

Corpus-based Research on Chinese Learners' Mother-tongue Influence on English Word Class Errors

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Abstract: Errors are one of the linguistic characteristics of language learners. Due to the differences between English and Chinese, learners may transfer their mother-tongue "habits" to the learning of the target language, thus resulting in errors. This study, based on the learner corpus, examines the word class errors of Chinese students at different stages of English learning. Meanwhile, it focuses on adjectives to explore the impact of Sino-British typological differences on learners' vocabulary errors. The research findings indicate that the second-language word class errors first increase from few to many and then decrease from many to few with the improvement of learners' English proficiency. There are systematic errors in the acquisition of English adjective word class by Chinese learners, which are specifically manifested in two aspects: morphological changes and syntactic functions of word class. The above results are likely caused by mother-tongue transfer, which is influenced by the typological differences between English and Chinese during the second-language word class acquisition process. The results of this study verify the morphological consistency hypothesis, suggesting that Chinese students lack a clear awareness of English word class. It provides an empirical basis for promoting the development of second-language word class acquisition research and improving the efficiency of second-language word class teaching.

Keywords: Corpus; Mother-tongue Transfer; Word Class Errors.

1. Introduction

"Word class" refer to the basic types of words. Traditional grammar divides English words into ten categories: nouns, verbs, adjectives, adverbs, pronouns, conjunctions, prepositions, interjections, articles, and numerals (Zhang Daozhen, 1995). In terms of word class, English, as an inflecting language in transition from a synthetic language to an analytic language, preserves rich morphological features. Words generally have obvious word class markers (i.e., derivational affixes), and different word class can usually be transformed into each other through morphological changes (Tokar, 2012). Common derivational suffixes of word class include -ation, -ness, -ment, -ate, -ify, -ize, -able, -ous, -ful, -ly, -ward, etc. Different word class can usually be transformed into each other through morphological changes (i.e., derivational affixes). For example, the verb "act" can derive the noun "action", the adjective "active", and the adverb "actively". In addition to derivational affixes, English also uses articles and infinitives to mark noun and verb word class respectively.

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"actively". In addition to derivational affixes, English also uses articles and infinitives to mark noun and verb word class respectively.

In contrast, Chinese is an isolating language, lacking strict morphological changes. The vocabulary itself generally does not have internal word class markers, nor does it have external word class markers. It mainly relies on function words and word order to express grammatical meaning and cannot achieve word class transformation through morphological changes (Shen Jiaxuan, 2015; Lu Jianming, 2015). For example, the word "success" in Chinese can function as a noun, a verb, and an adjective, without morphological changes. However, in English, three words "success", "succeed", and "successful" are needed to correspond to it respectively. Therefore, in many cases, if we do not combine the syntactic structure, we simply cannot judge the category of a Chinese word.

In terms of syntactic function, there is a clear one-to-one correspondence between English word class and syntactic functions. Usually, nouns act as subjects or objects, verbs act as predicates, adjectives act as attributives or predicatives, and adverbs act as adverbials. In contrast, in Chinese, word class often do not have fixed syntactic functions, and the relationship between word class and syntactic functions is complex and lacks a one-to-one correspondence (Zhu Dexi, 1985). Nouns can not only act as subjects or objects but also as attributives or adverbials. Verbs can not only act as predicates but also as subjects, objects, or attributives. Adjectives can not only act as attributives but also as subjects, objects, predicates, or adverbials. Conversely, a syntactic function in Chinese can also be realized by different word class. For example, although the predicate is usually filled by verbs, the phenomenon of adjectives or nouns acting as predicates is also very common. Although the attributive is usually filled by adjectives, nouns and even verbs often play the role of attributives. The correspondence between English and Chinese word class and syntactic functions is shown in

Figure 1 and Figure 2 respectively.

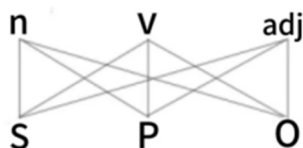


Fig 1. The correspondence between English word class and syntactic functions

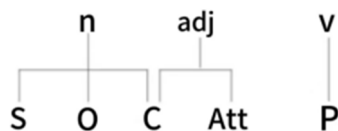


Fig 2. The correspondence between Chinese word class and syntactic functions

2. Literature Review

Quite a number of studies have explored mother tongue transfer from different levels of language use (e.g., Jarvis, 2002; Jarvis & Pavlenko, 2008; Bagherian, 2012; Wolter et al., 2020; Cai Jinting, 2015, etc.). Empirical studies on second language transfer in China focus on levels such as vocabulary, syntax, and metaphor. Vocabulary-level studies involve prepositions (Zhang Huiping & Liu Yongbing, 2013; Li Xijiang & Liu Yongbing, 2015), articles (Yang Mei, 2013), adverbs (Zhang Huiping, 2019), verb-noun and adjective-noun collocations (Jia Guangmao, 2017; Zhao Xueqin & Zhang Junyi, 2022), etc.; syntax-level studies involve temporal adverbial clauses (Li Xijiang, 2016; Li Xijiang & Liu Yongbing, 2020), sentence comprehension (Jiang Meng & Wu Wenyu, 2017), etc.; metaphor-level studies involve transfer issues in conceptual metaphors (Feng Yan & Jiao Weida, 2011) as well as metaphor induction ability and conceptual transfer ability (Shi Jinfang, 2012; Yuan Fengshi & Zhang Xinbin, 2015), etc.

Since this study focuses on the significant differences between English and Chinese in terms of morphological changes of word class and syntactic functions, the following will focus on research regarding the errors in second-language word class acquisition caused by these inter-language type differences.

Jiang (2011) proposed the Morphological Congruency Hypothesis regarding the influence of morphological differences between the mother tongue and the target language on second-language acquisition. This hypothesis states that the morphological congruence between the mother tongue and the target language affects the final acquisition degree of second-language morphemes: if there are corresponding morphemes in the learner's mother tongue to those in the target language, then those morphemes are relatively easy to acquire; if there are no corresponding morphemes in the learner's mother tongue to those in the target language, then those morphemes are difficult to acquire. According to this hypothesis, due to the rich morphological changes in English and the scarcity in Chinese, Chinese students are likely to encounter difficulties in acquiring English word class.

According to the statistics by Gui Shichun et al. (2005) based on the Chinese Learner English Corpus (CLEC), word class errors rank 7th among various types of speech errors made by learners (accounting for 4.18% of the total error rate). The top six types of speech errors are: spelling (17.47%),

word-selection (9.49%), capitalization and lowercase (5.83%), structural defects (5.25%), punctuation (4.6%), and word-omission (4.5%). If we exclude the three types of pure writing-form errors of spelling, capitalization and lowercase, and punctuation, word class errors rank 4th. It is one of the most major types of speech errors among Chinese students, which greatly affects English learning. word class errors are concentrated in notional words such as nouns, verbs, adjectives, and adverbs. Although word class errors are one of the most major types of speech errors among Chinese English learners, this issue has not received sufficient attention so far, and relevant research at home and abroad is very scarce.

Internationally, Zyzik & Azevedo (2009) and Ward & Chuen jundaeng (2009) investigated the second-language word class acquisition of Spanish learners in the United States and English learners in Thailand respectively, and found that inter-language type differences do affect second-language word class acquisition. In the study by Zyzik & Azevedo (2009), they used the method of word class forced-choice filling to examine the word class discrimination ability of Spanish learners whose mother tongue is English. They found that learners had difficulties in distinguishing between Spanish nouns and adjectives, indicating that learners lacked derivative knowledge indicating word class transformation. Zyzik (2009) then conducted an independent study using the think-aloud method and found that learners paid more attention to the inflectional changes of word class, while having weak awareness of the derivative changes of word class.

In China, Lin Ruchang (1994) briefly analyzed the differences between English and Chinese from the perspective of language typology and analyzed the acquisition of English nouns and adjectives by Chinese students based on 15 compositions. It was found that Chinese students made word class errors when using English nouns and adjectives. Later, Cai Hong (2002), Zhao Xincheng (2008), Xia (2015) and others investigated the acquisition of different English word class by Chinese students based on learner corpora. They found that Chinese students generally had problems in word class acquisition, and they all believed that the type differences between English and Chinese constituted the main obstacle to second-language word class acquisition.

The above-mentioned studies have achieved a preliminary understanding of Chinese students' English word class acquisition. However, these are all cross-sectional studies. To deeply and systematically understand second-language word class acquisition, isolated data obtained from cross-sectional studies alone are far from enough. It is necessary to comprehensively examine learners at different development stages and with different foreign-language proficiency levels. At the same time, although these studies have preliminarily analyzed and classified the errors of the main word class such as nouns, verbs, adjectives, and adverbs, which account for the majority of word class errors, in fact, the error situation of each type of word is very complex. Since the existing studies are all comprehensive investigations, they inevitably scratch the surface and cannot enable us to deeply understand the real situation of second-language word class acquisition and insight into the essential laws of second-language word class acquisition.

Based on this, this study will examine the characteristics of English word class errors of learners at different stages in

China through learner corpora. At the same time, it will focus on adjectives among the four major types of English notional words, mainly explore the influence of English-Chinese type differences on learners' acquisition of English adjective word class, and further verify the Morphological Congruency Hypothesis, providing empirical evidence for the acquisition and teaching research of English word class.

3. Research Design

(1) Research Questions

Based on the type differences between English and Chinese, this study examines the following question through the learner corpus:

What are the characteristics of English word class errors among Chinese learners at different stages?

(2) Research Tools

This study uses a corpus for research. The data of this study is collected from the Chinese Learner English Corpus, abbreviated as CLEC. The CLEC contains written language data of English learners, including those from high school, non-English majors in universities, and English majors in universities, with approximately over one million words. Specifically, it is divided into 5 stages: high school stage (St2), College English Test Band 4 for non-English majors (St3), College English Test Band 6 for non-English majors (St4), freshmen and sophomores of English majors in universities (St5), and juniors and seniors of English majors in universities (St6). Learners at different development stages represent different levels of foreign language proficiency. CLEC is a processed corpus, and the constructors of the corpus have marked the word class errors in the corpus. This not only facilitates our retrieval of word class errors but also ensures

the reliability of the survey results. In the CLEC, there are two types of annotations related to word class errors, namely word class usage errors (marked as "wd2" in the corpus) and word-missing errors (marked as "wd4" in the corpus).

(3) Research Procedures

Use the AntConc software to search for word class errors in the 5 sub-corpora (i.e., St2, St3, St4, St5, St6) of the CLEC with "wd2" as the search term. Obtain the frequencies of word class errors in different sub-corpora and extract the concordance lines.

Standardize the extracted word class errors in the 5 sub-corpora. This is because the total number of word tokens in the 5 sub-corpora is not exactly the same (St2 has 208088 word tokens, St3 has 209043, St4 has 212855, St5 has 214510, and St6 has 226106). The specific method of standardization is to divide the frequency of word class usage errors in each sub-corpus by the number of word tokens in that sub-corpus, and then multiply the ratio by 200000.

Analyze and discuss the survey results in combination with specific examples from the corpus, describe the characteristics of word class errors of learners at different stages, and explore the impact of the development of foreign language proficiency on the acquisition of second-language word class.

4. Data Discussion

(1) Discussion on English word class Errors of Chinese Learners at Different Stages

Through corpus retrieval, standardization processing, and calculation, the statistical results of word class errors in the five sub-corpora of the CLEC are shown in Table 1.

Table 1. Statistical Situation of English word class Errors of Learners at Different Development Stages

	St2	St3	St4	St5	St6	Total
Frequency	324.6	929.6	772.8	226.9	242.6	2496.5
Percentage	13.00%	37.24%	30.95%	9.09%	9.72%	100.00%

The statistical results in Table 1 show that the number of word class errors made by high-school-stage learners is relatively small, accounting for 13.00% of the total. The number of word class errors made by non-English-major university learners increases significantly, with St3 and St4 accounting for 37.24% and 30.95% of the total respectively. The number of word class errors made by English-major university learners is the least, with St5 and St6 accounting for 9.09% and 9.72% of the total respectively. If high-school-stage learners (St2) can be classified as the low-level group according to the years of English learning and the corresponding input time, non-English-major university learners (St3, St4) as the intermediate-level group, and English-major university learners (St5, St6) as the high-level group, it can be seen that the word class errors of learners show a development trajectory of first increasing from less to more and then decreasing from more to less as their English proficiency improves. Then, why does such a development trajectory occur? What essential laws of second-language word class acquisition does this development trajectory reveal? The following is an in-depth analysis of the above statistical results in combination with specific corpora.

First, let's look at the word class errors of low-level learners. The survey results show that high-school-stage learners make relatively few word class errors. However, through further observation and analysis of the corpora, it is found that the small number of errors is not due to the good acquisition of word class by learners at this stage. Instead, it is because the overall vocabulary of learners at this stage is small, and the output vocabulary is even smaller, with a low type/token ratio, which objectively helps learners reduce the probability of word class errors. We randomly selected some examples from the corpora, as shown in Examples 1-3:

Example 1: It's very danger[wd2, 2-0]for a driver to stop the car suddenly.

Example 2: Lazy[wd2, 15-]is my the[wd5, 1-]most [wd3, 1-1]shortcoming.

Example 3: Susanna took my[wd2, 1-1]up[vp2, 3-]and went to my[fm3]home.

It is not difficult to see that the word class errors in these examples are relatively elementary. In Example 1, the learner misuses "danger" as the adjective "dangerous". In Example 2, the learner misuses the adjective "lazy" as the subject. In Example 3, there is also a word class error of a pronoun,

where the learner misuses the possessive pronoun "my" as the objective pronoun "me". The above survey results and examples indicate that low-level learners have a weak awareness of the morphological changes and syntactic functions of English word class and are obviously affected by mother-tongue transfer. Therefore, although low-level learners make relatively few word class errors, as Ortega (2013) said, "fewer errors are not always a good thing for second-language acquisition." In fact, there are indeed problems in the second-language word class acquisition of learners at this stage, but these problems are not fully exposed due to the limitation of the vocabulary they have mastered.

Second, let's look at the word class errors of intermediate-level learners. The survey results show that non-English-major university learners make the largest number of word class errors. After further sorting out the corpora, we believe that the largest number of errors cannot simply be understood as the worst acquisition of word class. Because the richness of vocabulary in the two sub-corpora of St3 and St4 has increased significantly, and the type/token ratio has increased significantly, as shown in Examples 4-6:

Example 4: Their [fm3, 1-] structure of consume [wd2, 1-]has changed.

Example 5: They are proficiency [wd2, 2-]in the job gradually.

Example 6: In my opinion, I'd like to pursuit[wd2, s-] a single work.

As can be seen from the above examples, the difficulty of words such as "consume", "proficiency", and "pursuit" has increased significantly compared with the vocabulary in the middle-school stage. At this stage, learners' vocabulary is in a period of rapid growth, and the cognitive and memory burden of learners has increased accordingly. Learners do not fully master the knowledge (including word meaning and word class) of a large number of newly added words. When learners try to use newly learned words, they may mainly rely on the Chinese interpretations of the words, resulting in more mother-tongue transfer errors. Therefore, the largest number of errors at this stage is likely due to the sudden increase in vocabulary, which makes the problems of word class acquisition more fully exposed. On the other hand, these errors are also the inevitable result of learners repeatedly trying new language phenomena during the process of learning progress and are an inevitable path for the development of second-language acquisition.

Finally, let's look at the word class errors of high-level learners. The survey results show that English-major university learners make the fewest word class errors, which meets our expectations. The vocabulary of learners at this stage has increased significantly compared with that of high-school students and non-English-major university students. But why is the error rate the lowest among the three groups? As shown in Examples 7-9:

Example 7: To some extend [wd2, 1-], this system is [vp6, s-]rigid.

Example 8: There exists many obstacles in developing our country and socialism [wd2, 1-] construction.

Example 9: He will congratulate [fm1, -] withought [fm1, -1] cousing any jealous [wd2, 1-].

The above examples show that the word class errors made by high-level learners are more concealed. In Example 7, the learner misuses the verb "extend" as the noun "extent". In fact, the spellings of these two words are similar and easy to confuse. In Example 8, the learner misuses the noun

"socialism" as the adjective "socialist". The spellings of these two words are also very similar, and in English, sometimes a noun is used to modify another noun, so the error is not easy to detect. In Example 9, the learner misuses the adjective "jealous" as the noun "jealousy". There are also other errors in this example. It is not difficult to infer that the individual English proficiency of this learner is poor, which is also a contributing factor to the word class errors in the high-level group. Overall, on the one hand, because English-major students invest more time and energy in English learning, learners' metalinguistic awareness is gradually enhanced, and their knowledge of the morphological changes and syntactic functions of word class is more solid and stable. On the other hand, as the foreign-language proficiency improves, the influence of mother-tongue transfer gradually weakens. Therefore, although the vocabulary has increased significantly, the word class errors have decreased instead.

5. Conclusion

Based on the type differences between English and Chinese, this study investigated the development of English word class acquisition among Chinese learners at different stages and the impact of English-Chinese differences on second-language vocabulary acquisition through the Chinese Learner Corpus.

Regarding Research Question, the investigation found that: The word class errors of learners show a development trajectory of first increasing from less to more and then decreasing from more to less as their English proficiency improves. Low-level learners (i.e., high-school students) have problems in word class acquisition due to the influence of mother-tongue transfer. However, their small output vocabulary objectively helps reduce the probability of word class errors. Intermediate-level learners (i.e., non-English-major university students) are in a period of rapid vocabulary growth. The cognitive and memory burden of learners increases accordingly. The incomplete knowledge of a large number of newly added words and the deep-rooted influence of mother-tongue transfer fully expose the problems in word class acquisition, resulting in more errors. High-level learners (i.e., English-major university students) have a significantly enhanced metalinguistic awareness, a more solid and complete mastery of knowledge about the morphological changes and syntactic functions of word class, and a gradually reduced reliance on the mother tongue, ultimately leading to a significant reduction in word class errors.

The results of this study verify the Morphological Congruency Hypothesis, indicating that the morphological characteristics of the mother tongue do have an impact on second-language word class learning. In the Chinese context, English is a foreign language rather than a second language. Chinese students have fully acquired their mother tongue before starting to learn English. Therefore, the type differences between the mother tongue and the target language and the resulting mother-tongue transfer are inevitable influencing factors for Chinese students when learning a foreign language. Analyzing and clarifying the type differences between English and Chinese should not only be the beginning of second-language acquisition but also a booster for the success of second-language acquisition. The results of this study also suggest that Chinese students may not pay enough attention to or attach importance to English word class knowledge, thus lacking a clear word-class awareness. This finding provides empirical evidence for future research. In the next step, researchers can adopt

experimental methods (such as think-aloud protocols) to explore learners' second-language word-class awareness with more conclusive evidence and more deeply reveal the mental representation of second-language word class.

The above research results have implications for the teaching of second-language word class. First, the difficulty of word class acquisition varies for second-language learners at different stages. Teachers should make full use of this development rule to adjust and formulate corresponding word class teaching strategies. At the same time, compared with low-level learners (i.e., high-school students) and high-level learners (i.e., English-major university students), intermediate-level learners (i.e., non-English-major university students) have the most prominent problems in word class acquisition. Therefore, in teaching, special attention should be paid to word class problems at this stage. Second, to solve the problem of word class acquisition, fundamentally, teachers should guide students to improve their second-language word-class awareness. In teaching, emphasis should be placed on comparing and analyzing the differences in word class between English and Chinese. Students should be encouraged and helped to gradually learn to analyze English word-formation, remember common roots and affixes through practice, and master the correspondence between different word class and syntactic functions. Only in this way can the transfer impact of inter-language type differences on second-language word class acquisition be gradually reduced or even eliminated, thereby improving the quality and efficiency of foreign-language learning.

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