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The Psycholinguistic Function of Orthographic, Phonological and Semantic Representation in Recognition of Chinese Characters

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Abstract: Language error is an important means and basis of psycholinguistics. The study of second language errors, which emerged in the 1960s, has contributed to the study of psycholinguistics, such as the mental lexicon of SLA and speech production. As a form of second language errors, Chinese character recognition errors are of great research value for the study of the formation of CSL learners' mental lexicon and the psychological process of word recognition. This paper, based on the Chinese character recognition errors of international school CSL learners as the material, adopts the methods of probability statistics and natural observation of self-built corpus to explore the psychological process of Chinese character recognition of CSL students and the mediating role of orthographic, phonological and semantic representation in it, so as to provide reference for the further study of L2 mental lexicon and Chinese character teaching.

1. Introduction

The concept of mental lexicon originates from Psycholinguistics, which refers to the permanent memory of lexical knowledge in the brain. Those researches focus on the representation and extraction of word form, pronunciation, meaning in the brain.[1] Therefore, word acquisition is the process of activating the mental representation of a word item from the mental lexicon. The process of word recognition is to externalize the mental representation of words into oral expression. According to L2 error studies, the process of L2 production can be roughly divided into four steps: conceptualization, formulating, articulation and monitoring.[2] With the increasing popularity of Chinese Language learning in the world, the teaching scale of Chinese as a second language (CSL) is expanding. Guided by the theories of psycholinguistics and L2 error analysis, this study focuses on the errors of Chinese character recognition of CSL students, trying to reveal how Chinese characters are represented and extracted in the brain of CSL learners, so as to help them acquire Chinese characters better.

2. Method

This study attempts to study the psychological process of CSL students' Chinese character recognition and the role of orthographic, phonological and semantic representation by using corpus probability statistics and natural observation. The subjects of this study are 50 CSL students from an international school in Changshu, China, including 32 girls and 18 boys. They come from more than 40 countries, such as the United States, UK and Japan, and study Chinese for an average of 1.5 years. In this study, each subject was asked to read 5 short Chinese texts, each with about 200 Chinese characters. Based on data, 50 subjects produced a total of 685 Chinese character recognition errors. By removing the same items, 178 errors were obtained. After classification and labeling, the type, quantity and percentage of various Chinese character recognition errors were obtained by the word frequency statistics.

3. Results and Discussion

Through analysis, CSL students' Chinese character recognition errors show a high degree of arbitrariness and individual differences. Therefore, it seems impossible to classify and describe them. However, if we examine the errors together with the representation of Chinese characters in the aspects of orthography, phonology and semantics, we can find the common pattern hidden behind those errors and the mystery of learners' cognition with the help of psycholinguistics. Therefore, we can divide these seemingly diverse errors into three basic categories: orthographic, phonological and semantic errors.

3.1 Orthographic Errors and Psycholinguistic Analysis

Chinese characters belong to ideographic system, and the intrinsic quality of Chinese characters is glyph. Gao's research (2000) shows that in reading, CSL learners have a stronger awareness of orthography of Chinese characters than their awareness of phonology.[3] However, due to the great difference between the glyph of Chinese characters and alphabetic language like English, 66.3% of the Chinese characters recognition errors of CSL students in this study are caused by the orthographic errors of Chinese characters. Examples and their psycholinguistic analysis are as follows:

Table 1 Orthographic Errors

Error Item	Target Item	Psycholinguistic Analysis
dàixù fāzhǎn renewal development	chíxù fāzhǎn sustained development	confusion of similar radicals
chū piàn shè *out slice agency	chūbǎnshè publishing company	read half of character
hǎo wài *good outside	hǎochù benefit	mix up similar glyphs
jiǔ ài *alcohol love	kùài love	switch to a more familiar character with the same main part
guó mèng *country dream	èmèng nightmare	replace an unknown character with similar shapes

3.2 Phonological Errors and Psycholinguistic Analysis

Unlike alphabetic languages such as English, the phonological representation of Chinese characters cannot often be reflected by the visual shape. Although some Chinese pictophonetic characters have phonetic symbols, which somehow increases the difficulty of learning Chinese

characters and the burden of memory. Moreover, there are many polyphonic characters in Chinese; there are no space between Chinese characters; the pronunciation of Chinese pinyin is very different from learners' mother tongue; in addition, there are tones in Chinese language. All these factors have caused the phonological errors of CSL students. Examples and psycholinguistic analysis are as follows:

Table 2 Phonological Errors

Error Item	Target Item	Psycholinguistic Analysis
pái xíng bǎng *row ok list	páihángbǎng ranking list	confusion of polyphonic characters
Dàwèi xi ǎ ngchī de dào de zhōngcān. *David wants to eat de avenue's Chinese food.	Dàwèi xi ǎ ngchī dìdào de zhōngcān. David wants to eat authentic Chinese food.	wrong segmentation due to no space between Chinese characters
bùguǎn qǐ ngjià * whatever ask for leave	bùgǎn qǐ ngjià afraid to ask for leave	add a phoneme /u/ unconsciously
lǎobàn old spouse	lǎobǎn boss	wrong pronunciation of tones
shìshí fact	sìshí forty	wrong pronunciation between similar initial consonants /sh/ and /s/

3.3 Semantic Errors and Psycholinguistic Analysis

According to our corpus, the proportion of semantic errors in Chinese character recognition of CSL students is the smallest, only accounting for 10.1%. But it also reflects the mediating role of semantic representation of Chinese characters in CSL learners' extraction of Chinese characters from their mental lexicons. For example, the dominance of disyllabic words is an important feature of modern Chinese word formation. Therefore, when learners extract one of the Chinese characters from disyllabic words, they sometimes mistakenly extract the other Chinese character. More examples are shown in the following table:

Table 3 Semantic Errors

Error Item	Target Item	Psycholinguistic Analysis
chéngkuǎn *punish fund	fákuǎn impose a fine	extract a wrong character from a disyllabic phrase
shǒu wǔ zú jiǎo *hand dance foot foot	shǒuwǔzúdǎo dance with joy	misled by the meaning of the previous word
Nà zhī jī hěn pàng. That chicken is very fat.	Nà zhī jī hěn féi. That chicken is very fat.	influenced by the meaning of "pàng" (translated as "fat" can be used to describe animals) in English
*èrběn shū two books	liǎngběn shū two books	unconscious of the semantic usage of the measure word
*zìkào de nǚshēng *zìkào aux girl	zìlì de nǚshēng independent girl	coin a nonexistent word according to the context

4. Conclusion

To sum up, the process of Chinese character recognition is to activate the mental representation

of a certain character from the mental lexicon of international CSL students. During conceptualization, learners are faced with the comparison and choice of Chinese characters. First, conceptualization of a Chinese character is embodied as an orthographic representation, and then a certain semantic representation is combined to produce a certain option. Then, the phonological representation is selected, that is, the target orthographic representation is finally transformed into a phonological marker by using appropriate projection rules to complete the character output.

Using the methods of corpus and natural observation, this study finds that the main reason for the errors is the confusion of Chinese radicals and glyphs. In addition, some of the unique features of Chinese language, which are different from alphabetic language: like polyphonic characters, wrong segmentation caused by the absence of space between Chinese characters, tone, and the fact that Chinese is mainly composed of disyllabic words, which also could explain the causes for the errors in Chinese character recognition by CSL students.

Chinese character teaching is the key and difficult point of TCSL. This paper probes into establishing an interlanguage corpus of Chinese character recognition errors for international CSL students,[4] and analyzes the psychological process of Chinese character recognition of CSL students and the mediating role of orthographic, phonological and semantic representation, so as to scientifically guide learners to learn from errors and promote their CSL learning.

References

[1] Carroll, D. W, Psychology of Language. Beijing: Foreign Language Teaching and Research Press, 2000.

[2] Levelt, W. J. M, Speaking: From Intention to Articulation. Cambridge, MA: MIT Press, 1989.

[3] Gao, L. Q and L. Meng, The effect of phonological and orthographic representation on Chinese character recognition in Chinese reading of foreign students. Chinese Teaching in the World, 2000, (4):67-76.

[4] Zhang, R. P, Building Chinese Interlanguage Corpus: The Case of Character Error-tagged Chinese Interlanguage Corpus of Sun Yat-Sen University. Applied Linguistics, 2012, (2): 131-136.