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A Corpus-based Study on the Use of Resultative Connections in College English Writing

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Abstract: the correct use of connectives is an important guarantee to ensure correct coherence, and causal connectives play an important role in Chinese English learners ' writing. Based on the university part of the Ten Thousand English Compositions Corpus of Chinese Students (TECCL), this study compares it with the LOCNESS native language corpus, and examines the use of causal connectives by Chinese college students from three aspects : overall frequency, richness and colloquialization. It is found that compared with native language learners, Chinese learners have the same overall frequency of causal connectives, but the richness is not enough, and there is a tendency of colloquialization.

Keywords: Causal connectives Corpus-based study TECCL LOCNESS   English writing

I.   Introduction

As a comprehensive and creative productive skill, writing is considered to be the most complex and challenging skill in transmitting information, and it is also an important manifestation of English learners ' comprehensive language application ability. Cohesion is an important aspect of compact content, fluent language, clear logic and coherent meaning.   The improvement of English writing ability depends largely on students ' mastery of textual cohesion. Halliday and Hasan (1976) pointed out in *Cohesion in English* that the generation of discourse depends on the continuity of language components with mutual explanatory function, and the continuity of language components is realized by some means. They are called cohesive devices, which are divided into five categories : reference, substitution, ellipsis, connection and lexical cohesion.   By semantics, connections can be divided into four categories : addition, transition, cause, and time. The realization of link function depends on the correct use of connectives. Multi-use, abuse and misuse of connectives will only affect the accuracy and consistency of the article. Therefore, it is necessary to study the use of connectives by English learners. For Chinese English learners, argumentative writing is the most common one.Causal connectors are frequently used in argumentative writing since it focus on reason and logic. Whether the causal connectors can be properly used and the causal relationship can be clearly presented determines the quality of writing to a large extent.   Therefore, this study focuses on the use of causal connectors in Chinese EFL learners ' writing from a micro perspective.

II. Research review

So far, a large number of domestic scholars have made great research on the application of causal connectives. Xu Jing (2007) compared the use of causal connectors between Chinese non-English majors and Canadian

college students through a corpus-based approach. It is found that Chinese non-English majors use causal connectors frequently and overuse some simple causal connectors, ignoring the use of many causal connectors that should appear in formal writing, resulting in a single dull and unconvincing article. Hou（2008）studied the use of causal connectives in college English textbooks. Chen Guibin and Yang Beirong（2010）studied the acquisition of causal connectors in college English graded teaching by self-built corpus. Yue Yunzhi（2012）used learner oral corpus and written corpus to make a comparative study of the use of causal connectors by English majors. It was found that oral learners used more single causal connectors than written learners, and written learners used more adverbs and prepositional phrases. In two different types of corpora, high frequency connectors were roughly the same.Yang Jiansheng（2012）used a corpus to investigate the use of causal connectives by English majors in argumentative writing. It was found that Chinese students prefer to use causal connective adverbs and tend to use causal connectives that represent the result relationship. As a result, students ' compositions show strong colloquial features. Liu Xijuan and Liu Xiurong（2015）used corpus to analyze the use and characteristics of causal connectives in non-English majors ' time-limited argumentative writing at different stages, and the change trend of causal connectives in students ' language acquisition. Chen Wei（2018）co-corpus investigates and compares the use of causal connectors in Chinese English majors ' time-limited writing and American college students ' writing. It is found that the use of causal connectors by Chinese students is roughly the same as that of native speakers, but the frequency of use varies greatly and the accuracy and normalization are not enough.Cai（2016）also used the self-built corpus to explore the use characteristics of causal logic connectives in argumentative writing. Han Cunxin and Chen Jingna（2020）uses the middle school part of TECCL corpus and COCA written corpus for comparative study. The study shows that the causal connectives in Chinese middle school students ' argumentative writings are generally higher than native speakers, but the richness is not as good as native speakers, and there is still a tendency to colloquial.

In summary, the current domestic researches on causal connectives is relatively rich, mostly using learners corpus and native speaker corpus for comparative study. And most of the researchers used CLEC developed by Professor Gui Shichun and Yang Huizhong and SWECCL developed by Professor Wen Qiufang in their research.In addition a few researchers used self-built corpus to study learners in the authentic teaching process. Among them,only Han Cunxin and Chen Jinna（2020）used the middle school part of the TECCL corpus to study the usage of causal connectors in middle school students ' compositions. Therefore, this study uses TECCL corpus to study the use of causal connectors in Chinese college learners ' writing, which is a supplement to previous studies.

III. Research design

3.1 Research questions and framework

This study mainly answers two questions :

①What are the characteristics of causal connectives used by Chinese learners in writing ?

②What are the similarities and differences between Chinese learners and native speakers in the use of causal connectives in writing ?

This paper classifies causal connectives into adverbs（phrases）, conjunctions（phrases）and prepositional phrases from the perspective of grammar and function.   Referring to previous literature, table 1 lists all known causal connectives（Yang（2000）, Zhang（2000）and Zhao（2003））as detailed as possible.

Table 1 causal connectives

part-of-speech	function	Examples

conjunction	cause	as, because, for, since, now that
	effect	so, it follows that
adverb	effect	so, therefore, thus, hence, accordingly, for this reason, for that reason, as a result, consequently, as a consequence, in consequence
prepositional phrase	cause	because of, due to, owing to, thanks to, in that, out of, on account of, for fear of, for fear that, in view of, in response to, in reply to, as a result of, as a consequence of

3.2 Research materials

The corpus of this study is Ten-thousand English Compositions of Chinese Learners (abbreviated as TECCL). The total number of words is 1,817,335. The compositions collected cover three levels of university, middle school and primary school from 32 provinces, cities and autonomous regions in China from 2011 to 2015. The writing styles include practical writing, argumentation, narrative, description, etc. Unlike   the Chinese English learner corpus in the past, the types of writing tasks here include classroom time-limited writing, after-school homework, mid-term final examination writing, lecture notes prepared for classroom speeches, and group collaborative writing.   Academic tasks within the English curriculum system, rather than high-risk standardized test writing, can represent the true level of Chinese English learners ' writing. Although the TECCL corpus is not large, the sampling distribution is representative (Xu Jiajin, 2016).Here we mainly explore the use of causal connectives in college students ' compositions. I divide the TECCL corpus into three sub-corpus : college, middle schools and primary schools, and only use the college students ' composition corpus when researching. The corpus contains 6867 college students ' compositions, including 25983 types and 1395581 tokens.   In addition, in order to better understand the use of causal connectives by Chinese learners, this study also use LOCNESS (The Louvain Corpus of Native English Essays)which contains 16185 types and 326838 tokens as the comparative corpus. This corpus contains time-limited and non-time-limited compositions written by British and American college students, which is similar to TECCL and has certain comparability.

3.3 Research steps and tools

First of all, all the connectives that represent causality will be listed as many as possible according to previous literature (see Table 1). Secondly, I will use Antconc 3.2.4 to count the frequency of various connectors and manually exclude those results that do not meet the requirements . The frequency of causal connectors that meet the requirements will be recorded in a Excel table.   Since there is a big difference in the total number of words between the two corpora, standardized frequency (per 10,000 words) will be used for comparison in subsequent statistical data.

IV.   Results and discussion

4.1. Overall description

After careful retrieval and screening, the frequencies of all causal connectives in the two corpora are shown in Table 2 below.   As can be seen from the table, the total frequency of causal connectives used by Chinese college students is 7173, and the standardized frequency is 51.4 per 10,000 words.   The overall frequency of native language students is 2166, and the standardized frequency is 66.27 per million words.   Here we can see that the use of causal connectives in Chinese college students is generally lower than that of native English college students.   In addition, it can be seen from the table that Chinese students and native speakers have

roughly the same richness in the use of causal connectives, and Chinese students have also used some non-native speakers such as: *in response to, as a consequence of, for that reason.,It follows that,* a*s a result.* It can be seen that Chinese students have abundant causal connectives.

Table 2

TECCL Tokens（1395581）			LONCESS Tokens(326838)		
Connectives	Original frequency	Standardized frequency	Connectives	Original frequency	Standardized frequency
because	2329	16.69	because	659	20.16
so	1621	11.62	therefore	303	9.27
therefore	769	5.51	as	228	6.98
because of	641	4.59	because of	191	5.84
since	366	2.62	so	159	4.86
thus	336	2.41	since	153	4.68
due to	229	1.64	due to	153	4.68
as a result	119	0.85	thus	139	4.25
for	116	0.83	as a result of	30	0.92
in that	88	0.63	hence	26	0.80
consequently	87	0.62	consequently	21	0.64
thanks to	69	0.49	for	18	0.55
as	67	0.48	in that	18	0.55
owing to	67	0.48	as a result	15	0.46
as a result of	50	0.36	now that	15	0.46
hence	49	0.35	accordingly	9	0.28
accordingly	42	0.30	for this reason	9	0.28
for this reason	26	0.19	thanks to	7	0.21
on account of	26	0.19	for fear of	6	0.18
now that	24	0.17	as a consequence	3	0.09
as a consequence	23	0.16	owing to	2	0.06
in view of	23	0.16	in view of	1	0.03
for fear that	6	0.04	in response to	1	0.03
for fear of	6	0.04	it follows that	1	0.03
in response to	2	0.01	for fear that	0	0.00
as a consequence of	2	0.01	for that reason	0	0.00
for that reason	1	0.01	as a consequence of	0	0.00
it follows that	1	0.01	in reply to	0	0.00
in consequence	1	0.01	in consequence	0	0.00
in reply to	0	0.00	out of	0	0.00
out of	0	0.00	on account of	0	0.00
Total	7173	51.40	0	2166	66.27

4.2 Colloquial Tendency

As we can see from Table 3 the high-frequency connectives used by Chinese college students are roughly the same as those used by native language learners,namely *because, so, therefore, because of, since, therefore, due, as a result, for, in that, thus, thanks, as, due, as a result of of, so, accordingly, for this reason,* but they are quite different in sequence. After further analysis, it is found that the four causal connectives most frequently used by Chinese learners are *because, so, therefore* and *because of*, while native speakers preferred to use *because, so, as* and *because of*.   Let's take SO for example,the usage frequency of Chinese learners is 11.62 while that of native learners is only 4.86. The former is used almost twice as often as the latter. The other word is also very interesting, that is, AS. Chinese learners use the word as a lot, but mostly use to refer to the function or character that someone or something has, such as *as as a student, as a boy,* and so on.And it's rarely used as causal connectives.The frequency of this function is only 0.48.Whereas native learners prefer to use this word as cuasal connective,the frequency of which is 6.98.In addition, *because* and *so* account for a large proportion of causal connectives used by Chinese learners, accounting for 55 %, while the use of native language learning in these two words only accounts for 37.7 % of all causal connectives, which is quite different. Hence it can be seen that there is a tendency of colloquialism in comparison in the choice of causal connectives in Chinese learner. *Because* and *so* are commonly used causal connectives in spoken conversations, which are relatively rare in formal writing (Altenberg & Tapper, 1998).Wen Qiufang (2006) also mentioned that colloquial tendency exists in Chinese college students and postgraduates ' written English. This opinion is further confirmed in this research.

Table 3 The top 20 Causal connectives

Chinese learner	Because,so,therefore,because of,since,thus,due to,as a result,for,in that,consequently,thanks to,as,owing to,as a result of,hence,accordingly,for this reason
Native learner	because,therefore,as,because of,so,since,due to,thus,as a result of,hence,consequently,for,in that,as a result,now that,accordingly,for this reason,thanks to

4.3 Richness

Type-token ratio is an important indicator to measure the lexical richness of an article. The greater it is, the richer the vovabulary is. By calculating the type-token ratio of causal connectives, we will know the richness of causal connectives. From table 4 below, we can see that the type-token ratio of causal connectives of native language students is slightly larger than that of Chinese English learners, which reflects that native language students will use more different causal connectives. In fact, from Table 1 above, we can also find that Chinese students use a few more causal connectives than native speakers, but the frequency of these more connectives is very low.You see, *in response to, as a consequence of, for that reason, it follows that, in consequence,* these five phrases are used only twice and once, respectively.   *because* and *so* account for 55 %, and the remaining 27 words account for only 45 %, which shows that Chinese learners use the two words *because* and *so* repeatedly.In contrast, this situation is much better for native language learners. Except for because, the frequency difference between other words is not so big.On the other hand, we also find that Chinese learners tend to use more oral connectives. Those written connectives such as *hence,since,thus,due to,*their usage frequency is nearly twice less than native learners.

Table 4

Coupora	Types	Tkoens	Type-token ratio
TECCL(Uni. part)	29	7173	0.004
LOCNESS	24	2166	0.011

V. Conclusion

By comparing Chinese and foreign learner corpus, this study compares the use of causal connectives in college students ' English writing. It is found that the overall use of causal connectors in Chinese college students is roughly equivalent to that of native college students, but the richness is insufficient and the oral tendency is obvious, which further confirms the conclusions of previous researchers. This study uses the corpus approach to explore English learners ' vocabulary use, and further proves that corpus can become a powerful tool in English teaching and learning.It is worth mentioning that some data in this study are manually counted.Take AS for example ,it is frequently used in Chinese and foreign learner learner's writing, but less frequently as causal connectives. Therefore,the author adopts the sampling survey method during the counting process. Hence the data may be a little different from the actual situation, and it is expected that the researchers in the future can draw more attention.

The cohesive devices of English words and sentences are richer and more flexible than those of Chinese. Teachers should not only highlight connectors in English writing teaching, but also introduce more implicit cohesive devices such as grammar and words that express causality. In the usual teaching process, teachers should pay more attention to cultivate students ' stylistic awareness, so that students can understand the correct choice of causal connectors according to different contexts and styles. Meanwhile, students should read more original English, cultivate English thinking, and eliminate the negative transfer of mother tongue, so that they ' English writing level can be truly improved.

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