

Effects of English Proficiency on Chinese Students' Recognition and Pronunciation of English Lexical Stress

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Abstract: English is a stress-timed language, stress is very important in English. However, Chinese is a tonal language, which leads to pronunciation difficulties for Chinese students in learning English. This study studies the recognition and production of English lexical stress by Chinese students who are not English majors and the factors that may affect stress assignments. Eight students between the ages of 18-22 (four males and four females) who have passed CET 6 will be tested, including a phonetic quiz and a listening test. Four kinds of vocabularies were selected as research materials: Polysyllabic Word, Word with Affixes, Compound Word, and Homograph. Results indicate that: (1) For non-English major students, the correlation between English proficiency and lexical stress is not high, but is mostly affected by personal reading habits; (2) Students know very little about the word stress. They identify and pronounce stress relying on their personal habits.

Keywords: English Proficiency, English Lexical Stress, Recognition, Pronunciation

1. Introduction

With the development of globalization, English has become the most widely spoken and influential language in the world since the middle of the 20th century and is the dominant language in many areas of international communication. More and more Chinese people are learning English, but they often encounter many obstacles in learning to speak. Here are two reasons: First, English and Chinese are different. Not all languages have stress and not all languages that do have stress are alike. English is a lexical stress language, which means that in any English word with more than one syllable, the syllables will differ in their relative salience[1]. However, Chinese is a tonal language that has no stress in word phonology. And it is for this reason that English education in China focuses more on input skills such as listening and reading, and the education on speaking is very lack[2], which leads to pronunciation difficulties for Chinese students in learning English. This paper focuses on the relationship between Chinese students' English proficiency and their recognition and pronunciation of English lexical stress. The participants of the study are 8 Chinese non-English major students (gender balanced), they will be given two different tests, including a phonetic quiz and a listening test. Each test comprises four kinds of vocabulary. The feedback will be analyzed from different perspectives. (1) the relationship between CET6 and the test results. (2) Compare which of the four vocabularies has the highest error rate. (3) Compare the difficulty of pronouncing and identifying accents. (4) Analyze the special features of individual words or word

classes. This study will have many implications. First, the results of the study can reflect the problems of Chinese students learning English under compulsory education, and also reflect on the problems of English teaching in China, such as the lack of emphasis on speaking, the importance of vocabulary, and the neglect of lexicality, etc.

2. Word Stress

In English, people do not say each syllable with the same force or strength. Stress is an accentuation of syllables within words, or of words within sentences. In lexical-stress languages, the syllables of any polysyllabic word are not created equal. Some syllables may serve as the locus of accentual prominence; others may not. Perceptually, this results in a distinction in salience between the syllables within a word[3]. Stress is really important, Lexical stress is used by listeners to identify words[4]. Fluent English speakers use word stress to communicate rapidly and accurately, even in difficult conditions. If, for example, people do not hear a word clearly, they can still understand the word because of the position of the stress. Many English as a Foreign Language (EFL) students continue to struggle with speaking and have difficulty being understood by native English speakers because they have not taken the time to tackle word stress.

There are several general rules for English Lexical Stress. First of all, the most common one is that only one syllable can be stressed in an English word regardless if it has two, three, or even four or more syllables. In most two-syllable nouns and adjectives, stress comes in the first syllable of the word. For most two-syllable verbs, the stress is in the second syllable. For words that have three or more syllables, understanding where to place the stress becomes a little more tricky, but there are some general patterns that can be followed. The stress comes in the second to last syllable in any word that ends in -ic, -sion or -tion. For any word ending in the suffixes -cy, -gy, -phy, -ty, or -al, the stress comes in the THIRD syllable from the LAST. Last but not least, the stress is always on a vowel[5].

3. Research Methodology

3.1. Research Questions

This chapter focuses on the detailed research design of the experiment, including the research questions, participants, materials, and experimental process. In the first part, the following questions will be explored: (1) Can eight participants accurately perceive and output English word stress? (2) How are CET6 scores related to the recognition of lexical stress? (3) what are the reasons for making mistakes?

3.2. Participants

In this study, four males and four females aged 18-23 were randomly selected from Chinese students and all of whom had a bachelor's degree. They were not English-related majors, but all had studied English in school for the same years (compulsory education). They signed an informed consent form and filled out their CET 6 scores. All of them have no hearing or articulation disorders.

Table 1. Information of the collected persons

Number	Gender	CET 6 scores	Major
1ar	Female	524	Accounting and Finance
2lr	Female	487	Primary Education
3zq	Female	538	Package Design
4sy	Female	501	Product design
5lbw	Male	490	Business administration
6sytx1	Male	433	Product design
7sytx2	Male	422	Product design
8zzc	Male	508	Chemistry

3.3. Materials

Taking into account the factors affecting lexical stress, four different categories of words were selected: Polysyllabic Word, Word with Affixes(Prefix and suffix included), Compound Word, and Homograph[6]. In the listening test, there are five words in each group, for a total of 20 words. The pronunciation test is the same. The selected vocabulary is very common in English language learning, so the possibility of pronunciation interference is excluded.

3.4. Procedures

Due to COVID-19, participants will receive the test papers online. It is stated on the test paper that participants should not use reference books. After filling in the score of CET 6 on it, they could answer the sheet. The whole test is divided into two parts, the first part is the Recognition Test and the second one is the Pronunciation Test. The participants were allowed to spend ten minutes adapting to the words. After the recording is completed, participants will return the test papers and the new recording.

3.4.1.Procedure in the Recognition Test

Based on the recording, participants marked the word stress on the vocabulary (example: im'pression).

Table 2: Recognition of lexical stress

Five Polysyllabic Words				
Photography	ambassador	eliminate	linguistics	representation
Word with Affixes				
Solution	curiosity	syllabic	alternative	illegal
Five Compound Words				
superpower	waterfall	format	backfire	blueberry
Five Homographs				
record	present	perfect	impact	convict

3.4.2. Procedure in the Pronunciation Test

After a five-minute break, participants continued to answer the second test. They used the recording application of their phone to make recordings, with a moderate speed and clear pronunciation.

Table 3: Pronunciation of lexical stress

Five Polysyllabic Words				
beautiful	obvious	increase	triangle	unique
Word with Affixes				
(Alter) alterable	(relate) correlate	(democrat) democratic	(remark) remarkable	(collect) collection
Five Compound Words				
teenager	waterfall	undercut	snowman	foreman
Five Homographs				
Pervert(n.)	permit(v.)	desert(v.)	combine(n.)	digest(n.)

4. Results and Discussion

Table 4: Final score of two tests

Number	Gender	CET 6 score	Test 1 score	Test 2 score	Final score
1ar	Female	524	45	32.5	77.5
2lr	Female	487	25	30	55
3zq	Female	538	37.5	35	72.5
4sy	Female	501	40	45	85
6lbw	Male	490	25	40	65
7sytx1	Male	433	35	37.5	72.5
8sytx2	Male	422	35	42.5	77.5
9zzc	Male	508	45	32.5	77.5

Table 5: the ranking list of CET6

Number	Gender	CET 6 score	Test 1 score	Test 2 score	Final score
3zq	Female	538	37.5	35	72.5
1ar	Female	524	45	32.5	77.5
9zzc	Male	508	45	32.5	77.5
4sy	Female	501	40	45	85
6lbw	Male	490	25	40	65
2lr	Female	487	25	30	55
7sytx1	Male	433	35	37.5	72.5
8sytx2	Male	422	35	42.5	77.5

4.1. Research Data

The correlation between English proficiency and stress recognition and pronunciation is not high. No.3 student gained the highest score on CET6, and No.8 gained the lowest one, whereas the final score of the stress test for two people had very little difference. Meanwhile, No.4 ranked 1st in the stress test and No.2 ranked last, but their CET6 scores are very close. However, there is still relevance between the two scores. Students who get the higher stress scores are all good English learners (higher CET6 scores). This still shows that the level of English affects the recognition and pronunciation of lexical stress.

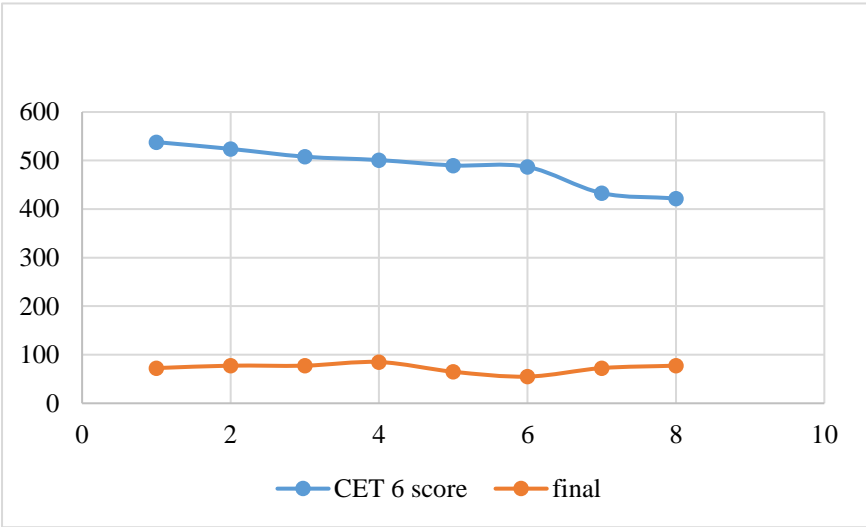


Figure 1: Correlation of CET 6 scores and test results

In conclusion, students with high English proficiency generally have high accenting ability, but students with low English proficiency do not necessarily have low accenting ability.

The figure reflects that there is no significant correlation between students' English performance (CET6) and pronunciation and perception of lexical stress.

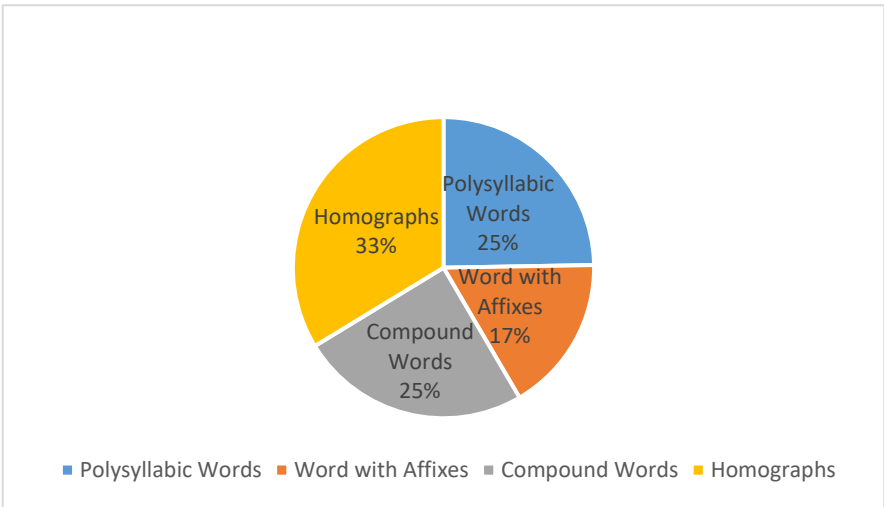


Figure 2: The Proportion on Different Types of Words

The pie chart shows the participants' total errors for the four categories of words in two tests. Homographs rank 1st, Polysyllabic words and Compound Words accounted for the same percentage, ranking 2nd, and words with Affixes accounted for the least.

Participants were generally unaware of the difference in pronunciation of homonyms for nouns and verbs, instead, they answered the questions based on their familiar pronunciation. Most Chinese students place emphasis on reading and listening, as well as vocabulary memorization during their studies, with little exposure to speaking, and even less consideration of pronunciation. The accuracy for words containing affixes was higher because these affixes were more common and participants did not consider the effect that the affixes had on the original word.

Table 6: Number of errors for both tests

	Polysyllabic Words	Word with Affixes	Compound Words	Homographs	Total
Recognition of lexical stress	8	9	16	13	46
Pronunciation of lexical stress	14	6	6	17	43

Participants' mistakes of recognition and pronunciation are comparable, whereas the former is a little more than the latter. People used to put the stress of compound words on the second syllable (the stress of the original word) but ignore that the stress will change with the addition of an affix.

4.2. Discussions and Analysis

4.2.1. Analysis of Recognition Test

Table 7: Ranking the number of word errors in English Stress Recognition test

Impact(n.)	5	syllabic	2
backfire	5	linguistics	2
Record(n.)	4	eliminate	2
illegal	4	curiosity	2
superpower	3	Solution	1
representation	3	Photography	1
Present(v.)	3	Perfect(v.)	1
Format	3	Convict(v.)	1
blueberry	3	ambassador	0
Waterfall	2	alternative	0

Among the top two error rates, two are homonyms, which are impact(n.) and record(n.). The stress of the noun is on the first syllable, but most of the participants put the stress on the second syllable and read them like imPACT and reCORD. This is because Chinese teachers focused more on the students' vocabulary expansion and the meaning of the words, but little on word properties, thus students always pronounce the word in their familiar way and ignore that homonyms have two different sounds[7].

4.2.2. Analysis of Pronunciation Test

Table 8: Ranking the number of word errors in English Stress Pronunciation test

combine(n.)	8	desert(v.)	2
Triangle	6	(Alter) alterable	1
Pervert(n.)	5	(democrat) democratic	1
unique	4	digest(n.)	1
Teenager	4	Beautiful	0
Obvious	2	(remark) remarkable	0
Increase	2	(collect) collection	0
(relate) correlate	2	Snowman	0
Waterfall	2	foreman	0
Undercut	2	permit(v.)	0

Combine(n.) is the only word that was misread by all the participants. People hear and use the verb form of “combine” too often and rarely hear the noun form, so they subconsciously put stress on the second syllable when pronouncing it. It also shows that people pay little attention to the effect of lexicality on stress when reading words.

Triangle is a word with an affix “tri”, and it is the second most mispronounced word. 3/4 of participants put stress on the second syllable. Angle is a dependent word, which stress is on “an”, so people just add the affix “tri” at the beginning of the word and don’t change the stress.

5. Conclusion

The paper introduces lexical stress briefly, tests non-English majors' mastery of pronunciation and recognition of stress, gets test results, and analyzes the underlying information. Students' English grades and recognition and pronunciation of stress are not necessarily related, but students who do well in English will be relatively better at stress recognition and pronunciation. The paper also has a lot of room for improvement. First, the number of variables can be minimized when looking for participants. For example, if the participants only have English other than Chinese, they will not be disturbed by other languages. Besides, there is technical software like Praat that can be used to determine the results so that the accuracy will be more accurate[8]. There is still much to be studied by scholars in the area of English stress, such as whether the pronunciation of lexical stresses has an effect on sentence reading.

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