

**MODERN VECTORS OF SCIENCE
AND EDUCATION DEVELOPMENT
IN CHINA AND UKRAINE**

中国与乌克兰科学及教育前沿研究

Harbin Engineering University

State institution "South Ukrainian National Pedagogical University named after K. D. Ushynsky"

Educational and Cultural Center "Confucius Institute"

Odesa, Ukraine

Harbin, the People's Republic of China

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The ninth issue of the materials represented by the Ukrainian and Chinese scholars are dedicated to the relevant issues of General and Contrastive Linguistics within the Chinese, English, Ukrainian, Turkish and Korean languages; linguodidactic problems of teaching native and foreign languages within polycultural educational space; peculiarities of cross-cultural communication in geopolitical space alongside education-related aspects regarding profession-oriented training of future specialists under conditions of multicultural environment and military actions in Ukraine; post-COVID-19 pandemic challenges.

The given articles may be of use to researchers, graduates, postgraduates and practising teachers who are interested in various aspects of Sinology, Cross-cultural Communication, Linguistics, Pedagogy and Psychology.

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A CORRELATION ANALYSIS BETWEEN CHINESE COLLEGE STUDENTS' RHYTHM OF ENGLISH READING ALOUD AND THEIR VIRTUAL LANGUAGE ENVIRONMENT

***Abstract:** Chinese is a syllable-timed language, while English is claimed to be stress-timed. Thus, there are many different speaking patterns between Chinese and English. This paper aims to analyze the virtual language environment variables that affect college students' rhythm of English reading aloud. This paper concentrates on the positive correlation factors that affect the reading rhythm of college students and puts forward several aspects that should be focused on in English rhythm training for Chinese college students.*

***Keywords:** rhythm; second-language learners; virtual language environment*

I. Introduction

Language is the embodiment of culture and an indispensable tool for daily communication. It is worth mentioning that language speaking proficiency is usually affected by many suprasegmental features, such as rhythm, speech rate and stress. Different languages have evolved different speaking patterns. To be specific, rhythm refers to a strong, repeated pattern of movement or sound in speaking. Previous studies have proved that stress-timed and syllable-timed are two basic types of rhythm in languages. English belongs to stress-timed, while Chinese is claimed to be syllable-timed. Being influenced by Chinese, few students can realize the importance of rhythm in English. Moreover, due to the less concern on oral English education in China, most Chinese college students are equipped with good grammatical and lexical competence

but poor oral ability. It's widely known that language environment is indispensable in teaching. With the help of contemporary technology, the application of virtual language environments becomes more and more extensive. This paper focuses on the rhythm of English reading aloud and attempts to find out the factors that affect Chinese college students' rhythm in English reading aloud in a virtual language environment.

The present paper has been divided into four parts. The very first part deals with the research background, the research method, and its significance. The second chapter is concerned with the methodology used for this paper, mainly including research methods, research question and data collection. In this part, research methods such as questionnaire conducting, quantitative analysis method and speech analysis software will be introduced. Chapter three presents the findings of the research, focusing on the three key themes. The overall Chinese college students' oral English competence is illustrated. The positive factors that influence Chinese students' rhythm of English reading aloud are claimed. Besides, priorities for oral English practice are stated. The fourth part is conclusion. This chapter summarizes research conclusions and points out limitations.

II. Research Methodology

This paper aims at studying the differences between Chinese learners' and Native speakers' English speaking rhythm patterns so as to find out the factors that affect English reading aloud. This chapter will explicitly introduce research questions, research methods, including subjects and instruments and data collecting procedures.

2.1 Research Question

This research paper mainly consists of three parts: firstly, it's to label voice recordings with acoustic analysis software (Praat), and the results are computed with PVI formula in Excel. Secondly, the cohort was divided into two groups according to rhythm patterns, namely group A and group B. Thirdly, the contributing factors concluded from the questionnaire are summed up, and suggestions for improving the rhythm of English reading aloud can be proposed.

Research question: What are positive virtual language environment factors on Chinese college students' acquisition of rhythm of English reading aloud?

2.2 Research Methods

In this part, the components of the participates will be illustrated from the aspect of gender. And instrument, specifically, the PVI formula and questionnaire will be introduced.

2.2.1 Subjects

This paper aims at finding out the virtual factors that influence students' rhythm of English reading aloud. The reading recordings are collected from students between 17 and 21 years, including both English major and non-English majors. The initial sample consists of 118 in total, and 110 of them are complete and used in further research. More detailed, the 73.7% of the respondents are female. Males compose 29 of the subjects and take up 26.3% in total. The information is indicated in Table 2.1.

Gender	Male	Female
Population	29	81
Percentage	26.3%	73.7%

Table 2.1 The Distribution of Subject

2.2.2 Instruments

In the first step, quantitative analysis is used. Totally, 110 voice recordings are visualized with acoustic analyzing software (Praat) mainly by listening. Each recording contains three English sentences, and each word in these sentences is labeled according to consonants and vowels. Annotation results are saved as separate TextGrid files. Then, the statistics are computed in Excel with the Pairwise Variability Index (PVI). PVI is an acoustic measurement put forward by Low, Grabe and Nolan, and it is based on the differences between successive vowel duration.

The formula for the PVI put forward by Low et al. is as follows:

$$PVI = 100 \times \left[\sum_{k=1}^{m-1} \left| \frac{d_k - d_{k+1}}{\frac{(d_k + d_{k+1})}{2}} \right| / (m - 1) \right]$$

In this formula, d refers to the vowel duration and m represents the number of syllables in the sentence. Later, a scatter plot is formed based on the results. Secondly, a short questionnaire is designed to ascertain the participants' pre-phonetic basis and

collect virtual environment factors.

2.3 Data Collection

There are 110 samples used in the research in total, and each of them was required to read a part of an English passage aloud. To make sure the diversity of the samples, there are three utterances. Next, these voice recordings were labeled according to consonant and vowel in acoustic software, Praat. Table 2.1 is the Praat picture in terms of labeling. The standard is shown in Figure 2.2.

The	c	a	m	p	f	i	r	e	a	c	t	i	v	i	t	y	g	o	t	c	a	n	c	e	l	e	d	
C	V		C	V	C	C	C	C	V	V		V	C	C	C	C	V	C	V	C		C	V	C	V	C	V	C

Table 2.1 The Standard of Labeling the Voice Recordings

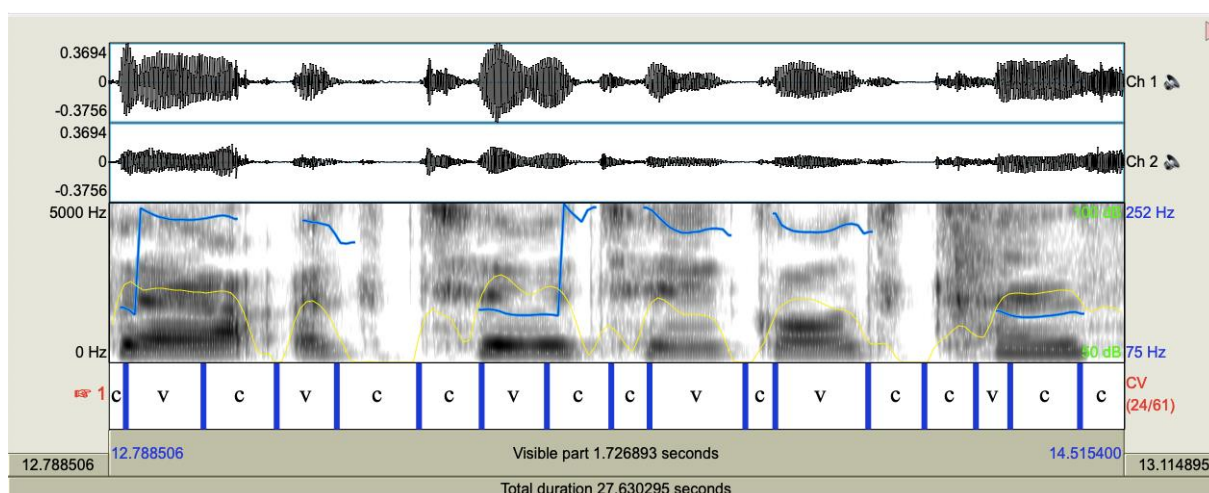


Figure 2.2 The Labeling Process

Each sample was checked twice to make it more accurate and confidential. The results were computed in accordance with the Pairwise Variability Index (PVI) in Excel. These recordings were used as standard data in comparison.

In addition, 119 copies of questionnaires were sent to participants through Wechat, containing 27 questions in each. The main purpose of the questionnaire is to know students' pre-phonetic basis.

III. Results and Discussion

In this chapter, the data collected will be analyzed with questionnaires.

3.1 Data Analysis Results Based on PVI

There are total of 110 voice samples. According to different rhythm patterns, these recordings are divided into two groups, according to different rhythms. This system of

classification allows for a clear comparison. In Figure 3.1, the ordinate NPVI-v refers to the differentiation of vowels, and the abscissas RPVI-c represents the differentiation of consonants without taking the speech rate into consideration. The results obtained from the preliminary analysis are shown in Figure 3.1.

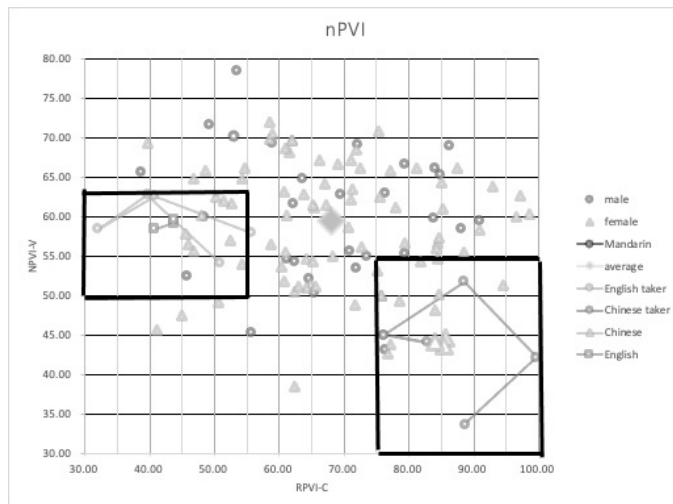


Fig.3.1 The NPVI Value of the Collected Voice Recordings

As can be seen from the Figure 4.1, in terms of English, the NPVI-v ranges from 50 to 63, and the RPVI-c ranges from 30 to 55; for Chinese, the NPVI-v of ranges from 30 to 55, and the RPVI-c ranges from 75 to 100. Samples in these ranges will be extracted. Thus, there are 10 voice recordings that are stress-timed, and it accounts for 9.1% of the total. These samples are called group A in this paper.

There are 11 voice samples closed to syllable-timed, which takes up 10% of the total. These samples are named group B.

Other than these, the coordinates of the average value are also accumulated. The average value of the NPVI-v on the ordinate is 59.43, and the average value of the abscissa RPVI-c is 68.04. It shows that the discrepancy between native speakers' rhythm and Chinese learners' mainly lies in the abscissa. In other words, the consonant duration. Thus, in the next part, the present paper shall find out reasons for the difference.

3.2 Correlation Analysis Based on Questionnaires

Through the questionnaire, the information related to the subjects' pre-phonological basis is collected. After comparing group A and group B, there are five factors, which can be divided into two types: positive factors with a high correlation or

low correlation.

3.2.1 Factors with High Correlation

In the questionnaire, there are mainly three positive factors. Firstly, it can be argued that extracurricular tutoring is prominent in shaping college students' rhythm of English reading aloud. Among the 10 samples in group A, 70% of the total have ever attended extracurricular tutoring. In group B, it accounts for 27.3% of the total.

Secondly, according to the research results, watching original English films is shown to have a great influence. In group A, there are 8 students who regard watching English movies as an effective way to improve their oral English. However, in group B, only 1 student holds the same opinion.

Thirdly, according to the sensitivity to subtle phonetic differences, among the 10 students in group A, 1 student thinks that he can clearly perceive any phonetic gaps between Chinese and English. It deserves to be mentioned that in group A, no one thinks he or she has low sensitivity to phonetic differences. Among the 11 samples in group B, 5 students believe that they can identify. In contrast to group A, there is 1 student who says he or she cannot recognize any phonetic differences.

3.2.2 Factors with Low Correlation

In addition to the three factors above, there are two more factors that exert a positive impact but with low correlation.

Firstly, taking foreign teachers' courses can affect students' rhythm. Among the 10 students in group A, 5 had taken foreign teachers' classes, accounting for 50%. Among the 11 students in B group, 5 had taken foreign teachers' classes, accounting for 45.5%.

Secondly, because of the current situation of English studying, Chinese universities rarely have access to direct English language environment.

3.3 Priorities to Improve Students' Rhythm of English Reading Aloud

Another goal of this paper is to provide college students and teachers with suggestions on English reading aloud. The strategies will be given from two aspects: internal and external.

3.3.1 Internal Aspects

The internal reasons will be discussed from two perspectives. Firstly, from the perspective of students, and secondly, from the aspect of teachers.

First of all, in terms of students, emotional factors, such as confidence, self-requirement and self-practice should be taken into account. Students should build up self-confidence and motivate themselves. Secondly, college English teachers should, on the one hand, improve their rhythm of English reading aloud. On the other hand, create a better English environment by adopting new teaching theories and technologies. The questionnaire shows that over 50% of the students don't think their teachers' oral English has exerted a positive influence on them.

It's true that this result contains strong subjectivity. But it cannot be denied that teachers' oral English performance is the model and can be imitated by students subconsciously. Thus, in order to improve students' rhythm of English reading aloud, college English teachers should make their spoken English more native and insist on teaching in English.

What's more, new methods should be used. The prominent problem of oral English education in China is the lack of an English-speaking environment. According to the research data, 100% of the students think their poor oral English is due to lack of practice.

Thus, they need more chances to practice oral English in class. After class, more spoken assignments should be arranged. Besides, the lack of professional skills is another problem. Over 70% of the students think they don't know how to practice oral English correctly. Thus, teachers should adopt a new teaching system. Except simply explaining phonetic symbols, some suprasegmental features, such as stress, intonation, and rhythm, should be taught in advance. In this way, Chinese students can learn oral English systematically.

3.3.2 External Aspects

Compared to internal factors, external aspects focus on modern technology. Firstly, visual teaching methods should be applied in college English classes. The process of English practicing could not only be acoustic but visual. In this paper, Praat is used to label vowels and consonants so as to compare the rhythmic differences between

Chinese and English. It's obvious that visual comparison is more direct and clearer. Therefore, teachers can use these kinds of software to help students find out disparities between them and native speakers. Secondly, English classes can be combined with other subjects. For example, the beat of music and the rhythm of English have features in common. Therefore, music can be used in class to train students' rhythm of English reading aloud.

IV. Conclusion

The paper is designed to find out factors that influence Chinese college students' rhythm of English reading aloud. Three findings are summarized in this paper. Firstly, Chinese college students' oral English has remained features from native English in vowels but remains features from Chinese. Secondly, there are five positive factors that influence the rhythm of English reading aloud. The five virtual language environment factors are listed in order of their correlation. Thirdly, four aspects are emphasized in this paper in order to improve the rhythm of English reading aloud. These suggestions are claimed from internal and external aspects.

However, the first limitation of this paper lies in the total amount of the subjects. There are 110 available samples. Thus, these samples are not enough to represent the level of rhythm of English reading aloud for all Chinese college students. What's more, the diversity of the subjects is limited. The analyzing result might vary if more non-English major students can be involved. Thus, the result is only responsible for samples in this paper. Secondly, each subject only reads three sentences. And the paper failed to collect negative factors in chapter three. In spite of its limitations, this paper certainly adds to EFL learners' understanding of the rhythm of English reading aloud. Thirdly, the labeling mainly depends on listening, which also affects the research results. A future study could assess long-term effects by adding more samples, such as students from different colleges and majors. More information in the questionnaire can be covered for more findings.

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中国大学生英语朗读节奏与其虚拟语言环境的相关性分析

摘要. 语言是文化的内核和必不可缺的交流工具，大学生作为社会发展中最活跃的成分，具备良好的英语口语交流能力十分重要。汉语与英语在朗读节奏上十分不同，本文旨在对影响大学生英语朗读节奏的虚拟语言环境因素进行分析。本文重点关注对大学生朗读节奏产生影响的正相关因素，并提出未来的大学英语口语朗读节奏中应该注重培养的方面。本文通过使用 Praat 语音分析软件，对采集的语音样本与标准样本进行比对，得到了两组具有代表性的朗读节奏数据。此外，根据上述问题，研究者设计了相关调查问卷，对 110 名学生进行调查。通过差异量数分析法结合调查问卷，本文共得出五个正相关因素。在本文研究的因素中，课外辅导对大学生英语朗读节奏的影响最大。就论文中阐述的中国大学英语口语存在的问题，本文也提出了相应的培养侧重点，如可使用可视化语音分析软件等。在缺乏真是语言环境的情况下，本文或对大学生英语朗读节奏的提高有一定的参考意义。

关键词: 韵律；二语习得者；虚拟语言环境