children in their families between speaking in Chinese and in English using the KORG chromatic tuner.

CHAPTER III

METHOD

Subjects

Fifty subjects were randomly selected from a population of 84 Chinese students who were from Taiwan. These subjects were selected according to the following criteria: members of the Chinese Student Association, had established residence in the USA for at least 6 months, had a TOEFL score of at least 450, and were enrolled in WMU. The subjects ranged in age from 18-30 years.

Instruments

All subjects' speaking voices were tested for pitches and octaves while speaking in Chinese and in English with the use of a chromatic tuner (KORG DTM 12) and a microphone (V-Tech VT-1030). A 7-page-interview package was provided for each subject which included the purpose of the study, informed consent, demographic information, Data Collection Form I & II, Data Analysis Form I & II.(see Appendix B). Identical questions were asked of the subjects while the researcher was recording data of individuals' speaking voices.

Questions were divided into 4 different areas--base, stress, future, and specific events (see Appendix C). The majority of these questions were selected from

Edwards' (1994) book, others were designed by the researcher. Before this study, the researcher did a pilot study to find out which questions were more related to the subjects' life. According to the researcher's knowledge and understanding of the Chinese students' life style, these questions were selected and designed.

Consent and Approval

This research project required approval from the Western Michigan University Human Subjects Institutional Review Board. The Human Subjects Approval Form (Appendix A) was completed and reviewed under expedited conditions by a subcommittee of the Board. After revisions, the board voted to approve the research project and formally notified the principal investigator of this decision (Appendix A).

Design and Procedures

Fifty Chinese students were randomly selected from 84 Chinese students to be involved in this study. The 50 Chinese students were randomly assigned to either a Chinese-English group, or an English-Chinese group (see Procedures # 3). Each group contained 25 Chinese students.

This study consisted of one-30 minute private interview with the researcher, and it would occur either at the researcher's apartment, or at the subject's apartment, depending on the subject's convenience and quiet environment.

The researcher contacted subjects by phone, explained the study briefly, and made an appointment.

If the subject chose to go to his/her apartment, the researcher would ask him/her to turn off the telephone, television, radio, and music for 30 minutes and make sure the environment was quiet and private. If the subject chose to go to the researcher's apartment, the researcher would control the environment to be as quiet and private as possible.

The entire interview took 30 minutes either at the subject's apartment or at the researcher's apartment.

The interview was comprised of three parts.

1. The researcher explained the purpose of this study and encouraged the subject to ask questions if he/she did not understand this study. The researcher demonstrated the way to record data through use of the chromatic tuner. The data was the subject's pitches and octaves which appeared on the chromatic tuner while the subject's spoke. The researcher suggested that the subjects speak into the chromatic tuner to demonstrate its use.

2. Each subject completed a consent form and provided general information about him/herself such as gender, birth date, education/major, length of stay in USA, geographical area (which part of Taiwan), birth order, religion, and parents' education (see Appendix B).

3. The researcher randomly assigned 25 subjects in the Chinese-English group and the rest of the 25 subjects in the English-Chinese group. The researcher asked each subject the same questions (see Appendix C). In the Chinese-English group, the researcher asked questions in Chinese first. While the subject was answering these

questions in Chinese, the researcher recorded the subject's pitches and octaves by using the chromatic tuner. Second, the researcher asked the same questions in English. While the subject was answering these questions in English, the researcher collected data on the subject's pitches and octaves by using the chromatic tuner. In the English-Chinese group, the researcher asked questions in English first, and vice versa.

The researcher suggested that the subjects answer the questions the same each time whether in Chinese or in English however any answer the subject gave was accepted.

CHAPTER IV

ANALYSIS AND RESULTS

Analysis

All data was analyzed by a t-test paired two-sample for means using the Excel computer program. For the purpose of this study, the .05 level of significance was selected for all statistical testing.

Results

Hypothesis 1

There will be no difference in the numbers of missing notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner. There were 50 subjects in the group. The means for missing notes were 0.36 in Chinese, and is 0.38 in English (Table 1). There was no difference in the numbers of missing notes between speaking in English and in Chinese.

Hypothesis 2

There will be no difference in the numbers of broken notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner. There

were 50 subjects in the group. The means for broken notes were 0.6 in Chinese and 0.88 in English (Table 2). There was significant difference in the numbers of broken notes between speaking in English and in Chinese.

Table 1

Means and t Values for Missing Notes Between Speaking in Chinese and in English

Languages	Subjects	Means	
Chinese	50	0.36	t=-0.198
English	50	0.38	

* Significant at .05 level.

Note: The lower means reflects a more positive psychological and physiological status.

Table 2

Means and t Values for Broken Notes Between Speaking in Chinese and in English

Languages	Subjects	Means	
Chinese	50	0.60	t=-1.92 *
English	50	0.88	

* Significant at .05 level.

Note: The lower means reflects a more positive psychological and physiological status.

Hypothesis 3

There will be no difference in the numbers of multiple notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner. There were 50 subjects in the group. The means for multiple notes were 2.68 in Chinese and 2.42 in English (Table 3). There was no difference in the numbers of multiple notes

between speaking in English and in Chinese.

Table 3

Means and t Values for Multiple Notes Between Speaking in Chinese and in English

Languages	Subjects	Means	
Chinese	50	2.68	t=1.006
English	50	2.42	

* Significant at .05 level.

Note: The lower means reflects a more positive psychological and physiological status.

Hypothesis 4

There will be no difference in the numbers of minor notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner. There were 50 subjects in the group. The means for minor notes were 0.75 in Chinese and 1.42 in English (Table 4). There was significant difference in the numbers of minor notes between speaking in English and in Chinese.

Table 4

Means and t Values for Minor Notes Between Speaking in Chinese and in English

Languages	Subjects	Means	
Chinese	50	0.75	t=-3.384 *
English	50	1.42	

* Significant at .05 level.

Note: The lower means reflects a more positive psychological and physiological status.

Hypothesis 5

There will be no difference in the numbers of stressed notes of native Chinese between speaking in Chinese and in English using the KORG chromatic tuner. There were 50 subjects in the group. The means for stressed notes were 4.40 in Chinese and 5.10 in English (Table 5). There was significant difference in the numbers of stressed notes between speaking in English and in Chinese.

Table 5

Means and t Values for Stressed Notes Between Speaking in Chinese and in English

Languages	Subjects	Means	
Chinese	50	4.40	t=-2.099 *
English	50	5.10	

* Significant at .05 level.

Note: The lower means reflects a more positive psychological and physiological status.

Hypothesis 6

There will be no differences in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese graduate students between speaking in Chinese and in English using the KORG chromatic tuner. There was 38 graduate students. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 6. There were no differences in the numbers of missing and multiple notes of native Chinese graduate students between speaking in Chinese and in English; however, there were significant differences in the numbers of broken, minor,

and stressed notes of native Chinese graduate students between speaking in Chinese and in English.

Table 6

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Graduate Students Between Speaking in Chinese and in English

Factor	Languages	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Graduate Students	Chinese	38	0.36	0.60	2.68	0.75	4.40
	English	38	0.36	0.88	2.42	1.42	5.10
			t=-0.20	t=-1.92*	t=1.01	t=-3.38*	t=-2.10*

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 7

There will be no differences in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese undergraduate students between speaking in Chinese and in English using the KORG chromatic tuner. There was 12 undergraduate students. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 7. There were no differences in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese undergraduate students between speaking in Chinese and in English.

Hypothesis 8

There will be no difference in the numbers of missing, broken, multiple, minor,

and stressed notes of native Chinese males between speaking in Chinese and in English using the KORG chromatic tuner. There was 32 males in the group. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 8. There were no differences in the numbers of missing, multiple, and stressed notes of native Chinese males between speaking in Chinese and in English, but there were significant differences in the numbers of broken and minor notes between speaking in Chinese and in English.

Table 7

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Undergraduate Students Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
UnderG. Students	Chinese	12	0.25	0.91	2.83	0.91	4.91
	English	12	0.33	0.66	2.67	1.33	5.00
			t=-0.56	t=1.39	t=0.25	t=-1.24	t=-0.11

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Table 8

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Males Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Males	Chinese	32	0.34	0.36	2.84	0.75	4.31
	English	32	0.31	0.75	2.66	1.31	4.93
			t=0.27	t=-2.25*	t=0.61	t=-2.41*	t=-1.47*

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 9

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese females between speaking in Chinese and in English using the KORG chromatic tuner. There was 18 undergraduate students. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 9. There were no differences in the numbers of missing, broken, multiple, and stressed notes, but there was significant difference in the numbers of minor notes of native Chinese females between speaking in Chinese and in English.

Table 9

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Females Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Females	Chinese	18	0.39	1.0	2.39	0.77	4.55
	English	18	0.50	1.11	2.00	1.61	5.22
			t=-0.57	t=-0.40	t=0.82	t=-2.35*	t=-1.17

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 10

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who stay in USA less than 2 years between speaking in Chinese and in English using the KORG chromatic tuner. There was 28 subjects who stay in USA less than 2 years. The means and t values for missing,

broken, multiple, minor, and stressed notes were contained in Table 10. There were no differences in the numbers of missing, broken, and multiple notes of native Chinese who stay in USA less than 2 years between speaking in Chinese and in English, but there were significant differences in the numbers of minor and stressed notes between speaking in Chinese and in English.

Table 10

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects Who Stay in USA Less Than 2 Years Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
In USA	Chinese	28	0.32	0.75	2.75	0.60	4.42
< 2 yr.	English	28	0.43	0.92	2.36	1.46	5.17
			t=-0.72	t=-0.93	t=1.17	t=-3.29*	t=-1.76*

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 11

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who stay in USA 2 or more than 2 years between speaking in Chinese and in English using the KORG chromatic tuner. There was 22 subjects who stay in USA 2 or more than 2 years. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 11. There were no differences in the numbers of missing, multiple, minor, and stressed notes of native Chinese who stay in USA 2 or more than 2 years between speaking in Chinese and in

English, but there was significant difference in the numbers of broken notes between speaking in Chinese and in English.

Table 11

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects Who Stay in USA 2 or More Than 2 Years Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
In USA	Chinese	22	0.40	0.40	2.60	0.95	4.36
>=2 yr.	English	22	0.32	0.81	2.50	1.36	5.00
			t=0.25	t=-1.82*	t=0.22	t=-1.40	t=-1.18

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 12

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese whose parents had lower educational level between speaking in Chinese and in English using the KORG chromatic tuner. There was 24 subjects whose parents had lower educational level. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 12. There were no differences in the numbers of missing, broken, multiple, and stressed notes of native Chinese whose parents had lower educational level between speaking in Chinese and in English, but there was significant difference in the numbers of minor notes between speaking in Chinese and in English.

Table 12

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects Whose Parents Had Lower Educational Level Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Lower ed. parents	Chinese	24	0.46	0.38	2.67	0.83	4.33
	English	24	0.38	0.54	2.67	1.46	5.04
			t=0.57	t=-0.81	t=0	t=-2.17*	t=-1.27

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 13

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese whose parents had lower educational level between speaking in Chinese and in English using the KORG chromatic tuner. There was 24 subjects whose parents had lower educational level. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 12. There were no differences in the numbers of missing, broken, multiple, and minor notes of native Chinese whose parents had lower educational level between speaking in Chinese and in English, but there was significant difference in the numbers of minor notes between speaking in Chinese and in English.

Hypothesis 14

There will be no difference in the numbers of missing, broken, multiple, minor,

and stressed notes of native Chinese in English-Chinese group between speaking in Chinese and in English using the KORG chromatic tuner. There was 25 subjects in English-Chinese group. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 14. There were no differences in the numbers of missing, broken, multiple, and stressed notes of native Chinese in English-Chinese group between speaking in Chinese and in English, but there was significant difference in the numbers of minor notes between speaking in Chinese and in English.

Table 13

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects Whose Parents Had Higher Educational Level Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Higher ed. parents	Chinese	26	0.27	0.80	2.69	0.69	4.46
	English	26	0.38	1.19	2.19	1.38	5.15
			t=0.83	t=-1.85*	t=1.48	t=-2.56*	t=-1.77*

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 15

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese in Chinese-English group between speaking in Chinese and in English using the KORG chromatic tuner. There was 25 subjects in Chinese-English group. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 15. There were no differences in the

numbers of missing, broken, and stressed notes of native Chinese in Chinese-English group between speaking in Chinese and in English, but there were significant differences in the numbers of multiple and minor notes between speaking in Chinese and in English.

Table 14

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects in the English-Chinese group Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
English-Chinese	Chinese	25	0.46	0.60	2.12	1.08	4.32
Chinese-English	English	25	1.04	0.84	2.32	1.60	5.12
			t=1.16	t=-1.1	t=-0.49	t=-1.80*	t=-1.53

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Table 15

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects in the Chinese-English Group Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Chinese-English	Chinese	25	0.27	0.60	3.24	0.44	4.48
English-English	English	25	0.38	0.92	2.52	1.24	5.08
			t=-1.41	t=-1.62	t=2.42*	t=-3.02*	t=-1.41

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 16

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese with religions between speaking in Chinese and in English using the KORG chromatic tuner. There was 14 subjects with religions. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 16. There were no differences in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese with religions between speaking in Chinese and in English, but there were significant differences in the numbers of multiple and minor notes between speaking in Chinese and in English.

Table 16

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects With Religions Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Religions	Chinese	14	0.64	0.43	2.29	1.07	4.43
	English	14	0.57	0.71	2.14	1.14	4.57
			t=0.37	t=-0.88	t=0.27	t=-0.21	t=-0.24

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 17

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese without religions between speaking in Chinese and in English using the KORG chromatic tuner. There was 36 subjects without

religions. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 17. There were no differences in the numbers of missing and multiple notes of native Chinese without religions between speaking in Chinese and in English, but there were significant differences in the numbers of broken, minor, and stressed notes between speaking in Chinese and in English.

Table 17

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects Without Religions Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Without religions	Chinese	36	0.25	0.67	2.83	0.64	4.39
	English	36	0.31	0.94	2.53	1.53	5.31
			t=-0.47	t=-1.71*	t=1.03	t=-3.90*	t=-2.29*

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 18

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who are the first children in their families between speaking in Chinese and in English using the KORG chromatic tuner. There was 19 subjects who are the first children in their families. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 18. There were no differences in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who are the first children in their families between speaking in Chinese and in English.

Table 18

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of Subjects Who Are the First Children Between Speaking in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
1st-born children	Chinese	19	0.53	0.63	2.79	1.00	4.97
	English	19	0.47	1.00	2.21	1.11	4.79
			t=0.27	t=-1.38	t=1.57	t=0.42	t=0.31

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Hypothesis 19

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who are the middle children in their families between speaking in Chinese and in English using the KORG chromatic tuner. There was 5 subjects who are the middle children in their families. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 19. There were no differences in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who are the middle children in their families between speaking in Chinese and in English.

Hypothesis 20

There will be no difference in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who are the youngest children in their families

between speaking in Chinese and in English using the KORG chromatic tuner. There was 24 subjects who are the youngest children in their families. The means and t values for missing, broken, multiple, minor, and stressed notes were contained in Table 20. There were no differences in the numbers of missing, broken, and multiple notes of native Chinese who are the youngest children in their families between speaking in Chinese and in English, but there were significant differences in the numbers of minor and stressed notes between speaking in Chinese and in English.

There were five different notes--missing, broken, multiple, minor, and stressed notes--which were examined by this study. In every notes, there were 15 factors that were also tested by this study. There were total 75 possibilities (5 times 15 = 75), 28 % of the possibilities (21 possibilities) showed significant differences, 72 % of the possibilities (54 possibilities) showed no differences between speaking in Chinese and in English (Table 21). Overall Signature Sound Work can be applied to native Chinese people, but the trained personnel needs to be aware of the 28 % of the possibilities that showed differences between speaking in Chinese and in English.

Table 19

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of
Subjects Who Are the Middle Children Between Speaking
in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Middle children	Chinese	5	0.6	0.80	1.8	1.20	4.40
	English	5	0.6	0.60	2.2	2.00	5.40
			t=0	t=0.54	t=-0.78	t=-0.72	t=-0.75

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Table 20

Means and t Values for Missing, Broken, Multiple, Minor, and Stressed Notes of
Subjects Who Are the Youngest Children Between Speaking
in Chinese and in English

Factor	Language	Subjects	Mean Scores				
			Missing	Broken	Multiple	Minor	Stressed
Youngest children	Chinese	24	0.21	0.54	2.6	0.50	3.88
	English	24	0.29	0.83	2.6	1.63	5.38
			t=-1	t=-1.43	t=0	t=-4.49*	t=-3.42*

* Significant at .05 level.

Note: The lower mean reflects a more positive psychological and physiological status.

Table 21

t-Test Summary Table for Overall Relationships Between Speaking in Chinese and in English

	<u>Factors</u>	<u>Subjects</u>	<u>Notes</u>			
			Missing	Broken	Multiple	Minor Stressed
Degrees	Graduate	38		*		* *
	Under G.	12				
Genders	Males	32		*		* *
	Females	18				*
In USA	<2 yr.	28				* *
	>=2 yr.	22		*		
Groups	E-C	25				* *
	C-E	25			*	*
Parents Education	Lower	24				* *
	Higher	26		*		* *
Religions	Yes	14		*		* *
	No	36				
Birth Order	1st-born	19				
	Middle	5				
	Youngest	24				* *

* Significant at .05 level; Significant difference between speaking in Chinese and in English.

CHAPTER V

SUMMARY

Voice analysis is an approach to identify notes or sounds that are distinctive for each individual. Signature Sound techniques are associated with voice analysis and were developed by Sharry Edwards in 1978. These technologies primarily apply to English speaking people. Unfortunately, none of this research has been applied to Chinese speaking population. Therefore, the purpose of this study was to see if differences exist in Taiwanese students when speaking in their native Chinese language as compared to a secondary language (English) using voice analysis, and to identify the possible factors that influence the voices of 2 languages.

The review of literature began with Signature Sound technologies that are associated with voice analysis and therapeutic sound replacement. The theory explored that vocally missing tones correspond to an individual's distinctive sound and physiological and psychological status; that is when a person is experiencing physiological or psychological illness, there are missing, multiple, or stressed notes in the body's distinctive sounds. The technique of voice analysis was to analyze the voice for patterns of tonal occurrences such as pitches and octaves during speaking.

The discussion focused on Chinese culture, gender, and birth orders and their effects on psychological variables. The review discovered that Chinese had a different way to handle feelings as compare to Western culture. The review explored that

different genders had different social roles and emotions. The review also discovered that birth order effects depression, anxiety, and self-concept.

The discussion brought into the influence of emotions and its effects on physiological and psychological variables. It was evident that emotions change body function, everyday behaviors, and vocal output. That is emotions influence an individual's psychological and physiological status.

The review of literature ended with a discussion of studies that related to both voice and emotions. The review explored that vocal changes related to emotions, personality, and social and cultural factors. That is an individual's psychological and physiological status might influence and distinct his/her voice.

The present study was based on these findings. This study was to see any differences of vocal utterance between speaking in Chinese and in English of native Chinese. This study also attempted to identify what factors influence vocal utterance between speaking in 2 languages.

The subjects consisted of 50 Chinese students, ranging in age from 18-30 years, who were from Taiwan, members of the Chinese Student Association, had established residence in the USA for at least 6 months, were enrolled in WMU with a TOEFL score of at least 450. These subjects were randomly divided into 2 groups; one was Chinese-English group, the other was English-Chinese group. The study was implemented in one-30 minute private interview.

Voice analysis were measured for each subject speaking in Chinese and in English using a chromatic tuner and tested an individual's speaking voice for pitches

and octaves. Each subject was asked to speak in Chinese and in English at the same interview, and voices were recorded by using chromatic tuner.

It was hypothesized that in the numbers of missing notes, broken notes, multiple note, minor notes, and stressed notes would have no significant effect on native Chinese between speaking in Chinese and in English. It was also hypothesized that in each notes each factor would have no significant effect on native Chinese between speaking in Chinese and in English.

The results of this study found that there were significant differences in the numbers of broken, minor, and stressed notes of native Chinese between speaking in Chinese and in English; however, in the numbers of missing notes and multiple notes there were no differences of native Chinese between speaking in Chinese and in English.

As for factors, in the numbers of broken notes, there were significant difference of native Chinese who are graduate students, males, stay in USA 2 or more than 2 years, had higher educated parents, and no religions between speaking in Chinese and in English. In the numbers of minor notes, there were significant differences of native Chinese who are graduate students, males, stay in USA less than 2 years, had lower educated parents, had higher educated parents, in Chinese-English group, in English-Chinese group, no religions, and youngest children between speaking in Chinese and in English. In the numbers of stressed notes, there were significant differences of native Chinese who are graduate students, stay in USA less than 2 years, had higher educated parents, no religions, and youngest children between speaking in Chinese and in

English. In the numbers of multiple notes, there was significant difference of native Chinese in Chinese-English group between speaking in Chinese and in English.

Discussion

It should be noted that there were differences in the numbers of broken notes, minor notes, and stressed notes between speaking in Chinese and in English. The mean scores in English were higher than the mean scores in Chinese in these 5 notes except in the numbers of multiple notes, and in the numbers of three note out of five notes were significant differences between speaking in Chinese and in English. It's possible that Chinese is the subjects' native language, so it is easier to express themselves in Chinese than in English. During the interviews, some subjects asked the researcher to explain the questions in Chinese, if they did not understand them in English; some subjects said, "Do we really need to speak in English?" Subjects may have been afraid of speaking in English in front of the researcher. Some of the subjects were nervous, tense, low self-confidence, and shy during the interview, especially when speaking in English. The results indicated that emotional status influence the outcomes of voice analysis.

When graduate students spoke in Chinese and in English, there were significant differences in the numbers of broken notes, minor notes, and stressed notes. During the interviews, most of the graduate students stated that they preferred staying at home and studying alone rather than going outside and discussing with friends. The results may indicate that native Chinese graduate students had more stress speaking in

English than in Chinese.

There were significant differences in the numbers of minor notes and stressed notes of native Chinese who stay in USA less than 2 years between speaking in Chinese and in English. On the other hand, if subjects stay in USA 2 or more than 2 years, it was significant difference only in the numbers of broken notes. The results may indicate that the Chinese have more stress speaking in English than in Chinese, if the subjects stay in USA less than 2 years.

There were significant differences in the numbers of broken notes, minor and stressed notes of native Chinese who did not have religious beliefs between speaking in Chinese and in English. On the other hand, there were no differences in the numbers of missing, broken, multiple, minor, and stressed notes of native Chinese who had religious beliefs between speaking in Chinese and in English. The results may indicate that the Chinese without religious orientations have more stress when speaking in English than in Chinese.

This study included preliminary aspect of Edwards' techniques which is voice analysis. The researcher determined if there is similar patterns of subjects between speaking in Chinese and in English, however there is no therapeutic replacement of tonal frequency for subjects.

Limitation of the Study

The limitation of the study was that there was no pre-test questions for psychological and physiological status of the subjects. The researcher was unable to

know if the subject had physiological illness such as a cold or a stomach ache, or psychological discomfort such as a mid-term right after the interview. The differences of the subjects' psychological and physiological status may influence the results.

Another limitation of the study was a time factor. Three factors that the researcher was unable to follow upon were the length of stay of subjects in USA, undergraduate students, and non-religions. When the subjects who stay in USA less than 2 years decide to stay in USA more than 2 years, will the results change between these subjects speaking in Chinese and in English? When the undergraduate students become graduate students, will the results change between these subjects speaking in Chinese and in English? When the non-religious subjects become religious people based on subject's demographic information, will the results change between these subjects speaking in Chinese and in English? These were time factors that were the limitation of the study.

In this study the literature was very limited. There was no researches about Signature Sound and Chinese culture or Signature Sound applied in any other countries. It was very difficult to find related researches to support the present study.

Another limitation of the study was the validity of the chromatic tuner. There was again no researches about the validity of the chromatic tuner used in voice analysis. This is another area that is lack of research support.

In this study, the numbers of every factors were not of equal amount. Is was unable to see the interactions between each factors statistically. The interview time for 50 subjects was not at the same week. It was separated into 3 weeks, one week

before mid-term, mid-term week, and Spring break. The different period of time may influence subjects' emotions and also effect the results, especially form anxious state to relaxed state.

Recommendation for Future Study

It is recommended that more research needs to be done in Signature Sound, in many areas. It may be using Signature Sound in different cultures, countries or different languages, using Signature Sound to assist in analyzing different diseases, using Signature Sound to help psychiatric patients or other facilities, or using Signature Sound in music therapy.

How to implement Signature Sound in music therapy is the most important question for the researcher as a music therapy. Professor Scovel is the first music therapist to be involved as a practitioner and teach of Signature Sound. She is conducting a study of children who are diagnosed with an attention deficit disorder to compare one group of children who listen to their missing frequencies to another group of children who listen to classical music with their missing keys. Another way to implement Signature Sound in music therapy is to let an individual listen to his/her missing frequency and simultaneously listen to his/her preferred music or songs that were transposed to their missing key and therefore hoping to achieve the therapeutic goals.

Based on this study, the researcher only have the beginning data of the Signature Sound technique. If the researcher would like to complete the techniques of

Edwards, the researcher would provide the subjects of their frequencies and implication of that is that the researcher will deal with therapeutic issues of the subjects.

Appendix A
Approval Forms

WESTERN MICHIGAN UNIVERSITY
HUMAN SUBJECTS INSTITUTIONAL REVIEW BOARD (HSIRB)
APPLICATION FORM
(all materials must be typewritten to be considered)

I. BASIC INFORMATION

PROJECT TITLE: A Comparison of the Differences of the Chinese Language and the English Language Using Voice Analysis

PRINCIPAL INVESTIGATOR OR ADVISOR

Name Mary Scovel Degree MA Title Professor
Department Music Therapy
Notification address Room 2115 Dalton Center, School of Music, WMU
Office Phone 387-4723 Home Phone 382-2310

CO-PRINCIPAL OR STUDENT INVESTIGATOR

Name Chia-Lin Hsieh, RMT
Department Music Therapy
Notification address 100 Western Ave. Apt. D-11 Kalamazoo MI 49008
Home Phone 387-5058

If this is a student investigator, please indicate level of training and involvement in the research:

Undergraduate___; Master level graduate x; Doctoral level graduate___.

Assisting Faculty Research___; Thesis x; Dissertation___; Other___.

OTHER COLLABORATING INVESTIGATORS AND THEIR AFFILIATIONS

None

PROPOSED PROJECT DATES: From 3/1/94 To 3/15/94

Source or potential source of funding Self

Site of the research activity In a private room at the main library, WMU

II. PARTICIPANTS

Total number of subjects: 50

Number of subjects in the control condition: None

Age Range: 18-30 years Sex: Female___; Male___; Both x

Other Qualifications: The subjects will be Chinese students who are from Taiwan, have established residence in the USA for at least 6 months.

Specific Exclusions: The subjects have to be enrolled in WMU with their TOEFL score at least 450.

Source of Participants: Chinese Student Association at WMU

Length of participation: One-15 minute private interview.

Vulnerable Participants:

☐ Children (any subject under the age of 18) Approximate age__

☐ Mentally retarded persons

☐ Mental health patients

☐ Check if institutionalized

☐ Prisoners

☐ Pregnant women

☐ Other subjects whose life circumstances may interfere with their ability to make free choices in consenting to take part in research. DESCRIBE:___

III. LEVEL OF REVIEW

To determine the appropriate level of review, refer to WMU Policy Guidelines for categories of exempted research (Appendix B).

☒ Exempt: Forward the original application to the Chair of the Department for a cover letter, then forward to HSIRB Chair via RSP along with Chair's letter.

☐ Not Exempt: Forward original application plus 10 copies to HSIRB. If blood products are involved, you must complete and attach the HSIRB collection of blood and blood products form (available in HSIRB office).

CERTIFICATION/SIGNATURE

I certify that the information contained in the HSIRB application and all attachments is true and correct. I certify that I have received approval to conduct this research from all person named as collaborators and from officials of the project sites*. If this proposal is approved by the Institutional Review Board, I agree to conduct the research according to the approved protocol. I agree not to implement any changes in the protocol until such changes have been approved by HSIRB. If, during the course of the research, unanticipated risks or harm to subjects are discovered, I will report them to HSIRB immediately.

P.I./Faculty Advisor Signature Date

Student Researcher Signature Date

*Letters of approval from project site officials should be included in this approval packet.

Comments (committee members/staff only):

IV. HSIRB PROTOCOL OUTLINE

PROJECT DESCRIPTION: Includes purpose, research procedure (including what

exactly participants will do as part of the study), research design, location and duration.

The purpose of this study is to compare the differences of the Chinese language and the English language using a technique of voice analysis. Not only is the study intended to compare the voices of 2 languages, but it also intends to determine the possible factors that influence the voices of 2 languages.

This study will involve 50 Chinese students who are members in Chinese Student Association at Western Michigan University.

The entire procedure will be one-15 minute private interview in one private room at the main library, WMU. There will be two chairs and a table in a quiet environment.

The interview will be comprised of 3 parts.

1. The researcher will explain the purpose of the study.
2. Each subject will complete a consent form and provide general information about him/herself such as gender, birth date, education/major, length of stay in USA, geographical area (which part of Taiwan), religion, language, birth order, occupation of parents.
3. The researcher will randomly assign 25 subjects in the Chinese-English group and the rest of the 25 subjects in the English-Chinese group. The researcher will ask each subject the same questions in 4 different areas--base, stress, future, and specific events. (See Instrumentation)

Chinese-English group : (a) The researcher will ask the subject questions in Chinese. While the subject is answering these questions in Chinese, the researcher will collect data by using a chromatic tuner. (b) The researcher will ask the same question in English. While the subject is answering these questions in English, the researcher will collect data by using a chromatic tuner.

English-Chinese group :The researcher will ask the subject questions in English first, and vice versa.

BENEFITS OF RESEARCH: Briefly describe the expected or known benefits of the research. This section should indicate benefit specific to the research participant in addition to longer term or more general benefits.

One way in which the research participants may benefit from this activity is having the chance to have their voice analyzed. If the participants are interested in further treatment such as therapeutic sound replacement, the researcher is prepared to make a referral about sound therapy.

SUBJECT SELECTION: Describe in detail how you intend to go about contacting and recruiting participants. Attach all written advertisements, posters and oral

recruitment scripts.

Subjects for this study will be selected from a population of 84 Chinese students who are from Taiwan and members of the Chinese Student Association, have established residence in the USA for at least 6 months, and are enrolled in WMU with TOEFL score being at least 450. 50 Chinese students will be randomly selected to be in this study, ranging in age from 18-30 years.

The coordinator of Chinese Student Association has provided a Chinese student directory. The researcher will contact subjects by phone.

RISKS TO SUBJECTS: Describe the nature and likelihood of possible risks. (e.g., physical, psychological, social) as a result of participation in the research. Risks include even mild discomfort or inconveniences, as well as potential for disclosure of sensitive information.

The only one potential risk of the participants in this study is that the participants may become upset by the content of the interview such as mild discomforts or potential for disclosure of sensitive information.

PROTECTION FOR SUBJECTS: Describe measures to be taken to protect subjects from possible risks or discomfort.

The participant has the right to refuse to answer the question that upset him/her. The researcher will be prepared to provide crisis counseling if the participant would become significantly upset.

CONFIDENTIALITY OF DATA: Describe the precautions that will be taken to ensure the privacy of subjects and confidentiality of information. Be explicit if data are sensitive. Describe coding procedures for subject identification numbers.

All the information collected from the participants is confidential. That means that the participants' name will not appear on any papers on which this information is recorded. The forms will all be coded, and the researcher will keep a separate master list with the names of participants and the corresponding code numbers. Once the data are collected and analyzed, the master list will be destroyed.

INSTRUMENTATION: All questionnaires, interview scripts, data collection instruments, should be identified and attached. Coding sheets for video-tape or audio-tape and other data collection procedures are required.

1. KORG DTM 12 Chromatic tuner.
2. Dynamic microphone V-Tech VT-1030.
3. 8 page-interview package will be provided for each subject. These include the purpose of the study, 2-copy informed consents (one for researcher, the other for the participant), demographic information, data collection form I (speaking in Chinese), data collection form II (speaking in English), data analysis form I (Chinese), data analysis form II (English).

4. Questions:

Base questions

- Describe the route you took to get here today.
- Would you describe where you live?
- What color(s) do you wear most often?
- How do you decide what to eat for lunch?
- Would you rather study alone or with others?

Stress questions

- Have you gotten into trouble at school academically?
- When someone takes something of yours without asking, how do you deal with the situation?
- Can you describe your mood during mid-term and final week?
- What do you do when you have a hard time to express your needs in English?
- When you do not have time to do all that you need to do, how do you cope?

Future questions

- Where do you see yourself in 5 years?
- If you would choose how you were going to be famous, what you like to be?
- If you had an unlimited checking account, how will you use it?
- If you could live in any country which would it be?
- What were you planning to do tomorrow?

Specific events/problems

- Do you have any financial problems?
- Do you have any problem with your parents or siblings?
- Do you have any health problems?
- Do you have any boyfriend or girlfriend? Can you describe the relationship?

INFORMED CONSENT: A copy of all consent/assent forms must be provided. Each participant must be given a signed copy of the consent form at the time of involvement in the study.

Please See Attached Sheets

Western Michigan University

School of Music

Principal Investigator: Chia-Lin Hsieh

Research Associate: Mary Scovel

I have been invited to participate in a research project entitled "A comparison of the differences of the Chinese language and the English language using voice analysis." I understand that this research is intended to compare whether there are any differences in a Chinese person's voice when analyzing their voices while speaking in Chinese and in English. I understand that my voice will be assessed by using chromatic tuner through answering questions in both Chinese and English. I further understand that this project is Chia-Lin Hsieh's master thesis project.

My consent to participate in this project indicates that I will be asked to attend one-15 minute private interview with Chia-Lin Hsieh in a private room at the Main library, WMU. I will also provide general information about myself such as my gender, birth date, education/major, length of stay in USA, geographical area (which part of Taiwan), religion, language, birth order, occupation of parents.

As in all research, there may be unforeseen risk to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to me except as otherwise specified in this consent. I understand that one potential risk of my participation in this project is that I may be upset by the content of the interview. I have the right to refuse to answer the question which upsets me.

One way I may benefit from this activity is having the chance to have my voice analyzed.

I understand the all the information collected from me is confidential. That means that my name will not appear on any papers on which these information is recorded. The forms will all be coded, and Chia-Lin Hsieh will keep a separate master list with the names of participants and the corresponding code numbers. Once the data are collected and analyzed, the master list will be destroyed.

I understand the I may refuse to participate at any time during the assessment without penalty. If I have any questions or concerns about this study, I may contact Chia-Lin Hsieh at 387-5058 or Professor Mary Scovel at 387-4723. I may also contact the Chair of Human Subjects Institutional Review Board or the Vice President for Research with any concerns that I have. My signature below indicates that I understand the purpose and requirements of the study and that I agree to participate.

Participator _____ Witness _____

Human Subjects Institutional Review Board



Kalamazoo, Michigan 49008-3899
616 387-8293

WESTERN MICHIGAN UNIVERSITY

Date: February 6, 1994

To: Chia-Lin Hsieh

From: M. Michele Burnette, Chair

A handwritten signature in cursive script, reading "M. Michele Burnette".

Re: HSIRB Project Number 94-02-02

This letter will serve as confirmation that changes to your research project entitled "A comparison of the differences of the Chinese language and the English language using a technique of voice analysis" has been reviewed by the Human Subjects Institutional Review Board. Please submit the following for review:

1. A description of chromatic tuner.
2. Consider eliminating the master list and consent forms and make the study anonymous since there are some questions of a personal nature. In doing so, make the consent form a description sheet that the subject takes with them.

Submit the above change in writing to HSIRB, 320 C Walwood Hall. To avoid delays in delivery, do not address the envelope to "Dr. Burnette".

Please be reminded that research activity cannot begin until all revisions are complete and final approval has been granted. If you have any questions, please call Michele L. Rosa in the HSIRB office, telephone number 387-8293.

xc: Scovel, Music Therapy

Date: February 13, 1994

To: M. Michele Burnette, Chair

From: Chia-Lin Hsieh

Re: HSIRB Project Number 94-02-02 Revisions

Attached are the revisions to my research project, "A comparison of the differences of the Chinese language and the English language using a technique of voice analysis." I have addressed all of the suggestions that the Board has made. I hope they meet your approval.

Please let me know if there is anything else you need.

Thanks for your time.

Description of Chromatic Tuner:

The chromatic tuner (KORG DTM 12) is a standard piece of equipment used to tune a piano. One can be purchased at a better music store. The chromatic tuner is able to measure octave, percentage of flat or sharp and notes, and is able to reproduce notes, range at least three octaves. Using the chromatic tuner is a way to determine which notes are in stress.

Western Michigan University

School of Music

Principal Investigator: Chia-Lin Hsieh

Research Associate: Mary Scovel

I have been invited to participate in a research project entitled "A comparison of the differences of the Chinese language and the English language using voice analysis." I understand that this research is intended to compare whether there are any differences in a Chinese person's voice when analyzing their voices while speaking in Chinese and in English. I understand that my voice will be assessed by using chromatic tuner through answering questions in both Chinese and English. I further understand that this project is Chia-Lin Hsieh's master thesis project.

My consent to participate in this project indicates that I will be asked to attend one-15 minute private interview with Chia-Lin Hsieh in a private room at the Main library, WMU. I will also provide general information about myself such as my gender, birth date, education/major, length of stay in USA, geographical area (which part of Taiwan), religion, language, birth order, occupation of parents.

As in all research, there may be unforeseen risk to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to me except as otherwise specified in this consent. I understand that one potential risk of my participation in this project is that I may be upset by the content of the interview. I have the right to refuse to answer the question which upsets me.

One way I may benefit from this activity is having the chance to have my voice analyzed.

I understand the all the information collected from me is confidential. That means that my name will not appear on any papers on which these information is recorded. The forms will all be coded, and Chia-Lin Hsieh will keep a separate master list with the names of participants and the corresponding code numbers. Once the data are collected and analyzed, the master list will be destroyed.

I understand the I may refuse to participate at any time during the assessment without penalty. If I have any questions about this study, I may contact Chia-Lin Hsieh at 387-5058 or Professor Mary Scovel at 387-4723. I may also contact the Chair of Human Subjects Institutional Review Board at 387-8293 or the Vice President for Research with any concerns that I have. My signature below indicates that I understand the purpose and requirements of the study and that I agree to participate.

Human Subjects Institutional Review Board



Kalamazoo, Michigan 49008-3899
616 387-8293

WESTERN MICHIGAN UNIVERSITY

Date: February 17, 1994

To: Chia-Lin Hsieh

From: M. Michele Burnette, Chair

A handwritten signature in cursive script, reading "M. Michele Burnette", followed by a flourish.

Re: HSIRB Project Number 94-02-03

This letter will serve as confirmation that your research project entitled "A comparison of the differences of the Chinese language and the English language using a technique of Voice Analysis" has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: February 17, 1995

xc: Scovel, Music Therapy

Appendix B
Interview Package

A COMPARISON OF THE DIFFERENCES OF
THE CHINESE LANGUAGE AND THE ENGLISH LANGUAGE
USING VOICE ANALYSIS

Description and purpose of the study

The purpose of the study is to see if there is any differences in a Chinese person's voice when analyzing your voice while speaking in Chinese and in English.

It will take 15 minutes for this interview. The researcher will use a chromatic tuner and microphone to test your voice for pitches and octaves.

If you are in the Chinese-English group, (a) the researcher will ask you some questions in Chinese first. While you are answering the questions in Chinese, the researcher will record your pitches and octaves from the chromatic tuner by pen. (b) the researcher will then ask you the same questions in English. While you are answering the questions in English, the researcher will record your pitches and octaves from the chromatic tuner.

If you are in the English-Chinese group, (a) the researcher will ask you some questions in English first. While you are answering the questions in English, the researcher will record your pitches and octaves from the chromatic tuner. (b) the researcher will then ask you the same questions in Chinese. While you are answering the questions in Chinese, the researcher will again record your pitches and octaves from the chromatic tuner.

Researcher

Western Michigan University

School of Music

Principal Investigator: Chia-Lin Hsieh

Research Associate: Mary Scovel

I have been invited to participate in a research project entitled " A comparison of the differences of the Chinese language and the English language using voice analysis." I understand that this research is intended to compare whether there are any differences in a Chinese person's voice when analyzing their voices while speaking in Chinese and in English. I understand that my voice will be assessed by using chromatic tuner through answering questions in both Chinese and English. I further understand that this project is Chia-Lin Hsieh's master thesis project.

My consent to participate in this project indicates that I will be asked to attend one-15 minute private interview with Chia-Lin Hsieh in a private room at the Main library, WMU. I will also provide general information about myself such as my gender, birth date, education/major, length of stay in USA, geographical area (which part of Taiwan), religion, language, birth order, occupation of parents.

As in all research, there may be unforeseen risk to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to me except as otherwise specified in this consent. I understand that one potential risk of my participation in this project is that I may be upset by the content of the interview. I have the right to refuse to answer the question which upsets me.

One way I may benefit from this activity is having the chance to have my voice analyzed.

I understand the all the information collected from me is confidential. That means that my name will not appear on any papers on which these information is recorded. The forms will all be coded, and Chia-Lin Hsieh will keep a separate master list with the names of participants and the corresponding code numbers. Once the data are collected and analyzed, the master list will be destroyed.

I understand the I may refuse to participate at any time during the assessment without penalty. If I have any questions about this study, I may contact Chia-Lin Hsieh at 387-5058 or Professor Mary Scovel at 387-4723. I may also contact the Chair of Human Subjects Institutional Review Board at 387-8293 or the Vice President for Research with any concerns that I have. My signature below indicates that I understand the purpose and requirements of the study and that I agree to participate.

DEMOGRAPHIC INFORMATION

001

Interview Time:

Gender:

Birth date:

Major/Education:

Length of stayed in USA:

Geographical area (which part of Taiwan):

Religion:

Language:

Birth order:

Educational level of parents:

Do you want to know the result of your voice analysis? Y/N

If Yes, Please write your mailing address:

DATA COLLECTION FORM I

001

CHINESE

Base	Stress	Future	Specific Events

DATA COLLECTION FORM II

001

ENGLISH

Base	Stress	Future	Specific Events

DATA ANALYSIS FORM I

001

CHINESE

	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
6												
5												
4												
3												
2												
1												
	C	C#	D	D#	E	F	F#	G	G#	A	A#	B

DATA ANALYSIS FORM II

001

ENGLISH

	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
6												
5												
4												
3												
2												
1												
	C	C#	D	D#	E	F	F#	G	G#	A	A#	B

Appendix C
Questions for Interview

Base questions:

- Describe the route you took to get here today.
- Would you describe where you live?
- What color(s) do you wear most often?
- How do you decide what to eat for lunch?
- Would you rather study alone or with others?

Stress questions:

- Have you gotten into trouble at school academically? *
- When someone takes something of yours without asking, how do you deal with the situation?
- Can you describe your mood during mid-term and final week? *
- What do you do when you have a hard time to express your needs in English?*
- When you do not have time to do all that you need to do, how do you cope?

Future questions:

- Where do you see yourself in 5 years?
- If you would choose how you were going to be famous, what you like to be?
- If you had an unlimited checking account, how will you use it?
- If you could live in any country which would it be?
- What were you planning to do tomorrow?

Specific events:

- Do you have any financial problems? *
- How is your relationship with your parents or siblings? *
- How is your healthy conditions? *
- Do you have any boyfriend or girlfriend? Can you describe the relationship between you and him/her? *

* Questions were designed by the researcher.

Appendix D

Examples for Data Collection and Data Analysis

DATA COLLECTION FORM I

001

CHINESE

Base	Stress	Future	Specific Events
G [#] ₃ G ₃	F [#] ₃ G [#] ₃	C ₃ A ₂	G [#] ₃ F [#] ₃
b ₃ G [#] ₃	A ₂ E ₂	G ₃ F [#] ₃	E ₂ E ₃
G [#] ₃ F [#] ₃	F ₃ G ₃	d ₃ G [#] ₃	A ₃ G [#] ₃
C [#] ₃ G ₃	b ₃ G [#] ₃	F ₃ G ₃	G [#] ₃ C ₄
C ₄ G ₃	F [#] ₃ F [#] ₂	F [#] ₃ A [#] ₂	G ₃ G [#] ₃
G ₃ G [#] ₃	E ₃ G ₃	A ₃ A ₃	F [#] ₃ F ₂
F [#] ₃ d [#] ₂	A ₃ G ₃	F ₃ F ₂	F ₃ G ₂
G ₃ G ₂	E ₃ F ₃	G ₃ C ₃	G ₂ F [#] ₃
F ₃ F ₃	G ₃ G ₃	F ₃ F [#] ₃	G [#] ₃ b ₃
G ₃ F [#] ₃	d [#] ₃ A ₃	G ₃ F ₃	A ₂ G ₃
F [#] ₃ G [#] ₃	F [#] ₃ E ₃	E ₃ d [#] ₃	G ₃ G ₃
b ₃ F [#] ₂	F ₃ F ₃	F [#] ₃ G ₃	F [#] ₃ G ₃
F ₃ F ₃	A [#] ₃ G ₃	F ₃	A ₃
A [#] ₃ F ₂	A ₂ F ₃	F ₃	F ₁
G ₃	G ₃	G ₃	G ₃
G ₃	d [#] ₁	A ₃	G [#] ₃

DATA COLLECTION FORM II

001

ENGLISH

Base	Stress	Future	Specific Events
A [#] ₃ A [#] ₃	A [#] ₃ F [#] ₃	A ₃ G [#] ₁	A ₃ F ₃
F [#] ₃ A ₃	G ₄ d [#] ₃	G ₃ E ₃	G ₃ F [#] ₃
F ₃ G ₃	G [#] ₃ G ₃	C ₄ E ₄	F [#] ₃ d [#] ₃
G [#] ₃ b ₃	E ₃ C [#] ₄	b ₃ F [#] ₃	G ₃ E ₃
F [#] ₃ C ₄	F [#] ₃ C [#] ₃	G [#] ₂ C ₄	F [#] ₃ A ₃
A ₃ C ₄	G ₃ E ₃	C [#] ₄ A ₃	F [#] ₃ F ₃
G [#] ₃ F [#] ₃	G [#] ₃ d ₃	G [#] ₂ C ₄	G ₃ F [#] ₃
F [#] ₃ G ₃	C [#] ₃ d ₃	A ₃ E ₃	F ₃ G ₂
F ₃ G [#] ₃	A ₃ F [#] ₃	G ₃ C ₄	G ₃ d [#] ₃
G [#] ₃ b ₃	G ₃ F ₃	b ₃ G ₃	G [#] ₃
G ₂ E ₃	F [#] ₃ F ₃	A [#] ₂ b ₃	F [#] ₃
E ₂ d [#] ₃	G ₃ G [#] ₃	b ₃ A ₃	G ₃
F [#] ₃	C ₄ F [#] ₃	A ₃ E ₃	A ₃
F [#] ₂	F [#] ₃	G [#] ₂ C ₄	F ₃
A [#] ₃	d [#] ₃	A ₃	d [#] ₃
b ₃		b ₃	E ₃

DATA ANALYSIS FORM I

001

CHINESE

	C	C#	D	D#	E	F	F#	G	G#	A	A#	B
6												
5												
4	000x	0	0									
3	✓✓	✓		✓✓✓✓	✓✓✓✓✓✓	✓✓✓✓✓✓	✓✓✓✓✓✓	✓✓✓✓✓✓	✓✓✓✓✓✓	✓✓✓✓✓✓	✓✓✓✓✓✓	✓✓✓✓✓✓
2					✓✓✓✓	✓✓✓✓	✓✓✓✓		✓✓✓✓	✓✓✓✓	✓✓✓✓	
1	^			x		^						x
	C	C#	D	D#	E	F	F#	G	G#	A	A#	B

Missing 0

Broken 3

multiple 1

Minor 1

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