Which Form of Chinese Characters Is More Beneficial to Education：Research of the Influencing Factors Based on Aliquot Linear Regression

Abstract: There are two forms of Chinese characters, the simplified and the complex form. The simplified Chinese characters are widely used in most parts of China, while the complex form are still used in several parts of China, namely Hong Kong, Macao and Taiwan. Some studies proposed that the complex Chinese characters are conducive to improving the learning effects, but some scholars hold opposite views. In order to further explore the role of different forms of Chinese characters in field of education, this paper studied the factors affecting the learning effects and willingness of students who use simplified Chinese characters for a long time. With the questionnaire experiment and the aliquot linear regression method, data were collected, processed and analyzed. This analysis shows the complex Chinese characters have an impact on certain students' learning effects and willingness, while some will learn better using simplified characters. These differences vary from person to person due to individual's specific situation, which provides some suggestions to education practice.

Key word: Chinese characters; Education; Learning effects and willingness; Aliquot linear regression

1 Introduction

The simplified character scheme was implemented from January 1956. Its original intention was to adapt to the development of the literacy movement, thus achieving the improvement of the national quality education level at the beginning of the founding of the country. However, the call for restoring traditional characters has always existed now and then. Traditional Chinese characters have the characteristics of beautiful glyphs, shapes, meanings and symbols. When learning traditional characters, it can often help learners to make inferences and analogies. Although the simplified words can reduce some strokes and can be easily written, they ignore the mechanism of the Chinese character system. Chinese characters have their own scientific font system. When Chinese education is used, if the mechanism of such a man can be used, the source of Chinese characters will be clearly conveyed according to the original meaning of the word, and the students will learn and remember faster. The history and culture of Chinese characters will be more deeply understood.

In this study, the data of the traditional Chinese characters and simplified Chinese characters on the learning outcomes and the willingness to learn were analyzed and analyzed. The questionnaires were designed, distributed, data collected and collated, and the R language was used to aliquot linear regression. Data processing and analysis, setting the adjustment situation to simplified characters and traditional characters; the dependent variables are learning intention (Y1) and learning effect (Y2); the influencing factors are contact frequency (X1), existing basis (X2), and degree of affection (X3), cognitive needs (X4), value judgment (X5), self-efficacy (X6), to explore the impact of traditional and simplified Chinese on learning outcomes and learning willingness, and try to infer whether traditional Chinese characters are more favorable. Learning, and whether it can replace Simplified Chinese characters in the future, participate in the teaching activities in the area where Simplified Chinese characters are the main textbook fonts.

2 Literature Review

In recent years, some scholars have proposed to resume the use of traditional Chinese characters. The supporters' view is mainly that traditional Chinese characters have strong ideographic features. Moreover, the structure of traditional Chinese characters has strict logic and can directly or indirectly relate to things. It is very easy to remember and understand. It can be used to learn Chinese characters. A positive impact. (Zhang Ruizhen, 2017). The opponents believe that the simplification of traditional Chinese characters must have its rationality and inevitability, and the simplified Chinese characters are very easy to identify and remember, which can effectively improve the learning efficiency of students. However, there is no unified view on which fonts of traditional and simplified characters can really promote learning efficiency or enhance learning willingness.At present, there are few studies on traditional Chinese characters and simplified Chinese characters in

the academic world. Only a small number of scholars have conducted a small amount of research on topological and classification perceptions, and the research on the influence of traditional Chinese characters and simplified Chinese characters on learning effects and learning willingness is more There are very few. Tzeng and Wang (1955) suggest that reading Chinese characters requires more visual processing and memory than reading alphabet scripts. At the same time, some researchers believe that words with symmetric closed, linear (horizontal or vertical line) features or less than 10 strokes are easier to identify than words of other configurations. Subsequently, Kao (2000) developed a theory of psychological geometry about literacy, which shows that texts with balance, closure, cavitation, linearity of center of gravity, orientation, connectivity, symmetry, and parallelism should It is recognized and learned faster and easier. According to our existing perception judgment, in terms of symmetry and closure, both simplified and traditional characters have more characters, while traditional characters will be relatively more. However, in terms of strokes, the simplified characters are more dominant. At the same time, Yang and Wang (2018) pointed out that the experience of two different writing systems, namely simplified characters and traditional Chinese characters, has an impact on people's perception of words, and points out that in terms of text perception, the visual recognition rate of users of simplified characters is better than that of traditional characters. The user's is higher. Chen and Yuen (1991) compared children from mainland China, Hong Kong, China and Taiwan, and found that children's Simplified Chinese learning experiences in Chinese children may make them more sensitive to the visual information of words and use them for text recognition. McBride et al. (2005) found that children in mainland China who learn simplified Chinese characters have significantly higher visual skills than Chinese Hong Kong children who learn traditional Chinese characters. These studies show that using simplified characters is more helpful in improving visual recognition and visual skills, but it does not prove that using simplified characters can improve learning efficiency. Liu and Chuk, Yeh et al. (2016) proposed that the recognition of Chinese characters is a reduction in overall processing and found that Simplified and Traditional Chinese readers have similar overall processing levels in dealing with Simplified and Traditional Chinese characters, while Simplified Chinese readers are in the right place. The simplified characters do not have the integrity of the traditional Chinese characters, and they also find that although there is a high visual similarity between the two fonts, the differences between the simplified characters are large, which may enable the simplified characters to take them. The skills are interpolated and extended to the use of traditional characters.

Although there are few literatures on the influence of traditional Chinese characters and simplified Chinese characters on learning effects, there are many research literatures on learning effects, which have played a guiding role in this research, especially in the study of attitudes and familiarity on learning effects. Gardner, Lalonde, and Moorcroft (1985) pointed out that in the second foreign language learning, aptitude, attitude and motivation have an impact on learning efficiency, and pointed out that attitude and motivation can help determine the learning achievement of the second language, or the proficiency of language. The degree affects attitudes and motivations. Then, learners' motivations for learning between simplified and traditional Chinese characters and learners' attitudes toward simplified or traditional Chinese characters will affect their final learning outcomes, and whether learners' familiarity with simplified or traditional Chinese characters will affect their motivation and Attitude will be one of the directions in this study. Coltheart et al. (1993), Seidenberg and McClelland (1989) suggest that the frequency of occurrence of words in a language has a strong influence on reading performance. King and Kutas (1998) also pointed out that for very common words, identifying common words is faster and can begin processing during the first 350 milliseconds of the brain. For mainland residents, the frequency of simplified characters is much higher than that of traditional Chinese characters. On the contrary, residents in Hong Kong and Macao, Taiwan, have better learning efficiency under their respective writing systems, but for different writing systems. Between, which can have higher learning efficiency, there is no unified statement.

Some scholars believe that frequency is the decisive factor of learning effect, but some scholars have expressed doubts about it, and that learning efficiency is affected by many factors. For example, Soumaya and Claude pointed out that emotions also have many effects on learning, including cognitive processes, self-learning levels, and motivational

motivation. At the same time, the authors also suggest that positive emotions can stimulate learning interest, improve learning motivation, and promote information processing. Dirkx (2008) also pointed out from the other side that negative emotions can make students have an unpleasant learning experience, reduce learning enthusiasm and learning efficiency, and hinder cognitive processing. This shows the important role of emotional factors in language teaching and learning. Some scholars have shown that the perceived value of students' learning projects has a positive impact on emotions. In this study, the degree of affection of Simplified and Traditional Chinese characters was different. I felt that it is necessary to learn traditional characters to judge the value of traditional Chinese characters. We will test whether respondents with high levels of traditional Chinese characters and high value judgments will be more effective.

In addition, cognitive needs and self-efficacy may also have an impact on learning outcomes. Xu Jie and Zhou Ning (2010) studied the impact of cognitive needs on the tendency of individual information processing. They believe that high cognitive needs and low cognitive needs differ in the cognitive activities that are complex or need to be put into practice. The performance, which is reflected in the degree of input to cognitive activities and the degree of love for cognitive activities. At the same time, they also pointed out that high-cognitive demanders like to think. When faced with cognitive tasks, they will be more actively engaged in cognitive tasks than those with low cognitive needs, so they are more active in information processing. Deep, the amount of information recalled is greater. But they did not explicitly point out that high-cognitive demanders are more efficient in learning, so we will verify this in our research.

Shi Leishan et al. (2011) found that self-efficacy can lead to learning input. Subsequently, Shen Yongjiang et al. (2014) used multi-level linear models for multi-level analysis, indicating that the higher the academic self-efficacy of students, the more invested, ie both There is a significant positive impact between them. Self-efficacy can have an impact on learners' emotions. Shi Leishan et al. (2011) also suggest that high self-efficacy believes that through hard work, it can achieve the expected learning goals, and demonstrates the determination and motivation to overcome difficulties in the face of difficulties. The more confident your school is, the more likely you are to devote yourself to learning, to be willing to work hard in learning, and to be more persistent in encountering difficulties. Extending this theory to our research, we can make the following assumptions. High self-efficacy people are confident that they can master, and use simplified or traditional characters, and they are more engaged in learning reading materials, thus achieving higher learning outcomes.

All the factors mentioned above may have an impact on the learning outcomes. These factors are related to each other. In addition to these, the existing foundations of the traditional Chinese characters and simplified Chinese characters will greatly affect the final. The learning outcome of the measurement. This study studied the influence of traditional Chinese characters and simplified Chinese characters on the learning effect through the experimental method and made up for the shortcomings of the academic community in this respect. At the same time, it also provided a reference for the Chinese mainland whether it needed to "disuse the simple and complex".

3 Research Method

This study used the questionnaire experiment to conduct surveys and collect data, and the questionnaires were designed the six factors of the dependent variables: learning intention and learning effect, as well as contact frequency, existing foundation, affection degree, cognitive needs, value judgment, and self-efficacy. The study of the impact of the two situations of simplified characters and traditional Chinese on learning outcomes and learning willingness, design reading questions (concept understanding and news event introduction) to further study.

(1)The connotation of independent variables and dependent variables

Dependent variable and independent variable dependent variable - learning effect Y1, learning willingness Y2; independent variable - contact frequency X1, existing foundation X2, favorite degree X3, cognitive demand X4, value judgment X5, self-efficacy X6; situation - Learning effects and willingness to learn based on both traditional and simplified Chinese characters.

(2)Variable data source

The independent variables are obtained from the direct data of the subject, and the value is 0-100. X1, X2, X3, X5, and X6

are all related to the traditional Chinese character (for example, X2 already has the basic understanding and mastery of the traditional Chinese characters, X3 refers to the traditional Chinese characters, X3 value judgment) It refers to the subjective judgment and self-efficacy of the interests and effects of traditional Chinese characters. X6 refers to the degree of satisfaction of learning through traditional Chinese characters. X4 is an independent variable for the subject, that is, the subject's own acceptance of the complexity of the matter. The evaluation of learning outcomes consists of two levels of learning efficiency and knowledge recall. The learning efficiency is based on the total time taken by the subject to complete the experimental topic; and the degree of knowledge recall is mainly based on the correct rate of the respondent's answer to the question. The average length of time for all subjects to complete the problem is calculated, and then 0.5 and 2 times of the average is used as the demarcation point, and five intervals are divided. The subjects in different intervals are given corresponding scores. As efficiency, the shorter the duration used, the higher the score and the higher the efficiency. By rating each respondent's answer, we assign a value to each subject's correct rate. The test title is two reading materials with five minor questions. After deriving the scores of learning efficiency and knowledge recall, according to the relevant theory and reality analysis, we respectively weighted the two scores by 10% and 90%, and finally obtained the learning effect level of each subject.

4 Empirical Analysis

After the questionnaire was sent out, according to statistics, a total of 119 participants who participated in the experiment were randomly assigned to the Simplified and Traditional Chinese characters. Among them, 51 were involved in the traditional Chinese character experiment and 68 were involved in the simplified Chinese character experiment. The number of participants is roughly balanced. All the subjects completed a reading question as required, and the topics in the two situations were identical, except that there was a difference between the traditional Chinese characters and the simplified Chinese characters. The difference in text presentation is used as the control variable for this test segment.

This study uses R language software to perform aliquot linear regression analysis on the data. The data mining results are organized as follows:

(1) Analysis of the learning effect Y1 of the dependent variable

F-test for the difference of regression coefficient of translation model is shown in Table 1.

Table 1. Regression coefficient difference F-test of complex Chinese characters

Variables of complex Chinese characters	t1---t2		t2---t3		t1---t3	
	F-value	Sig.	F-value	Sig.	F-value	Sig.
constant	86.9004	***	0.0021	***	0.1825	-
contact frequency	0.1616	-	39.2271	***	6.3405	-
existing foundation	1.5036	-	0.6515	-	0.9795	-
favorite degree	0.1129	*	7.6754	*	0.8665	-
cognitive demand	0.6053	-	3.8500	-	2.3302	-
value judgment	2.3427	-	3.2510	-	7.6162	*
self-efficacy	0.2685	-	0.8540	-	0.2293	-

It can be seen from Table 1 that in the traditional Chinese context, the significance level of the constant term and the preference level between the first aliquot and the second quintile is 99% and 90%, respectively, so the constant term has a very significant difference. The degree of affection also has a higher level of difference. Between the second and third aliquots, the significance level of the constant term and the contact frequency is 99%, and the level of significance of the degree of preference is also 90%. Therefore, the constant term and the contact frequency are very significant differences. The degree of affection is also a significant difference. Between the first and third aliquots, the significance level of the value judgment is 90%, so the value judgment is significantly different.
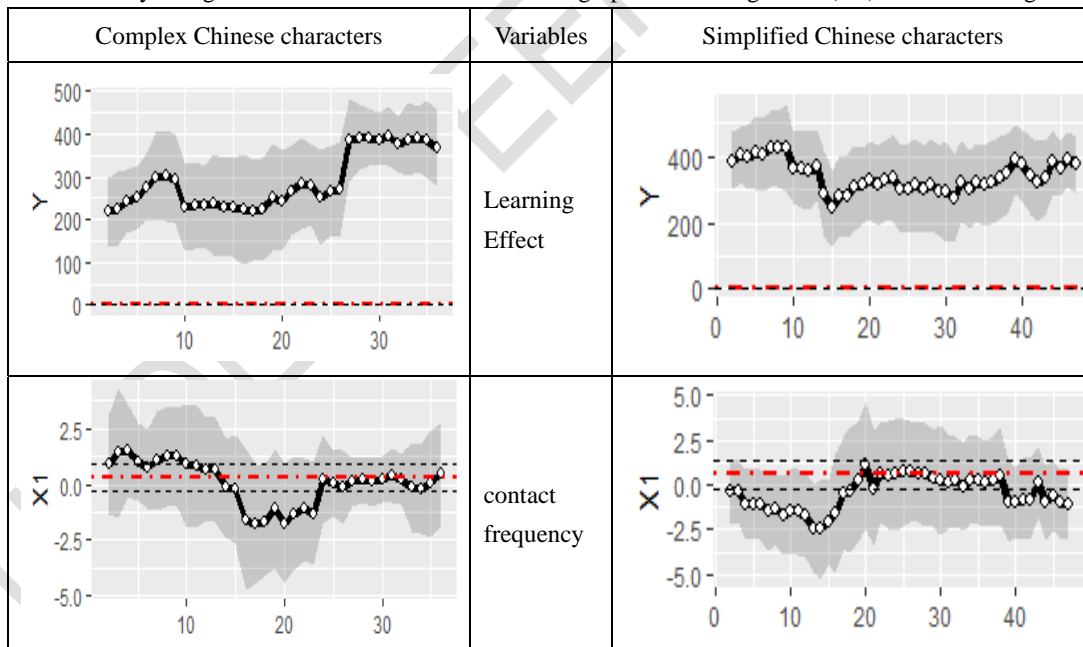
As can be seen from Table 2, in the simplified Chinese context, between the first and second aliquots, the level of salience,

foundation, and self-efficacy has reached 99%, so there is already a foundation. There is a very significant difference in the degree of love and self-efficacy. The significance level of value judgment is 90%, which is significantly different. Between the second and third divisions, the level of significance, the degree of affection and the value judgment are both 99%, with very significant differences. The significance level of contact frequency is 95%, which is also significant. of. Between the first and third aliquots, the significance level of value judgment and self-efficacy is 99%, with very significant differences, and the significance level of exposure frequency is 95%, which is also a significant difference.

Table 2. Regression coefficient difference F-test of simplified Chinese characters

Variables of simplified Chinese characters	t1---t2		t2---t3		t1---t3	
	F-value	Sig.	F-value	Sig.	F-value	Sig.
constant	0.4737	-	1.8192	-	0.8618	-
contact frequency	0.6406	-	9.2622	**	5.9335	**
existing foundation	0.0174	***	20.5616	***	0.3583	-
favorite degree	0.0435	***	29.5984	***	1.2864	-
cognitive demand	0.7174	-	1.4076	-	1.0099	-
value judgment	4.4311	*	12.5513	***	55.6161	***
self-efficacy	0.0233	***	3.6666	-	0.0854	***

Analysis of the analytic regression line and confidence interval graph for learning effect (Y1) is shown in Figure 1.

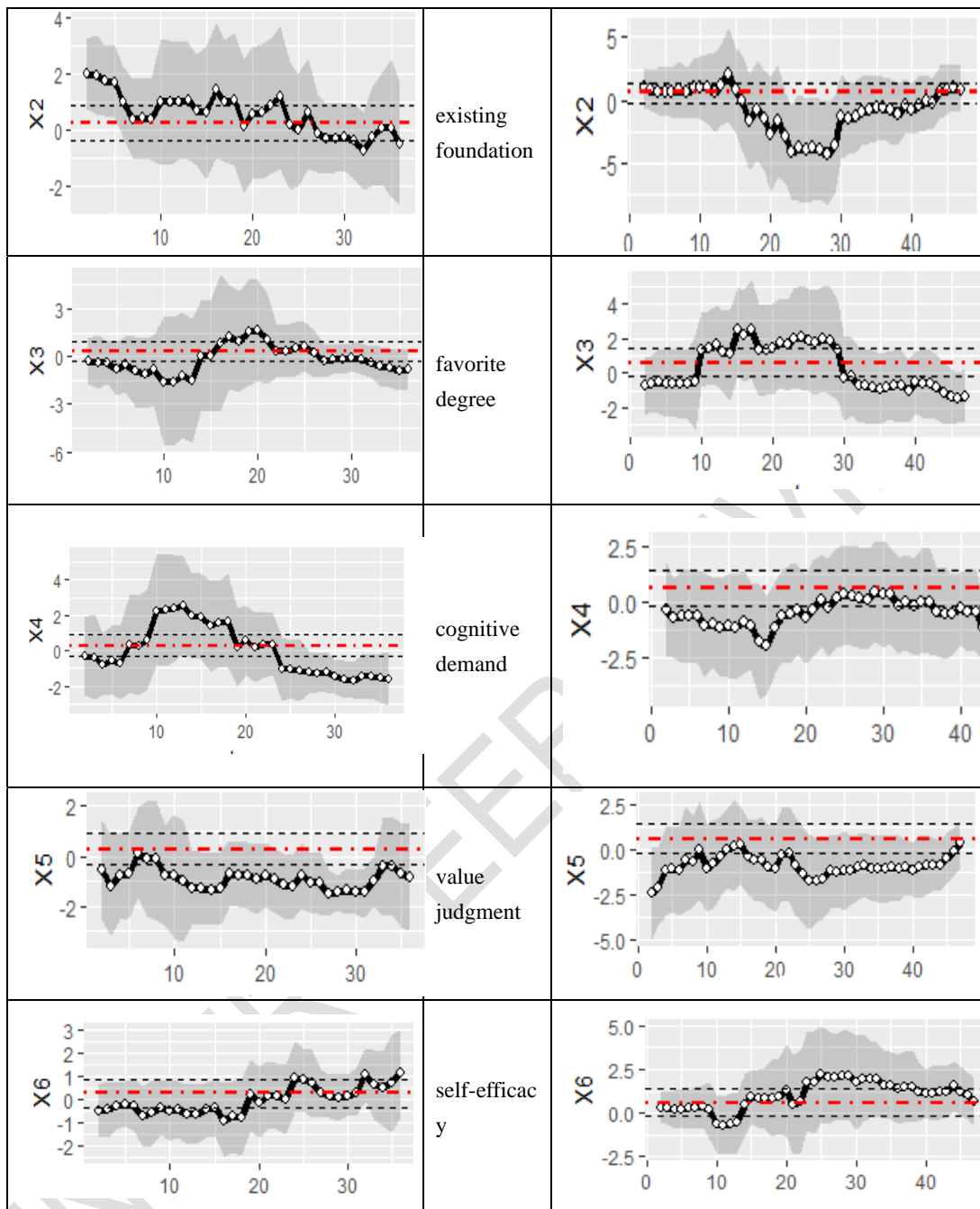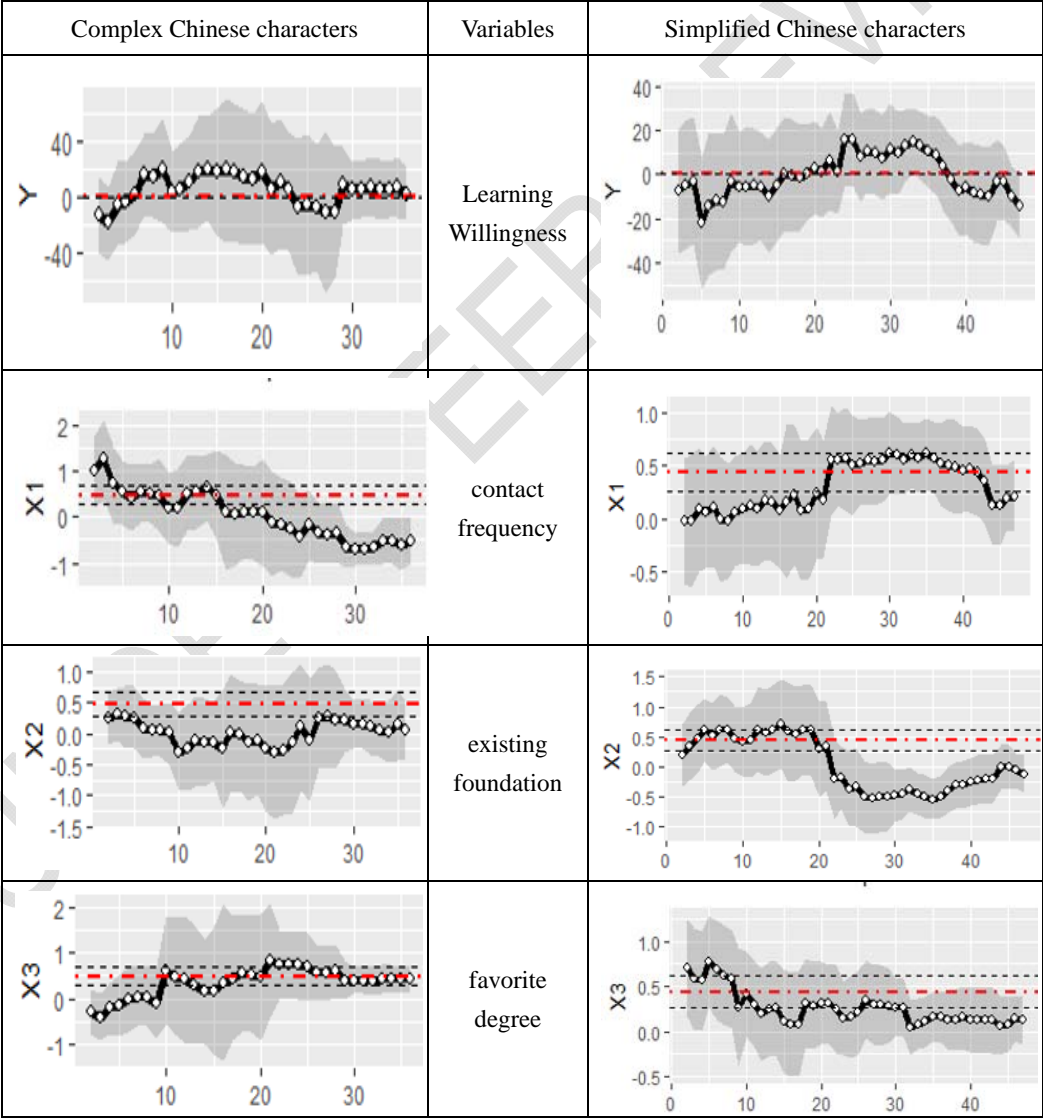| Complex Chinese characters	Variables	Simplified Chinese characters
	Learning Effect	
	contact frequency	

Figure 1. Learning effect (Y1) aliquoting regression line and confidence interval map

In Figure 1, it can be seen that if the standard linear regression is used for estimation, the contact frequency will be significantly overestimated in the traditional Chinese characters in the traditional Chinese characters, and will be overestimated in the lower functional parts in the simplified Chinese characters, indicating that the contact frequency is The learning effects of Simplified and Traditional Chinese characters have a certain influence, but they are overestimated than the actual impact; the existing base is underestimated in the traditional Chinese characters, and the intermediate points in the simplified Chinese characters are overestimated. There is a big influence on the learning effect of traditional Chinese characters, but the impact on simplified Chinese characters is small. The reason may be that everyone has the same level of mastery of the commonly used simplified characters, but the traditional Chinese characters that we have never learned, because of human beings Difference, the degree of mastery may be significantly different; the degree of affection will be

overestimated in the lower part of the traditional Chinese character, while the middle score will be underestimated, while in the simplified Chinese, the middle score will be underestimated, in the higher score The situation is overestimated; the cognitive demand is obviously underestimated in the middle of the traditional Chinese characters, and is significantly overestimated in the higher scores; the self-efficacy is overestimated in the lower part of the traditional Chinese characters, and Simplified Chinese characters will be underestimated in the middle and high grades, indicating that self-efficacy has little effect on the effect of traditional Chinese characters, and it has a greater impact on the learning effect of simplified Chinese characters. The reason may be that compared with traditional Chinese characters, people's traditional Chinese characters More understanding and control, so I am more confident in learning and able to learn and solve the difficulties encountered during the study; value judgment is overestimated in the lower, middle or higher points in simplified and traditional Chinese characters. In this case, therefore, this factor is not the main factor affecting the learning effect of traditional Chinese characters and simplified Chinese characters. The cognitive needs are overestimated in each of the simplified Chinese characters. Therefore, this factor is not the main factor affecting the learning effect of simplified Chinese characters.

(2) Analysis of anatomical regression line and confidence interval graph of learning intention (Y2) is shown in Figure 2
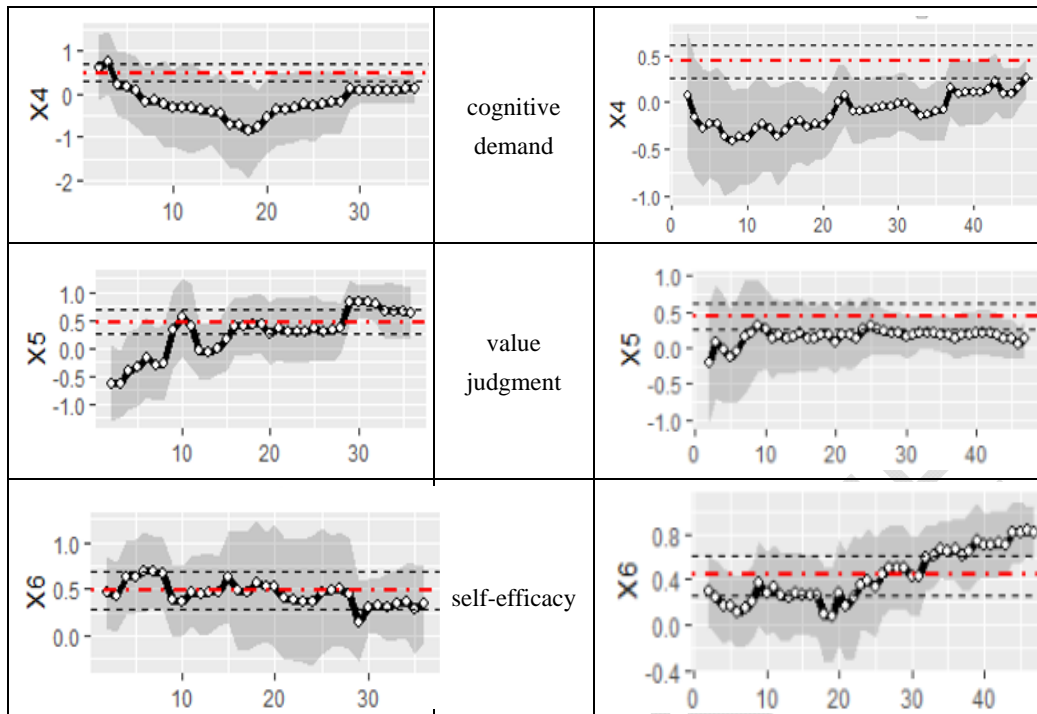
Complex Chinese characters	Variables	Simplified Chinese characters
	Learning Willingness	
	contact frequency	
	existing foundation	
	favorite degree	

Figure 2. Learning willingness (Y2) aliquoting regression line and confidence interval map

From Figure 2, it can be seen that if the standard linear regression is used for estimation, the contact frequency will be significantly overestimated at the traditional Chinese character high score, while the low score of the simplified Chinese character is significantly overestimated. It shows that the influence of contact frequency on the traditional willingness to learn is not so large, but for Simplified, the frequency of contact affects the willingness to learn. The existing foundation is overestimated in the simplified high-level division, and there is also an overestimation phenomenon in the traditional Chinese, indicating that the existing foundation has little influence on the willingness to learn from Simplified and Traditional Chinese. The degree of affection is in the lower part of the traditional Chinese character, and the Simplified and Highly graded points are overestimated, indicating that the degree of affection has little effect on the willingness to learn from Simplified and Traditional Chinese. Cognitive needs are significantly overestimated in the middle and high scores of traditional Chinese characters, indicating that cognitive needs have little effect on traditional learning willingness, while cognitive needs are in simplified Chinese characters, whether in low, medium or high. Overestimation, therefore, this factor is not the main factor affecting the willingness to learn Simplified Chinese characters. Value judgments are overestimated in each of the simplifications, so this factor is not the main factor affecting the learning effect of simplified characters. Self-efficacy is underestimated in a simplified high score, indicating that self-efficacy has a greater impact on Simplified learning willingness.

5 Conclusions

The level of willingness to learn: the frequency of contact, cognitive needs and affection are the main influencing factors of Simplified and Traditional Chinese learning willingness. The contact frequency is as we have imagined, because the contact is more simplified, so the degree of influence on the simplified learning will is significantly higher than the traditional. The degree of affection has little effect on the willingness to learn from Simplified and Traditional Chinese. For cognitive needs, it has a certain influence on the willingness to learn traditional Chinese characters, but there is almost no Simplified Chinese characters. Therefore, most people want to learn traditional Chinese characters more because they need To understand, use, and not to like the traditional Chinese characters. Simplified Chinese characters are used for our daily use, so the degree of likeness and cognitive needs are minimal.

Learning effect level: It can be found that the contact frequency has a certain influence on the learning effect of simplified

and traditional characters. The existing foundation has a significant influence on the learning effect ratio of traditional characters, but has less influence on simplified characters. As for the degree of affection, relative to traditional characters in terms of the learning effect of simplified characters, it has a greater impact. Cognitive needs are just the opposite, which have a certain impact on the learning effect of traditional Chinese characters, but have little effect on the learning effect of simplified Chinese characters. Self-efficacy significantly affects the learning effect of simplified Chinese characters, but has little effect on the learning effect of traditional Chinese characters, but the value judgment is not an important factor affecting the learning effect of Simplified and Traditional Chinese characters.

The distinction takes into account the factors that influence the learning and willingness of different fonts (simplified and traditional). In the case of the general use of simplified characters, if you want to try to use traditional Chinese characters for teaching, you can improve your willingness to learn and the learning effect by improving your cognitive needs. You can also improve your learning by improving your knowledge of traditional Chinese characters effect

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