Cognitive Language Transfer from Shandong Varieties to English Phonological Acquisition

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Keywords: Cognitive Language Transfer, Shandong Varieties, English Phonological Acquisition

Abstract. Freshmen of the higher vocational education pronounce English with heavy native accents. This paper investigates the reasons relying on the cognitive language transfer theory of Ausubel and Rod Ellis. Audio software and Microsoft Excel were employed to collect and analyze the data. 120 subjects were tested on their pronunciation of six plosives, three affricates, two fricatives and two vowels. The results show that for all subjects, positive transfers occur when the six plosives fall at the beginning and in the middle of the words; for subjects from districts of Weifang, Jining & Qufu, and Jinan, negative transfers occur when the same plosives falling at the end of the words, and when the subjects read other phonetic symbols, with the accuracy rates ranging from approximate 20% to 60%. Cognitive transfer theory is applied to explain the different transfers. Social and cultural factors, such as growth environment, educational background, individual discrepancy all accounts for the phenomenon. The findings are meaningful for the English teachers and educators to explore effective pedagogical strategies in the English phonological acquisition teaching. It is original that this paper explains the different transfers from cognitive perspective and underlines the social and cultural factors of the learning agents in constructing their English pronunciation.

Introduction

Higher vocational education is a constituent part of the Chinese education structure. In consideration of the present situation of expanding enrollment in the higher education, however, the comprehensive quality of the freshmen can hardly be guaranteed. Their English basic skills are comparatively poor, which brings great challenge to the college English teaching. Lacking systematic phonological training, freshmen commit many errors in their English pronunciation. Language transfer theory is employed to analyzes the cognitive reasons behind these errors. The corresponding teaching strategies are proposed to help the students to acquire standard English pronunciation and enhance their spoken English.

Literary Review of the Domestic and Foreign Researches

Language transfer refers to the interference from native language to foreign language acquisition. In educational psychology, with respect to phonological transfer, theories have undergone three stages. In the 1940s, Robert Lando, the American linguist, proposed contrastive analysis hypothesis on the basis of behaviorism, asserting to realize the transfer from native language on foreign language acquisition by contrasting and analyzing the mutual elements between them. He also pointed out that language transfers can be categorized into two types. Positive transfer occurs when native language facilitates foreign language acquisition; negative transfer happens when native language obstacles foreign language acquisition. Transfer theory in the second stage declared that between native language and foreign language, there are stimulus similarity variation and reaction similarity variation. The different combinations of these variations lead to different transfers. The third stage features cognitive transfer theory in the 1960s. Ausubel (1968) stated that “transfer is a cognitive activity…it manifests the individual’s initiative psychological processing course.” In this stage,
language transfer was included into the domain of cognitive study and was no more be regarded as the mechanical transfer from native language to target language but a complicated cognitive process affected by multiple factors.

In recent years, the study of language transfer flourishes in foreign language research field in China. The majority of them focus on the pedagogical practice, e.g., the language transfers in English writing, reading, speaking vocabulary acquisition, etc. Particularly, as for the phonological acquisition, many researches investigate the negative transfers from various language varieties to the English phonological acquisition, such as Mongolian, (Wen Fang, 2012), Hexi dialect in Gansu province (Han Yan, 2013), Hakka dialect (Zhong Tao, 2015), etc.

Language Transfer in English Phonological Acquisition

The Concept of Language Transfer

In educational psychology, transfer refers to the previous knowledge or skills of the learners affect the new knowledge or skills. D.P. Ausubel redefined the concept from the cognitive perspective by pointing out that transfer is “the psychological process of the previous knowledge playing a part in the new learning environment.” There are two types of transfer, namely, the positive transfer and the negative transfer. In foreign language acquisition, positive language transfer occurs when the learners can distinguish the features of their native language and the target language and decide on proper usage of the target language. When the learners fail to cognize the target language and resort to their native language features, it leads to the negative transfer. Positive transfer facilitates foreign language acquisition, while negative transfer hinders it.

Positive language transfer in English phonological acquisition

In order to quantize the positive and negative language transfer in phonological acquisition, we sampled 120 freshmen in vocation education class as subjects in Shandong University of Political Science and Law. They are required to read loudly six plosives: [b], [p], [k], [g], [d], [t]. Their readings were recorded and saved as audio files. Three experienced English teachers were invited to grade the recordings. The mean scores were adopted, and the accuracy rates were calculated. The result is shown in table 1.

Table1. The accuracy rate of six plosives.

<table>
<thead>
<tr>
<th>Place</th>
<th>[b]</th>
<th>[p]</th>
<th>[k]</th>
<th>[g]</th>
<th>[d]</th>
<th>[t]</th>
<th>Mean of Percentage</th>
<th>Transfer Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>beginning</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.95</td>
<td>0.991</td>
<td>+</td>
</tr>
<tr>
<td>middle</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.97</td>
<td>0.995</td>
<td>+</td>
</tr>
<tr>
<td>end</td>
<td>0.63</td>
<td>0.65</td>
<td>0.52</td>
<td>0.67</td>
<td>0.64</td>
<td>0.59</td>
<td>0.615</td>
<td>-</td>
</tr>
</tbody>
</table>

* Symbol “+”stands for the positive transfer, and symbol “-” stands for the negative transfer.

In English phonetic symbols, there are coupled voiceless consonants and voiced consonants, such as [b], [p], [k], [g], [d], [t]. In Chinese pinyin, there are sounds like [bo], [po], [ko], [go], [do], [to]. Compare these sounds, and we find there are obvious similarities between each pairs only that the Chinese pinyin has an end syllable very much like the English phonetic symbol [ə]. Test result shows that the mastery of these plosives is super with the accuracy percentage very close to one hundred percent, no matter they are at the beginning of the words as in “bright”, “preposition”, “kind”, “grade”, “describe”, and “term”, or in the middle of the words as in “husband” “preposition” “weekend” “magazine” “redeem” and “guarantee”. It indicates that when learning these symbols, students have good cognition of the similarities between the English phonetic symbols and the
Chinese pinyin and can take advantage of the similarities to facilitate the acquisition of the English phonetic symbols.

**Negative language transfer in English phonological acquisition**

When there are difference between the native language and the target language, negative transfer appears. The test also shows that when the same consonants are at the end of the words, the accuracy rate reduces to 61.5%. Quite a number of the subjects stretch the final syllables by adding an unnecessary vowel [a] in the same way as they pronounce the counterparts in Chinese pinyin. For example, they pronounce “light” [lait] as “lighter” [laitə] “grade” [greid] as “grader” [greidə], “work” [wə:k] as “worker” [wə:ka]. This phenomenon belongs to the negative transfer. It occurs when English phonetic symbols are different from Chinese pinyin.

Shandong is a province rich in language varieties. Freshmen from various districts pronounce English with heavy regional accents. The next test was held in the following week. Subjects were required to read loudly three affricates [dz], [tʃ], [ʃ], two fricatives [ð], [θ] and two vowels [ai], [æ]. Test procedures were similar to the first one except for the fact that the audio files were saved according to the native districts of the subjects. The accuracy rate suggests that these phonetic symbols are statistically significant in three particular districts of Weifang, Jining, Qufu, and Jinan, as is shown in table 2.

Table 2. The accuracy rate of the three affricates, two fricatives and two vowels.

<table>
<thead>
<tr>
<th>Districts</th>
<th>[dz]</th>
<th>[tʃ]</th>
<th>[ʃ]</th>
<th>[ð]</th>
<th>[θ]</th>
<th>[ai]</th>
<th>[æ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weifang</td>
<td>0.926</td>
<td>0.435</td>
<td></td>
<td>0.893</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jining &amp; Qufu</td>
<td>0.274</td>
<td>0.627</td>
<td>0.905</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jinan</td>
<td>0.915</td>
<td>0.656</td>
<td>0.521</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In Weifang variety, the sounds of [ð], [θ], [s], [z] are almost promiscuous. The sound [z] is often pronounced like [ð], and [s] like [θ]. The test shows that subjects from this district have a very low differentiation degree with the accuracy rate being 43.5%. “Some” [sʌm] or “thumb” [θʌm], “sink” [sɪŋk] or “think” [θɪŋk]? These are questions suffer many freshmen from Weifang district.

For those from Jining and part of Qufu, where there is no sounds like [zh], [ch], [sh] in their native variety, when pronouncing the affricates [dz], [tʃ], [ʃ], without the reference with high similarity degree to their native variety, they choose [z], [c], [s], the sound with less high similarity degree to replace [dz], [tʃ], [ʃ]. The failure to distinguish the English phonetic symbols [dz], [tʃ], [ʃ] from the sound in their native variety [z], [c], [s] hinders the cognition of these English phonetic symbols. The very low accuracy rate of 27.4% is greatly significant and indicates how common the errors are among freshmen from these districts.

The exaggeration of the sound “ai” is a prominent oral feature of Jinan variety, which interferes the differentiation of the English phonetic symbols [ai] and [æ]. In the test, the two vowels were frequently mixed up. Some subjects replaced [ai] with [æ], or vice versa. Some pronounced the two like neither of them, but the ambiguous sounds in the midway from [ai] to [æ]. For example, many subjects have great difficulty to pronounce distinctively the word pairs, such as “bike” and “back”, “cat” and “kite”, “light” and “let”.

An overall language transfer status in specific districts of Shandong province is summed up in table 3.
Table 3. Transfer types in certain districts of Shandong province.

<table>
<thead>
<tr>
<th>Districts</th>
<th>[dz]</th>
<th>[tʃ]</th>
<th>[ʃ]</th>
<th>[ð]</th>
<th>[θ]</th>
<th>[ai]</th>
<th>[æ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weifang</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jining&amp;Qufu</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jinan</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The result suggests that the three groups of the English phonetic symbols were significantly affected by the three native varieties respectively. Negative language transfer occurs when freshmen from Jining & Qufu district acquire the three affricates of [dz]、[tʃ]、[ʃ], and when freshmen from Jinan acquire the two vowels of [ai] and [æ]. Statistics show that the fricatives [ð]、[θ] cause trouble for students from not only Weifang district with the lowest accuracy rate of 43.5%, but also other districts with the accuracy rate merely above 60%, which is obviously lower than the accuracy rate of around 90% for other consonants in the test. The ultimate reason is that there are no such sounds as [ð]、[θ] in Chinese Putonghua or native varieties other than Weifang variety. Therefore, apart from the freshmen from Weifang district, negative language transfer occurs to students from other parts of Shandong province as well.

**Cognitive Interpretation of the Language Transfer in English Phonological Acquisition**

According to D.P. Ausubel, cognitive structure is the reproduction of the new knowledge in learner’s brain. Foreign language acquisition is a process of integrating new knowledge into learners’ entire cognitive structure or schema. It is both the internal premise and the learning outcome of meaningful learning. The learning agents enrich and promote their cognitive structure by means of assimilating and accommodating with the factors in their learning environment. English phonological acquisition is a complicated cognitive process. Rod Ellis (1994) stated that language transfer seems to occur at the superficial level of the language, but the process is very deep-rooted in the cognition of the learning agents, which involves and stresses more social and cultural aspects, such as growth environment, educational background, individual discrepancy, etc.

English phonological acquisition is a process of integrating new phonology knowledge into the pre-existing cognitive structure of the learning agent. The phonetic features of their native language, the phonetic features of the input sources, and the phonetic sensitiveness of the learning agents themselves all contribute to the conforming or deflected reproduction of the phonological knowledge in the learners’ brain. For the majority of the vocational education freshmen, they have learned English for six or more years, and before learning English, they had learned and spoken their native variety for at least twelve years. The oral features of their native variety is so cognitively solid that they have strong impact on the phonology of the new learning language. Some students obtained shallow phonological knowledge in middle school and some have never known anything about phonology. When the knowledge is none or shallow and inadequate, the learning agents will unconsciously grafted their articulation habits in native variety onto the new language. Moreover, English teachers are their main input sources and play a vital role as models in their English phonological acquisition. If the teachers speak Standard English, the negative transfer will be less. Unfortunately, the fact is that most of the teachers share the similar growth environment and educational background with the students, and they speak English with strong local flavor themselves. They fail to function as paradigms and cannot point out the errors in students’ pronunciation. It is very difficult for the learners to avoid negative transfers in such learning environment. Finally, the English learners’ own phonetic sensitiveness contributes to the language transfer effects. It accounts for the fact that in each group of the test, there are always subjects who can pronounce English phonetic symbols with great accuracy. This is a precious innate ability with which a language learner can acquire the speaking ability of a new language much better than their peers. And it is also an ability which cannot be acquired or imposed on other learners. For the majority of the learners from local
districts, they depend more on their own native language speaking habits, and the input sources such as their English teachers.

**The Pedagogical Enlightenment for English Phonological Teaching**

In English phonological teaching, the main task is not to overcome the negative transfer or interference, but to adopt strategies or intercessory measures to acquire the knowledge as effective as possible. English teachers are supposed to realize fully the effect of the Chinese varieties on English phonological acquisition and help students to be aware of their phonetic flaws. They should inspire the students to rectify the flaws consciously themselves on the basis of the cognition of the difference between Chinese and English phonology. Second, in order to foresee the negative transfer in the learning process, the English teachers and educators should have a good understanding of the learners’ the learning backgrounds and their diverse native varieties. Basing on the understanding, they may compile phonological training materials according to different variety features and teach students speaking English with particular native flavor purposefully. Thirdly, English teachers should allow full play of the positive transfer from the native varieties, helping students to realize the similarities between English phonology and Chinese variety phonology. It will facilitate English phonological acquisition and enhance the learning outcome. Finally, the superior educational institutions or governments have the obligation to organize English phonological training programs for English teachers, especially for those from the local areas. The training programs are to be developed regular and normative. Regulations and appraisal systems need being drafted and established.

**The Conclusion**

This paper exemplifies the positive and negative transfers from three particular districts varieties in Shandong province. According to cognitive transfer theory, these transfers happen because of the soical and cultural factors at play in the learning agents’ phonology construction. The findings help English teachers and educators to explore effective strategies to facilitate the English phonological teaching. It should be on the record that language transfer in English phonological acquisition is a complex. Besides the phonetic symbols discussed here, it occurs in various super-phonetic features, like stress, intonation, tone, etc.

**References**


