An Experimental Study on the Acquisition of the Relationship between Form and Meaning by Middle and Advanced Level International Students Based on the Chinese Character Grading Outline

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Abstract: Chinese characters are the basic materials to record the Chinese language, and are the important content of teaching and research on Chinese as a foreign language. The phonographic structure is the most important structure of modern Chinese characters. This paper designs the selection task of correlation of "form and meaning", controls the semantic transparency of experimental materials, and adopts pen and paper test to investigate the development process of the acquisition of the relationship between shape and meaning of middle and high-level international students. The results show that after learning Chinese for about one year, the understanding of the relationship between Chinese characters and their meanings has reached the level of automation, and the students are able to guess the meanings of Chinese characters with the help of contextual clues, which is similar to the development path of second language acquisition. From the perspective of cognitive psychology, this paper also puts forward a trinity teaching strategy of Chinese characters.

1. Introduction

Chinese characters are the most difficult point for foreign students to learn Chinese and an important part of teaching and research on Chinese as a foreign language. The current Chinese character teaching in teaching Chinese as a foreign language refers to the teaching activities that take foreigners as the object, take modern Chinese characters as the content, use foreign language teaching methods and aim to master the skills of using Chinese characters. Its fundamental purpose is to explain the shape, sound and meaning of modern Chinese characters, helps students read and write Chinese characters, learn Chinese and master the written language of Chinese.[1] At the present stage, the authoritative Chinese character grading outline[2] is the Chinese vocabulary level and Chinese character grading outline (revised version) formulated by the examination center of the of the national Chinese language proficiency examination committee in 2001. This is the basic standard for teaching Chinese characters to foreign countries and one of the authoritative "programmatic" documents for teaching Chinese characters to foreign countries.

Phonographic structure is the most important structure of modern Chinese characters.[3] The syllabus contains 2905 Chinese characters (2864+41), including 800 characters for class a, 804 characters for class b, 590 characters for class c, 11 appendices for class c, 670 characters for class d and 30 appendices for class d.

The number of pictographic characters accounted for 75.9% of the total number of characters in the Chinese character grading outline. In pictographic characters, radical parts are constructed by means of meaning, phonetic parts are constructed by means of sound. Although the function of the metal is weakened due to the development and changes of Chinese ancient and modern word meanings, however according to statistics [4], the overall table beside the form of Chinese characters is still as high as 43.79%.

Table 1 Chinese character structure table in Chinese character grading outline

	class a	class b	class c	class d	Total	percentage
Single body ideographs	119	53	26	33	231	7.85%
Combined ideographs	129	105	54	57	345 (355)	12.29%
Pictographic characters	504	608	508	594	2214 (2205)	75.90%
Semideographs	30	19	13	20	82 (79)	2.72%
Semisemitic	1	3	0	0	4	0.14%
Single sign	12	6	2	1	21	0.72%
Combined symbol	6	4	1	0	11	0.38%
In total	801 (800)	798 (804)	604 (601)	705 (700)	2908 (2905)	100.00%

The cognitive study of Chinese characters has found that, in the recognition of high-frequency Chinese characters, the sidings have an important influence on the extraction of the meaning of Chinese characters, and the extraction of the meaning of Chinese characters may rely more on the acquisition of the information of Chinese characters, and high-frequency Chinese characters can acquire the meaning of words directly from the character.[5] From the perspective of the acquisition rules of Chinese characters for foreign countries, most of the single-character teaching is concentrated in the primary stage, which indicates that the teaching task of single-character teaching should be mainly completed in the primary stage. [6] In this stage of Chinese character learning, students should be able to gradually establish the overall concept of modern Chinese character, to provide conditions and basic guarantee for the future study of a large number of combined characters. So, in the middle and advanced stage of foreign students to learn Chinese characters, the pictographic character beside the consciousness is how to develop, when the establishment of the font and the meaning of the relevance?[7] To this end, this paper designed a selection task experiment of " correlation of form and meaning " to control the transparency of the form meaning correlation of experimental materials. All the test glyphs are common ones with high sense of meaning, so as to reveal the development and maturity of the sense of form meaning correlation in the process of Chinese character acquisition by overseas students.

2. Research Methods and Process

2.1 Subjects.

There are 40 students from India, Pakistan, Austria, Burundi, Indonesia, Nigeria, Russia, Haiti and other countries in the intermediate class B and class C (learning Chinese for about 8-12 months) and advanced class D and class E (learning Chinese for about 14-18 months).

2.2 Experimental Materials.

The experimental words are 20 groups of words, each group has four words, in which the first word is the test word, the latter three are the choice words. For example:1, hold a. lift b. full c. please. There are four grades of test words, namely grade a, grade b, grade c and grade d. The three words to be selected in each group are divided into three levels according to the relationship between them and the test words: the same word next to the shape (cue word), the same word next to the sound (confusion word), and the unrelated word (control word, not included in the data analysis). All the experimental characters are left - shaped and right - sound. The selected shape is a common shape with high sense and word formation ability.

2.3 Experiment Implementation.

The experimental materials were song typeface no.4 and printed on A4 paper with 1.5 times spacing. By means of pen and paper test, the task of the subject is to select the word that is semantically related, that is, to select A word that is semantically related from the three words to be selected: A, B and C.

Before the implementation of the experiment, in order to test the effectiveness of the experimental materials, a small range of samples were tested among Chinese undergraduates, which proved that the design of experimental materials could achieve the expected experimental purpose. As these 60 subjects are concentrated in four classes, the whole class test method is adopted, which is carried out by teachers in class and completed by students independently.

2.4 Data Analysis.

The test paper was analyzed, and the absolute number of each type of word selected by the subject was recorded, as well as the proportion of each subject choosing different words for each type of target word. Such as:

(1) the subjects of advanced level are 20 people, and the total number of words to be selected when the test word is class-a word is: 80 homographs, 1 or 2 homophones, and 8 unrelated words.

(2) subject A: in the five groups of test words, subject A, three words to be selected next to homographs, one word to be selected next to homophones, and one unrelated word were selected, marked as 60%, 20%, and 20%

Statistical analysis was conducted on the data to investigate the change of the proportion of the subjects choosing words with the same sound and words with the same shape when facing different target words.

3. Experimental Results and Data Analysis

3.1 Intermediate Level Subjects.

Experimental results

The absolute number distribution of three words to be selected by the intermediate level subjects is shown in the table:

Table 2 Intermediate level subjects choose the number of answers

	homograph	homophone	unrelated word
Class a	57	23	0
Class b	58	22	0
Class c	60	20	0
Class d	55	25	0

From this group of Numbers, no matter what grade of Chinese characters the test word is, the absolute number of words next to the same shape selected by the subject is greater than that of words next to the same sound. And there is no one who select the irrelevant word. This shows that the phenomenon of random guessing basically does not exist, and the subjects selected according to a certain glyph clue.

T-test was carried out on the proportion of paratactic words and paratonic words selected by intermediate level subjects. The analysis results are shown in the following table:

Table 3 Intermediate level T test results (α=0.01, critical value T = 2.16)

	Class a	class b	class c	class d
T value	5.57	5.42	4.01	3.52

The t-test results show that there is a significant difference between the proportion of words with the same shape and that of words with the same sound when the test words are of various grades (frequencies), and the proportion of words with the same shape is higher than that of words with the same sound.

3.2 Discussion

For subjects with intermediate Chinese proficiency, a-level characters and some b-level characters in the syllabus are high-frequency Chinese characters, which are familiar characters they have learned. For these test words, the choice of words next to the homonym is not enough to show that they have a sufficient understanding of the relationship between morphological, phonetic, glyph and meaning. But for those who belong to the low frequency of the outline of class c and d level words, the participants were still able to select with metal as a test words related to the meaning of words, This indicates that at this time, the test subjects have developed a strong sense of parataxis, have a sufficient understanding of the relationship between the meaning of phonograms and glyphs, and know how to use parataxis clues to infer the meaning of words. Thus, even though the right side of the sound is highly stimulated, only a small number of subjects are affected.

From this data, it can be seen that learners with non-chinese character backgrounds start to establish the relationship between shape, sound, glyph and meaning between the 8th and 10th month of learning Chinese, and infer the meaning of Chinese characters through glyphs. Although in the primary stage of Chinese character teaching, we have gradually infiltrated the knowledge of common collateral meaning, and learners have some of this knowledge, but this knowledge cannot affect the learner's spontaneous reading behavior.

3.3 Advanced Level Subjects.

Experimental results

The absolute number distribution of three words to be selected by high-level subjects is shown in the table:

Table 4 Advanced level subjects choose the number of answers

	homograph	homophone	unrelated word
Class a	78	2	0
Class b	75	4	1
Class c	76	4	0
Class d	74	6	0

From the data of the table, no matter what grade of Chinese characters are tested, the absolute number of words next to the same shape is greater than that of words next to the same sound. From the figures alone, we can basically conclude that the rate of choosing homonyms is significantly higher than that of homonyms.

In order to explain the problem scientifically, we carried out T-test on the proportion of subjects choosing homographs and homophones, and the analysis results are shown in the table below.

Table 5 T- test results of advanced level subjects ($\alpha=0.01$, critical value T = 2.13)

	Class a	class b	class c	class d
T value	38	17	27.8	10.08

The results showed that when the tested characters were Chinese characters of various grades, the difference between the proportion of words with the same shape and that with the same sound reached an unprecedented significant level, and the proportion of words with the same shape was significantly higher than that with the same sound. In fact, almost all of the subjects had already chosen the interference word next to the same sound.

3.4 Discussion

For advanced level subjects, no matter the target word is high frequency Chinese character a, or low frequency Chinese character c, they all choose the word next to the same shape as the word related to meaning, and the ratio of choosing the word next to the same sound interference is close to zero. This shows that at this time, the test object's consciousness of the phonetic character beside the form has been quite strong, can skillfully guess the meaning of the word according to the clues

beside the form, for these common and high sense of the form beside, according to the form selection meaning related word almost reached the point of no thinking.

Through the analysis of experimental data, it can be seen that after a year of systematic learning of Chinese, foreign students can skillfully guess the meaning of Chinese characters by using visual clues, and have a very deep understanding of the relationship between Chinese characters and their meanings. Since the experimental materials we used are all the shapes with high semantic content, the acquisition of Chinese glyph and semantic relationship among international students should be different for those shapes with low semantic content and high semantic content. Will they have a negative impact on the learning of Chinese characters for international students? This is a problem worthy of attention and will be the direction of our further research.

4. Inspiration to Teaching

From the conclusion of this experiment, it can be seen that only when the foreign students reach the intermediate and advanced Chinese level can they have a preliminary understanding of the relationship between the form and meaning of Chinese characters, and the form and the meaning can be automatically applied to the reading task as the clues of the meaning. This phenomenon shows that we begin to carry out the teaching of pictographic characters in the primary stage, which seems to be too early. Even after teaching, this kind of knowledge can only stay in the stage of "learned knowledge" [8]and cannot be used as a kind of ability.

How to introduce the concept of semaphora and semaphora in the elementary and intermediate stages of Chinese character teaching? Through the investigation of the relationship between Chinese characters and meanings, we find that the trinity teaching strategy is an effective teaching method. Chinese characters are a unity of form, sound and meaning. In the cognitive process of Chinese characters, ideographs and vocals play a key role.[9] We believe that the three forms, sounds and meanings should be integrated into a comprehensive study of Chinese characters, especially as the main part of modern Chinese pictographic characters. Foreign students have a new understanding of Chinese characters, which is different from that of Chinese students who have the phonetic basis of their mother tongue.[10] Due to the lack of oral Chinese foundation, it is not easy to achieve the one-to-one correspondence of the shape, pronunciation and meaning of Chinese characters. Therefore, it is necessary to strengthen the connection between Chinese character form and its pronunciation and meaning. Learning the pronunciation and meaning of Chinese characters while memorizing their glyphs requires TCFL teachers to fully grasp the shapes, sounds and meanings of Chinese characters, and then rationally and comprehensively explain the shapes, sounds and meanings of Chinese characters in the process of teaching Chinese characters, and strengthen the connection between Chinese characters and phonetic symbols and semantic symbols. Through induction and association, the method of "using old characters with new ones" can effectively improve the efficiency of Chinese character learning and achieve the effect of lasting memorization.

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