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Analysis of the Segmental and Suprasegmental Problems in Chinese Mandarin Speakers' Pronunciation

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Abstract

Pronunciation is the most essential form of a language. Good pronunciation helps people communicate fluently and pass on messages correctly. The goal of this paper is to analyze both the segmental and suprasegmental problems of two representative Chinese mandarin speakers which is selected from an officially funded language corpus. Based on the pronunciation error analysis, some suggestions on pronunciation teaching are provided. Quantitative data were detailed analyzed and the finding highlights the importance of pronunciation teaching and the practical use of language corpus.

Keywords

Error analysis; Segmental pronunciation; Suprasegmental pronunciation.

1. Introduction

Pronunciation is the most fundamental form of a language. In the process of English learning, standard pronunciation is the prerequisite to achieve good language communication. Gimson (1970, p.3) once claimed that "to speak any language, one must know nearly 100% of its phonetics while only 50% to 90% of its grammar and 1% of the vocabulary may be sufficient." According to Miller (1978), English phonetic structure includes segmental information and suprasegmental information. In linguistics, Crystal (2003, pp.408-409) defines the segmental features of speech as "any discrete unit that can be identified, either physically or auditorily, in the stream of speech", such as consonants and vowels, which occur in a distinct temporal order. Length, tone, stress, pitch, rhythm and intonation are involved in the suprasegmental features, which always accompany the production of segmental features (Fox,2000).

The aim of this paper is to analyze both the segmental and suprasegmental problems in the recorded speech by two male Chinese mandarin speakers. The recorded materials are selected from an online corpus (http://corpus.ied.edu.hk/phonetics/Browse.aspx). The two speakers one is from Jiangsu province, and another one is from Shanghai province. Speaker from Jiangsu province was a master student majoring in business education with 11 years' English learning experience, while speaker from Shanghai was a bachelor student majoring in English education with 15 years' English learning experience. I chose these two areas as the analysis object mainly due to their close geographical distribution so that I can find some common phonological features in Mandarin speakers' pronunciation. The recorded text material and the IPA transcription of the material are enclosed as appendices in the end of this paper.

2. Literature Review

There is a certain number of researches conducted on phonological acquisition of Chinese learners. Much work has been done on a comparative analysis of English and Chinese phonetics and teaching strategies on English pronunciation to English major or non-English major students. Some work involves a comparative study of English and Chinese dialects. According to Liu (2013, p.15), "some results have been achieved regarding a diachronic study of the

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similarities and differences of English and Chinese phonetics." Researcher Tiee carried out a research in 1969 on making a comparison of Chinese and English pronunciation. He found that it is quite difficult for Chinese learners to distinguish long vowel /i:/ and short vowel /ɪ/. Eckman (1987) in his study revealed that Chinese speakers tend to add an additional /ə/ after word-final consonant in English pronunciation. Anderson (1987) found that /t/ and /d/ were most often deleted when in word-final position in consonant clusters. Bayley (1996) found that /t/ or /d/ was less likely to be omitted following a liquid, over a nasal or obstruent. Other researchers such as Major (1987), Odlin (1989) and Skaer (1984) studied the negative transfer of mother tongue to English pronunciation. The majority of previous researches on English pronunciation learning for Chinese learners mainly give a general account of the common problems that the majority of Chinese learners have with little reference to specific case study and the focus usually lies in segmental aspect whereas suprasegmental aspect does not receive its due attention. Investigating the pronunciation problems of Chinese speakers and analyzing factors that have influenced their pronunciation learning through a specific case study has both theoretical and practical significance, which provides insights into pronunciation problem classifications of foreign language learning in the particular context of English learning in China and broadens the research scope of second language acquisition studies in a specific context of English pronunciation learning among Chinese learners, and further provide pedagogical guidance for both pronunciation learning and future English phonetics teaching.

3. Error Analysis

Pronunciation errors consist of both segmental and suprasegmental deviations. Segmental errors are errors in the production of individual vowels and consonants (Anderson et al.,1992; Flege & Hillenbrand,1984). Segmental errors include the substitution of the modification of a sound or one sound for another (Broselow, Chen, & Wang,1998; Flege, Bohn, & Jang,1997; Major & Faudree,1996). Suprasegmental errors include errors in timing, intonation, phrasing, stress assignment and rhythm (Anderson et al.,1992; Koster & Koet,1993; Munro,1995). Suprasegmental errors can further be divided into those that influence speech fluency, including pause frequency and duration, speech rate and those that influence speech melody, including tonal peak alignment and stress timing (Trofimovich & Baker,2006).

3.1. Segmental Error

Based on the selected samples from the online corpus, we can find that the English major student has a better pronunciation with fewer pronunciation errors than the non-English major student, but two of their pronunciation problems have something in common.

3.1.1. Wrong Pronunciation of Consonant Sounds

In English, there are 24 consonant phonemes. The syllable structure is relatively complex since all English consonants, with the exception of the velar nasal /ŋ/， and the palatal fricative /ʒ/, are allowed word-initially (Jensen,1993).

In Shanghai speaker's pronunciation, /l/ is pronounced as /ɜ:/ in "wolf" for three times when the total number of this word appears only 5 times. In Jiangsu speaker's pronunciation, the word "wolf" is wrongly pronounced 4 times with three times /l/ pronounced as /ɜ:/ and once mispronunciation as /wɜ: tʃ/.

3.1.2. Wrong Pronunciation of Vowels And Diphthongs

"Vowels are sounds in which there is no obstruction to the flow of air as it passes from the larynx to the lips" (Roach,2010, p.10). To some degree, the quality of vowels influences the meaning of the word and it is even one of the important grounds to judge whether one's pronunciation is awesome or not. "If you wish to understand and be understood English well, great accuracy must be made to distinguish and make the distinction among the vowel sounds"

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(Prator & Robinett,1985, p.13). "Diphthongs consist of a movement or glide from one vowel to another. A vowel which remains constant and does not glide is called a pure vowel" (Roach,2010, p.17).

The vowel pronunciation is a very serious problem in Jiangsu speaker's record. The Shanghai speaker has only one vowel pronunciation problem in "short", taking /ɔ:/ as /ʊ/, and two diphthongs pronunciation errors:

Line 9, /aɪ/ is pronounced as /e/ in "diet";

Line 11, /aʊ/ is pronounced as /ɑ:/ in "down".

In Jiangsu speaker's pronunciation, however, there are altogether nine pronunciation errors:

Line 3, /ɪ/ is pronounced as /ɜ:/ in "fist";

Line 4, /æ/ is pronounced as /ʌ/ in "ran";

Line 6, /ɔ:/ is pronounced as /ɒ/ in "short"; /aɪ/ is pronounced as /eɪ/ in "while";

Line 9, /eɪ/ is pronounced as /em/ in "change";

Line 10, /ɒ/ is pronounced as /ʌ/ in "shot"; /ɪə/ is pronounced as /ɪl/ in "fear";

Line 11, /eɪ/ is pronounced as /aɪ/ in "Racing";

Line 12, /u:/ is replaced by /ɔ:/ in "fool".

3.1.3. Simplification of Consonant Clusters

Every language has an allowable combination of phonemes. English also has its rules and limitations of consonant combinations, order and clusters in its phonological system. "For instance, there are no words with /bk/ and /kb/ in English. Learner's knowledge of English phonology includes information about what consonant clusters are permissible. Consonant cluster is a sequence of two or more consonants occurring together in the same syllable. English permits consonant clusters of two, three and four up to five" (Seetha,2010, p.47). "In English, after a consonant like /p/, /b/, /k/, /g/, another stop consonant in the same syllable is not permitted. If a word begins with /l/ or /r/, the next segment must be a vowel. If the initial sounds of a word are /tʃ/ or /dʒ/, the next sound must be a vowel. No more than three consonant sounds can begin a word and these are /s/+/p, t, k/+/l, r, w, y/. Further, while /s/+/t/+/l/ and /s/+/p/+/y/ are not permitted. But /s/+/t/+/r/ as in the initial sounds of 'strict' and 'squat' are possible" (Fromkin, Rodmer & Hyman,2007). There is no serious problem with two examples except one simplification of consonant cluster in Jiangsu speaker's pronunciation where /eks/ pronounced as /es/ in Line 2 "next".

3.1.4. Sound Substitution

There is a very serious pronunciation problem with both samples in sound substitution. In Shanghai speaker's pronunciation, there are four sound substitutions in all:

Line 1, /ʃ/ is replaced by /tʃ/ in "shepherd";

Line 2, /θ/ is replaced by /s/ in "thought";

Line 7, /ʒ/ is replaced by /ʃ/ in "pleasure";

Line 12, /tʃ/ is replaced by /t/ in "unfortunately".

In Jiangsu speaker's pronunciation, there are 21 sound substitutions in total.

Line 1, /i:/ is replaced by /jʊ/ in "fields"; /ð/ is replaced by /z/ in "the";

Line 2, /k/ is replaced by /dʒ/ in "dark"; /t/ is replaced by /dʒ/ in "foot";

Line 4, /aʊ/ is replaced by /ɒ/ in "shouting"; /z/ is replaced by /ð/ in "as";

Line 5, /l/ is replaced by /m/ in "full";

Line 6, /w/ is replaced by /v/ in "with"; /ð/ is replaced by /z/ in "with";

Line 7, /ð/ is replaced by /z/ in "that"; /ɔ:/ is replaced by /əʊ/ in "more";

Line 9, /ʒ/ is replaced by /r/ in "usual"; /k/ is replaced by /t/ in "duck";

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Line 10, /e/ is replaced by /aɪ/ in “threaten”.

Line 11, /aʊ/ is replaced by /ɔː/ in “louder”;

Line12, /ð/ is replaced by /z/ in “that”; /ð/ is replaced by /z/ in “them”;

Line 13, /θ/ is replaced by /s/ in “third”; /ð/ is replaced by /z/ in “they”; /ʌ/ is replaced by /əu/ and /ð/ is replaced by /z/ in “bother”.

From above, the frequent pronunciation errors are about differentiating /θ//s/ and /ð//z/, especially /ð/ and /z/. The phoneme /ð/ has appeared in the text for 27 times, and the speaker made 8 times pronunciation error on this aspect. /θ/ and /ð/ are dental fricative consonants, which is produced at the place between upper teeth and lower teeth. However, /s/ and /z/ are alveolar fricative consonant, which is produced with the tongue tip and the alveolar ridge. Though they heard a similar way, they have different articulations.

3.1.5. Sound Insertion

There is no sound insertion problem in Shanghai speaker’s pronunciation. However, there is a few problems in Jiangsu speaker’s pronunciation. For example:

Line 4, “air” is pronounced with an insertion of /m/ in the end of the sound; “down” is pronounced with an insertion of /m/ in the end of the sound;

Line 5,“concern” is pronounced with an insertion of /s/ in the end of the sound;

Line 8, “zoo” is pronounced with an insertion of /mz/ in the end of the sound;

Line 10,“actually” is pronounced with an insertion of /s/ in the end of the sound; an insertion of /m/ in the end of the sound in “threaten”.

Line 11, an insertion of /s/ in “village” and “boy” separately.

Line 12, an insertion of /s/ in “were”.

3.1.6. Sound Deletion

In Shanghai speaker’s pronunciation, there are two omissions of final consonant. The first one is in line 5 “full” with an omission of /l/, and the second one is in line 8 “from” with an omission of /m/. The Jiangsu speaker has also made a sound deletion in his speech. For example, Line 9,“diet” is pronounced with an omission of /ə/.

In addition, there are some mispronounced words by both speakers. Taking Jiangsu speaker’s speech as an example, Line 1 “poor”, which should be pronounced as /pɔː/ is mispronounced as /pɔɪd/. Line 7“tried” is mispronounced as /kraɪd/. Line 11 “cried” is mispronounced as /kraɪdeɪz/. In Shanghai speaker’s record, line 12 “trying” is mispronounced as /kraɪɪŋ/.

3.1.7. Diagram

The pronunciation errors of both speakers are counted in the following diagrams, which will easily help us find out which area they are weak at.

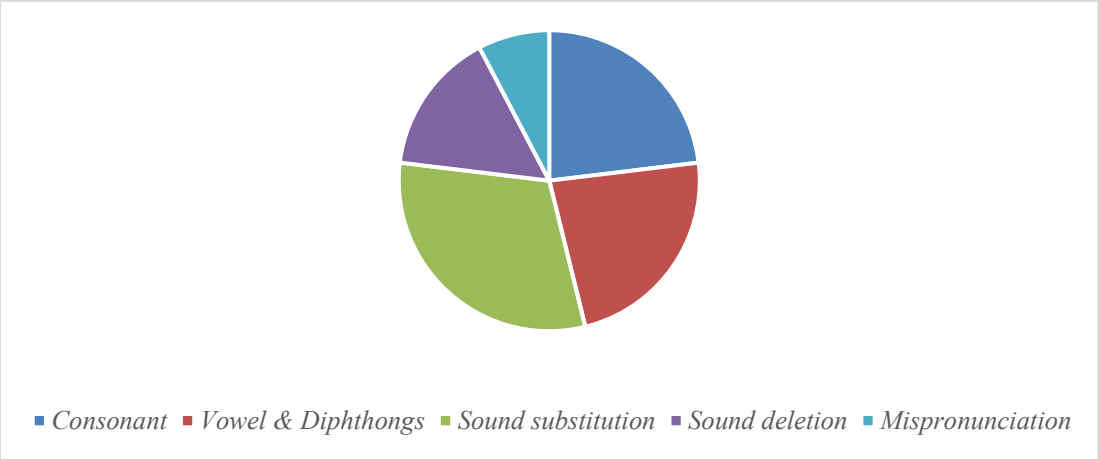

Figure 1. Pronunciation Errors of Shanghai speaker

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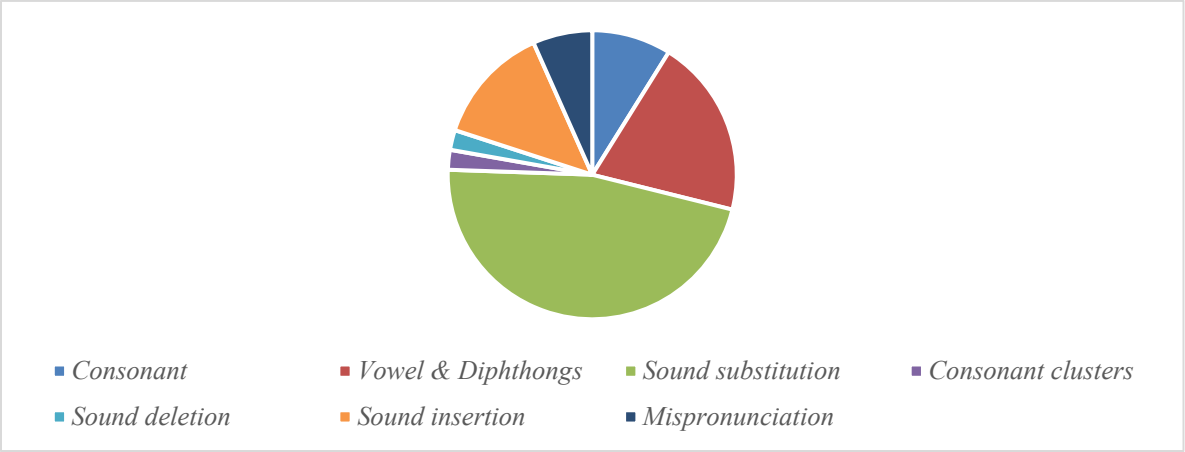

Figure 2. Pronunciation Errors of Jiangsu speaker

From above the diagrams, we can find that the common pronunciation problems in Chinese speakers' pronunciation are sound substitution, vowel and diphthongs, as well as consonant.

3.2. Suprasegmental Error

Suprasegmental aspects of pronunciation deal with rhythm, stress, and intonation in pronunciation (Ohata,2004). Since the speaker from Shanghai was an English major student. The recording in his speech do not have serious problem in suprasegmental error. I will focus on analyzing the Jiangsu speaker's speech. I found the speaker has two different pronunciation problems at suprasegmental level.

3.2.1. Intonation Problem

Intonation refers to "the distinctive use of pitch over units larger than a single word" (Reetz,2009, p.221). Guo (2009) states that there are three types of intonation in English: falling, rising and winding (including rising-falling, falling-rising and level). If there are different types of intonation in a same sentence, the meaning will be different. For example, in this sentence: he ran down to the village shouting "Wolf, Wolf." The speaker continuously used three rising tone in "shouting 'wolf, wolf'", which may hear strange as if he saw something else rather than a wolf. The rising tone signifies a question mark. If the speaker wanted to tell people that he saw a real wolf, falling tone would be proper in the statement of truth.

3.2.2. Pausing Problem

The frequency of pausing depends on the speed of the speakers. Slower speeches tend to have more pauses. Some pauses are necessary, while some are optional. For example, in the first sentence "There was once a poor shepherd boy who used to watch his flocks in the fields next to a dark forest near the foot of a mountain." The speaker paused after "dark" which was supposed to be read together with "dark forest". Listener may be confused about the meaning before the word "dark", though the latter half of the meaning would be acceptable. One more example is in "he thought up a good plan to get some company for himself" where the speaker paused between "for" and "himself", which is a pause problem the speaker could try to avoid concerning its meaningless adding. The problem caused may be related to the speaker's breath and speed of speech. In order to avoid such problem, one should pay attention to his speed and breath while he is speaking.

4. Causes of the Pronunciation Errors

Most researchers believe that speaker's pronunciation is affected by the language transfer of mother tongue. Some Chinese students have difficulty in English pronunciation because they are deeply influenced by similar sounds in Chinese (Yang, 2014). If a particular sound does not

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exist in mother tongue, which causes the second language learner to be unable to make the sound, or sometimes attempts to replace the sound with a similar tone in their native language. The wrong substitution will occur at this point. For example, English learners in Hebei province often pronounce /ɑ:/ as /ɔ:/, as large (/lɑ: dʒ/) in /lɔ: dʒ/. In Xiang dialect, one of the main characteristics of the sound is mixing /n/ and /l/. Speakers from this area are easy to be influenced, such as pronouncing no (/nəʊ/) as /ləʊ/ or name (/neɪm/) as /leɪm/ (Gao & Hu, 2006).

Dialect or native language in the process of learning a second language does have a very large impact, but it is not the only factor attributing to pronunciation problems. It may be the unscientific way of learning pronunciation so that students do not form the correct pronunciation patterns, such as using a similar sound in mother tongue to replace the English pronunciation. It is also possible that the teacher does not have a standard pronunciation and they take a neglected attitude towards the students' pronunciation problems. In addition, there are drawbacks in English examinations in mainland China. Test types generally include listening, reading, writing without oral test. The requirement of speaking is relatively low, which make students pay little attention to their pronunciation or correct it.

5. Implication on Teaching Pronunciation

After analyzing the results, some suggestions could be made for English pronunciation teaching.

Wang (2013) suggests teachers using phonetics theory to guide pronunciation practice. Imitation is the most direct and effective way to learn pronunciation, but in the process of second language acquisition, the effect of phonetic imitation is difficult to guarantee although students can read after the original audio tapes. The incorrect pronunciation in imitation or the substitution of some pronunciation with Chinese approximation cannot be corrected in time. Therefore, it is necessary for teachers to emphasize the study of phonetic theory in the course of teaching, instruct the students to correct the original pronunciation error and ensure the scientific validity of the imitation of speech. Meanwhile, let students know basic phonetic knowledge, such as their articulation and manner of speech, which can be accompanied by a picture explanation or real object touching.

As a teacher, it is important to let students know the pronunciation features as well. Thus, incorporating language corpora in teaching will be of great value in classroom. For one thing, it can facilitate students' input of authentic language, raise their awareness of pronunciation problem and motivate them to analyze the language by themselves. Learners themselves can improve both of their segmental and suprasegmental pronunciation through the pronunciation exercises in corpora, such as minimal pair, dictation, tongue twister, linking, assimilation, phonetic quiz and IPA transcription, which is also prone to perform learners' contrastive analysis between their mother tongue and English phonology. For another thing, it can improve teachers' own understanding of the language and generate effective teaching materials for students. Through observing and analyzing those authentic data, teachers will be equipped with a better pronunciation model in their teaching. The language corpora can also equip teachers with more teaching strategies so that they can give more correct feedback in pronunciation teaching.

6. Conclusion

English learning and teaching have been a hot issue around the globe within the past few decades toward which many linguists and scholars both home and abroad have made substantive contributions. The pronunciation problems at segmental and suprasegmental

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levels found in the two samples might be of general significance for Chinese students, which can provide some guidance for future learning and teaching activities.

One limitation in this paper will be the small sample cases, which may not well stand for all Chinese speakers' pronunciation characteristics, especially those who have their own dialect, which will be further studied in the following researches. The factors that influence foreign language pronunciation learning might go far beyond the ones discussed in this paper with more complications and interrelations involved.

Appendix 1: Recorded text material

The Boy Who Cried Wolf

There was once a poor shepherd boy who used to watch his flocks in the fields next to a dark forest near the foot of a mountain. One hot afternoon, he thought up a good plan to get some company for himself and also have a little fun. Raising his fist in the air, he ran down to the village shouting "Wolf, Wolf." As soon as they heard him, the villagers all rushed from their homes, full of concern for his safety, and two of his cousins even stayed with him for a short while. This gave the boy so much pleasure that a few days later he tried exactly the same trick again, and once more he was successful. However, not long after, a wolf that had just escaped from the zoo was looking for a change from its usual diet of chicken and duck. So, overcoming its fear of being shot, it actually did come out from the forest and began to threaten the sheep. Racing down to the village, the boy of course cried out even louder than before. Unfortunately, as all the villagers were convinced that he was trying to fool them a third time, they told him, "Go away and don't bother us again." And so the wolf had a feast.

Appendix 2: IPA transcription

/ðə bɔɪ huː kraɪd wʊlf /

/ðeə wəz wʌns ə pɔːr 'ʃepəd bɔɪ huː juːst tʊ wɒtʃ hɪz flɒks ɪn ðə fiːldz nekst tʊ ə dɑːk 'fɒrɪst nɪə ðə fʊt əv ə 'maʊntɪn/. /wʌn hɒt ɑːftə'nuːn, hiː θɔːt ʌp ə gʊd plæn tʊ get sʌm 'kʌmpəni fɔː hɪm'self ænd ɔːlsəʊ həv ə lɪtəl fʌn/. /reɪzɪŋ hɪz fɪst ɪn ðiː eə, hiː ræn daʊn tʊ ðə vɪlɪdʒ ʃaʊtɪŋ "wʊlf, wʊlf."/ /æz suːn æz ðeɪ hɜːd hɪm, ðə vɪlɪdʒəz ɔːl rʌʃt frɒm ðeə həʊmz, fʊl əv kənsɜːn fɔː hɪz seɪfti, ænd tuː əv hɪz kʌzənz iːvən steɪd wɪð hɪm fɔː ə ʃɔːt waɪl/. /ðɪs geɪv ðə bɔɪ səʊ mʌtʃ pleʒə ðæt ə fjuː deɪz leɪtə hiː traɪd ɪg'zæktli ðə seɪm trɪk ə'gen, ænd wʌns mɔː hiː wəz sək'sesfəl/. /haʊ'evə, nɒt lɒŋ ɑːftə, ə wʊlf ðæt hæd dʒʌst ɪ'skeɪpt frɒm ðə zuː wəz lʊkɪŋ fɔː ə tʃeɪndʒ frɒm ɪts juːʒuəl daɪət əv tʃɪkɪn ænd dʌk/. /səʊ, əʊvə'kʌmɪŋ ɪts fɪə əv biːɪŋ ʃɒt, ɪt æktʃuəli dɪd kʌm aʊt frɒm ðə 'fɒrɪst ænd bɪgæn tʊ θretən ðə ʃiːp/. /reɪsɪŋ daʊn tʊ ðə vɪlɪdʒ, ðə bɔɪ əv kɔːs kraɪd aʊt iːvən laʊdər ðən bɪ'fɔː/. /ʌn'fɔːtʃənətli, æz ɔːl ðə vɪlɪdʒəz wə kən'vɪnst ðæt hiː wəz traɪɪŋ tʊ fuːl ðəm ə θɜːd taɪm, ðeɪ təʊld hɪm, "gəʊ ə'weɪ ænd dəʊnt bɒðə ʌs ə'gen."/ / ænd səʊ ðə wʊlf hæd ə fiːst/.

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