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# Exploring Models for the Overseas Promotion of Chinese Residential Architecture: Diversified Approaches Based on Chinese Language Education as a Link

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**Abstract** Chinese traditional culture is profound and profound, and there are a large number of architectural and cultural words, which, as a part of Chinese cultural vocabulary teaching, are more important bridges for cultural communication and cultural exchange. The study adopts multiple regression to establish a baseline model, Pearson correlation analysis to test the correlation between Chinese residential architecture, Chinese language education and foreign cultural communication, and finally structural equation modeling analysis to test the mediating role played by Chinese language education. The results show that Chinese residential building culture and the effect of foreign communication show a negative correlation with a coefficient of -0.005, the better the Chinese residential building culture, the better the effect of Chinese language education in foreign communication, and the level of foreign investment and the effect of foreign communication have a significant effect at the 1% level. After analyzing the mediating effect, it is found that Chinese language education plays a partly mediating role between architectural vocabulary, architectural patterns, architectural styles and foreign culture dissemination, and its value in foreign culture dissemination is excavated and dissemination strategies are proposed.

**Index Terms** multiple regression model, Pearson, Chinese residential architecture, Chinese language education, communication strategy

## I. Introduction

With the rise of China and the improvement of its international status, more and more people begin to learn Chinese [1], [2]. As a special language and cultural system, Chinese language education needs to be combined with Chinese culture and become an important mode of foreign cultural communication in the new era [3]-[5]. Chinese residential architecture is one of the unique cultural symbols of China, which not only reflects the level of Chinese architectural art, but also embodies the aesthetic concepts, values and humanistic spirit of the Chinese people, which can be properly integrated into Chinese language education for foreigners to make Chinese language education more attractive and sustainable [6]-[9].

The art of Chinese residential architecture is one of the representatives of Chinese culture, which is an important reflection of the aesthetic characteristics and cultural knowledge of the Chinese people [10], [11]. In Chinese language education, residential architecture can be used to demonstrate the excellent culture of China, which helps students to understand the history, culture and art fields of China [12], [13]. Students can learn the aesthetic concepts and expressions of Chinese folk art through appreciating and appreciating residential architecture [14], [15]. At the same time, Chinese residential architecture culture is not only a form of expression, but also an important carrier of Chinese culture [16], [17]. In Chinese language education, architecture can be used as a tool to promote Chinese culture [18]. Students can learn all aspects of Chinese culture through residential architecture, including Chinese history, art, customs and habits, etc. Through such learning, students can not only learn Chinese language, but also further understand Chinese culture, so as to better carry out cross-cultural communication [19]-[22].

In this paper, a multiple regression model is used to establish a baseline model from the three dimensions of Chinese residential buildings, foreign cultural communication and Chinese language education. Descriptive, correlation, and regression analyses of the effects of Chinese residential architecture on foreign cultural communication and the effects of each dimension on foreign communication were conducted using SPSS software and Pearson correlation analysis. Structural equation modeling was used to explore the mediating role of Chinese language education between architectural vocabulary, architectural patterns, architectural styles and foreign cultural communication. Finally, based on the results of the study, relevant strategies are proposed to enhance the foreign cultural communication of Chinese residential architecture.

## II. Research and design on the mode of cultural dissemination of Chinese residential architecture to the outside world

### II. A. Multiple regression models

Regression analysis refers to a statistical analysis method in which variables with correlation relationships are used to describe the interrelationships between variables by choosing an appropriate regression analysis procedure according to the manifestation of their relationships [23]. Regression analysis can be divided into univariate regression analysis and multiple regression analysis according to the number of independent variables involved; it can also be divided into linear regression analysis and nonlinear regression analysis according to the correlation between independent variables and dependent variables.

(1) General regression model According to the theory of regression analysis, if there is a correlation between independent variable  $x_1, x_2, \dots, x_m$  and dependent variable  $y$ , it is possible to model the relationship between dependent variable  $y$  and independent variable  $x_1, x_2, \dots, x_m$  as:

$$y = f(x_1, x_2, \dots, x_m) + \varepsilon \quad (1)$$

In Eq. (1),  $\varepsilon$  -random error.

(2) Multiple linear regression analysis

① Univariate linear regression model

Linear regression model is a model in which the relationship between variables is linear, when the function expression is:

$$y = \beta_0 + \beta_1 x_1 + \dots + \beta_m x_m + \varepsilon \quad (2)$$

From equation (2), when  $m$  is 1, the model is a univariate linear regression model; when  $m$  is greater than or equal to 2, the model is a multiple linear regression model.

For practical problems, such as obtaining  $n$  sets of observations  $(x_{i1}, x_{i2}, \dots, x_{im}; y_i), i = 1, 2, \dots, n$ .

At this point, the linear regression model is:

$$\begin{cases} y_1 = \beta_0 + \beta_1 x_{11} + \dots + \beta_m x_{1m} + \varepsilon_1 \\ y_2 = \beta_0 + \beta_1 x_{21} + \dots + \beta_m x_{2m} + \varepsilon_2 \\ \dots \\ y_n = \beta_0 + \beta_1 x_{n1} + \dots + \beta_m x_{nm} + \varepsilon_n \end{cases} \quad (3)$$

Matrix form:

$$Y = X\beta + \varepsilon \quad (4)$$

In equation (4),  $Y = \begin{bmatrix} y_1 \\ y_2 \\ \dots \\ y_n \end{bmatrix}$ ;  $X = \begin{bmatrix} 1 & x_{11} & \dots & x_{n1} \\ 1 & x_{21} & \dots & x_{n2} \\ \dots & \dots & \dots & \dots \\ 1 & x_{2m} & \dots & x_{nm} \end{bmatrix}$ ;  $\beta = \begin{bmatrix} \beta_0 \\ \beta_1 \\ \dots \\ \beta_n \end{bmatrix}$ ;  $\varepsilon = \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \dots \\ \varepsilon_n \end{bmatrix}$ .

Assume that the multiple linear empirical regression equation for  $y$  about  $x_1, x_2, \dots, x_m$  is:

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \dots + \hat{\beta}_m x_m \quad (5)$$

In Eq. (5),  $\hat{y}, \hat{\beta}_0, \hat{\beta}_1, \dots, \hat{\beta}_m$  is the estimated value of  $y, \beta_0, \beta_1, \dots, \beta_m$ .

② Test of significance of multiple linear regression model (partial  $F$  test)

The significance test for linear regression is the partial  $F$  test. The test of significance of multiple linear regression model, only need to test the  $m$  regression coefficients  $\beta_1, \beta_2, \dots, \beta_m$  are not all 0. If all 0, then the linear regression is not considered significant, and vice versa. Assumptions are made on the model of equation (5):

Assumption  $H_{01}: \beta_1 = 0, \beta_2 = 0, \dots, \beta_m = 0$ .

According to the multiple linear empirical regression equation, substituting the independent variables into the measurements  $x_1, x_2, \dots, x_m$  can be obtained:

$$\hat{y}_i = \hat{\beta}_0 + \hat{\beta}_1 x_i + \dots + \hat{\beta}_m x_m \quad i = 1, 2, \dots, n \quad (6)$$

Calculate the total deviation regression and get:

$$Q_T = \sum_{i=1}^n (y_i - \bar{y})^2 = \sum_{i=1}^n (y_i - \hat{y}_i)^2 + \sum_{i=1}^n (\hat{y}_i - \bar{y})^2 \quad (7)$$

in Eq. (7),  $\bar{y}$  - the average value of the test of Y,  $\bar{y} = \frac{1}{n} \sum_{i=1}^n y_i$ .

At this point, the residual sum of squares is recorded as:

$$Q_{\text{Remain}} = \sum_{i=1}^n (y_i - \hat{y}_i)^2 \quad (8)$$

It is mainly an error caused by the test and  $\frac{1}{\sigma^2} Q_{\text{Remain}} \sim \chi^2(n-m-1)$ .

The regression sum of squares is denoted as:

$$Q_{\text{Return}} = \sum_{i=1}^n (\hat{y}_i - \bar{y})^2 \quad (9)$$

It is mainly the error caused by linear regression and  $\frac{1}{\sigma^2} Q_{\text{Return}} \sim \chi^2(m)$ .

It can be seen from equations (7) to (9):

$$Q_r = Q_{\text{Remain}} + Q_{\text{Return}} \quad (10)$$

The construction of a  $F$ -distribution function obeying degree of freedom  $(m, n-m-1)$  according to the definition of  $F$ -distribution:

$$F = \frac{Q_{\text{Return}} / m}{Q_{\text{Remain}} / (n-m-1)} \quad (11)$$

Given the level of significance  $\alpha$ , the value of  $F$  is calculated by sampling and if  $F \geq F_{\alpha}(m, n-m-1)$ , the original hypothesis  $H_{01}$  is rejected and the linear regression is considered significant; otherwise, the original hypothesis is accepted and the linear regression is considered insignificant.

### ③ Significance test of regression coefficients ( $t$ test)

Significant linear regression does not prove that each independent variable contributes to the change in the dependent variable  $y$ . When linear regression is significant, each independent variable must be used separately. To test the significance of the regression coefficients, i.e., in order to test the significance of the independent variables corresponding to  $y$ , we only need to test whether the regression coefficients are equal to zero.

For a given regression coefficient  $\beta_j (1 \leq j \leq m)$ , when  $\beta_j = 0$ , the regression coefficient is insignificant, i.e.,  $x_j$  has no significant effect on  $y$ ; otherwise it is significant.

Assumption  $H_{02}: \beta_j = 0$ .

According to the theory,  $\hat{\beta}_j \sim N(\beta_j, c_j \sigma^2)$ , where  $c_j$  is the  $j$ th element on the main diagonal of the matrix  $C = A^{-1} = (X^T X)^{-1}$ .

According to the definition of  $t$  distribution, the  $T$  distribution function obeying  $n-m-1$  degrees of freedom is constructed

$$T = \frac{\hat{\beta}_j}{\sqrt{c_{jj}} \sqrt{\frac{Q_{\text{Remain}}}{n-m-1}}} \quad (12)$$

Given the level of significance  $\alpha$ , sample the values of  $T$ . If  $|T| \geq t_{\alpha}(n-m-1)$ , reject the original hypothesis  $H_{02}$  and consider the effect of  $x_j$  on  $y$  as significant; otherwise, accept the original hypothesis  $H_{02}$  and there is no significant effect of  $x_j$  on  $y$ .

## II. B. Benchmark modeling

### (1) Benchmark regression models

$$\begin{aligned}
 Inunify_{it} = & a_0 + a_1 * Socwel_{it} + a_2 * Proind_{it} \\
 & + a_3 * \ln Sch_{it} + a_4 * Fisde_{it} + a_5 * \ln FDI_{it} + \varepsilon
 \end{aligned}
 \tag{13}$$

Where  $Inunify_{it}$  is Chinese residential building culture,  $Socwel_{it}$  is foreign culture dissemination,  $i$  represents individual samples, and  $t$  represents time.  $a_0 - a_5$  denotes the value of regression coefficient of each indicator,  $Proind_{it}$  is the industrial structure of provinces,  $\ln Sch_{it}$  is the level of human capital,  $Fisde_{it}$  is the degree of fiscal decentralization, and  $\ln FDI_{it}$  is the level of foreign investment. In addition,  $\varepsilon$  denotes the random perturbation term of the model.

(2) Mediation effect test model

$$\begin{aligned}
 Flow = & a_0 + a_1 * Socwel_{it} + a_2 * Proind_{it} \\
 & + a_3 * \ln Sch_{it} + a_4 * Fisde_{it} + a_5 * \ln FDI_{it} + \varepsilon
 \end{aligned}
 \tag{14}$$

$$\begin{aligned}
 Inunify_{it} = & a_0 + a_1 * Socwel_{it} + a_2 * Flow + a_3 * Proind_{it} \\
 & + a_4 * \ln Sch_{it} + a_5 * Fisde_{it} + a_6 * \ln FDI_{it} + \varepsilon
 \end{aligned}
 \tag{15}$$

Equations (14)-(15) model the mediation effect test.

## II. C. Variable Settings and Data Descriptions

(1) Core Explanatory Variables

The core explanatory variable of this paper is foreign cultural communication (SC), which is here proxied by  $Socwel_{it}$  in equation (13), derived from the measurements in the previous chapter.

(2) Explained Variables

The explanatory variable of this paper is Chinese residential architecture culture (IN), and in order to avoid the impact on the regression results due to the large value, the logarithmic approach is adopted to narrow the deviation of the regression results. Here, Equation (13)  $\ln unify_{it}$  is used as a substitute.

(3) Control variables

In order to solve the problem of endogeneity caused by omitted variables as much as possible, other factors potentially affecting the level of provincial labor market unification are selected here for control, for which the control variables provincial industrial structure (PI), human capital level (IS), degree of fiscal decentralization (FS) foreign investment level (IF) are selected.

(4) Mediating variables: Chinese language education (FL).

## II. D. Research Scale

The sample used for econometric analysis in this study is for the period of 2015-2024, with 310 observations, in which the feature quantity includes three parts: residential architecture, foreign cultural communication, and Chinese language education, and the general feature quantity includes architectural vocabulary, architectural motifs, architectural style, communication content, communication audience, communication media, education mode, education method, and education pathway, totaling nine behavioral features and evaluated. The Likert 7-point scale was used, with a total score of 25-175 points, and the higher the score, the higher the intensity of the feature representation, and the coefficient of the scale  $Cronbach's \alpha$  was 0.758.

## III. Empirical analysis of China's residential building foreign cultural communication mode

### III. A. Descriptive analysis

In order to illustrate some Kissbourne characteristics of the relevant variables, the data of the selected samples are grasped as a whole and analyzed for regularity. In this paper, the first descriptive analysis of each correlation variable was carried out. The data were entered into SPSS9.0 software to analyze the data descriptively, and the results of the analysis are shown in Table 1.

As can be seen from the table, all variables show large differences in terms of values. The level of foreign investment (IF) has a maximum value of 154.73 and a minimum value of 34.51; indicating that the level of foreign investment in Chinese residential architecture for foreign cultural communication is not a uniform level. The level of foreign cultural communication (SC) has a maximum value of 96.42 and a minimum value of 22.54, indicating that the level of foreign cultural communication of Chinese residential buildings is quite different. In terms of Chinese residential architecture culture (IN), the maximum value 52.17, the minimum value 2.14, indicating that the culture of Chinese residential architecture culture larger differences in the cultural environment. The provincial industrial structure (PI) has a maximum value of 0.27 and a minimum value of 0.001, showing that the level of development

between provincial industries on Chinese residential architecture is not balanced. In addition, the human capital level (IS) has a maximum value of 0.31 and a minimum value of 0.031, the fiscal decentralization (FS) has a maximum value of 6.83 and a minimum value of 0.26, and the Chinese language education (FL) has a maximum value of 154.73 and a minimum value of 34.51. All these variables show that the distribution of these variables is widely dispersed. Before regression analysis, this paper also needs to conduct correlation test for each variable.

Table 1: The statistical analysis results of each variable are described

Variable	Minima	Maxima	Mean	Standard deviation
SC	22.54	96.42	58.8431	21.51293
IN	2.14	52.17	24.1503	14.5783
PI	0.001	0.27	0.1425	0.05483
IS	0.01	0.31	0.1442	0.08124
FS	0.26	6.83	3.7842	1.72836
IF	0.93	21.14	8.2156	4.0531
FL	34.51	154.73	99.1755	35.3844

### III. B. Correlation analysis

Correlation analysis is the premise of regression analysis, and regression analysis is meaningful only when there is a high degree of correlation between variables. In order to understand whether there is correlation between the selected variables, this paper utilizes SPSS9.0 and adopts Person's correlation coefficient [24] analysis method to do correlation analysis on the comprehensive index of psychological distance, as well as the relationship between the various indexes of psychological distance and the effect of external communication, and the results are shown in Table 2.

From the correlation coefficient matrix of each variable, we can see that, firstly, the correlation coefficient between Chinese residential construction culture (SC) and foreign cultural communication (SC) tends to be 1, i.e. it is 0.931. This indicates that there is a strong correlation between Chinese residential construction culture and foreign cultural communication. Second, the correlation coefficient values of each of the other explanatory variables are small. Third, the level of human capital (IS) and Chinese language education (FL) are significantly correlated, with a correlation coefficient of -0.334. Fourth, there are also some correlations between the provincial industrial structure (PI), the level of human capital (IS), the degree of fiscal decentralization (FS), the level of foreign investment (IF) and the spread of culture to the outside world (SC), which initially suggests that there is a strong correlation between the industrial structure of Chinese provinces (PI), the level of human capital (IS), the degree of fiscal decentralization (FS) and the spread of culture to the outside world (SC). ), the level of fiscal decentralization (FS), the level of foreign investment (IF) and the effect of foreign dissemination have some influence. Through the correlation analysis, it is not yet possible to know the degree of influence between the variables, so it is necessary to use regression analysis to further illustrate.

Table 2: The analysis results of the correlation coefficient matrix among the variables

		SC	IN	PI	IS	FS	IF	FL
IN	Pearson correlation	1						
PI	Pearson correlation	0.657**	1					
IS	Pearson correlation	0.429**	0.337*	1				
FS	Pearson correlation	0.225	-0.041	0.432**	1			
IF	Pearson correlation	0.167	-0.152	-0.138	0.326*	1		
FL	Pearson correlation	0.361*	0.334*	0.155	-0.334*	0.254	1	
SC	Pearson correlation	0.931**	0.856**	0.427**	0.162	0.108	0.482**	1

### III. C. Multiple regression analysis

The paper first analyzes the degree of fit of the model, and then, conducts a significance test of the model, after which the regression coefficients of the model are analyzed to determine whether the independent variable is significantly affected by the dependent variable. The first regression analysis of this paper is the regression analysis of the psychological distance composite index and the effect of external communication, and the results are obtained as shown in Table 3.

Table 3 presents the results of the regression analysis between the independent variable, Chinese residential architecture culture, and the dependent variable, the composite index of external communication effect and. Before

the regression analysis, a goodness-of-fit test was conducted for this model and concluded that the R-value was 0.629 and the  $R^2$ -value was 0.401, which indicated that the fit was moderate in this regression model. In the table, the significant values of the independent variable Chinese residential architecture culture (IN) and the control variable foreign investment level (IF) are 0.005 and 0.000, respectively, indicating that both of them are significantly correlated with the effect of foreign communication at the 9% level. Meanwhile, Chinese residential building culture shows a negative correlation with the effect of foreign communication, with a coefficient of -0.005. This suggests that the better the Chinese residential building culture is, the better the effect of Chinese language education on the effect of foreign communication. In addition, the control variable foreign investment level has a significant effect with the effect of foreign communication at the 1% level, with a coefficient of 0.011, which indicates that there is a positive correlation effect between foreign investment level and the effect of foreign communication.

Table 3: Regression analysis results of Chinese residential construction and foreign communication effect

Model	Coefficient	Std.Error	t-statistic	Prob.
Constants	0.573	0.291	1.943	0.056
IN	-0.005***	0.002	-2.836	0.005
IF	0.011***	0.004	4.275	0.000

Note: \*\*\*, \*\*, \* sub-tables indicate significance at the 1%, 5%, 10% level.

#### IV. Examining the mediating effect of diversifying pathways in Chinese language education

##### IV. A. The Direct Effect of Chinese Residential Architecture on Foreign Cultural Communication

The mediating effect of Chinese language education was examined using constructed structural equation modeling. First, the direct effect was tested, then this study used the maximum likelihood method to estimate the model, and the bias-corrected nonparametric percentile Bootstrap method was used to sample 1,500 times and calculate the 95% confidence intervals, and the final mediation model data were obtained as shown in Figure 1.

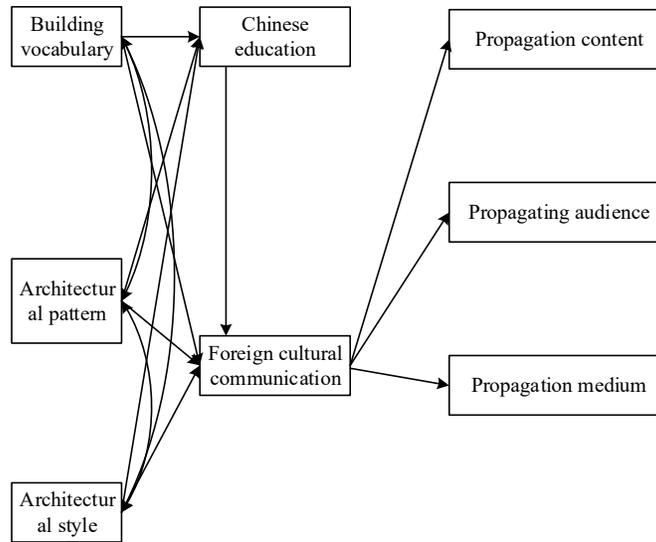


Figure 1: Structural equation model

Firstly, the direct effect path of architectural vocabulary on foreign cultural communication is constructed as shown in Table 4, from which it can be seen that architectural vocabulary shows a significant direct positive effect on foreign cultural communication at the confidence level of 0.001, with a standardized coefficient value of 0.41, which proves that China's residential architectural vocabulary has a direct and positive effect on the enhancement of foreign cultural communication. Secondly, the path model of the direct effect of architectural motifs on foreign cultural communication is constructed. From the results of the path analysis, the standardized path coefficient of architectural motifs on foreign cultural communication reaches 0.33, and the p-value is less than 0.001, which indicates that architectural motifs have a significant positive effect on foreign cultural communication at the confidence level of 0.001. This result confirms the positive effect of architectural patterns on foreign cultural

communication. Finally, constructing the direct effect path of architectural style on foreign cultural communication, peer support shows a significant direct positive effect on foreign cultural communication at the 0.001 confidence level, with a standardized coefficient value of 0.31, which proves that architectural style has a direct and positive effect on enhancing foreign cultural communication.

Table 4: Direct effect test

Path	Estimate	S.E.	C.R.	P
Building vocabulary→Foreign cultural communication	0.41	0.062	5.753	0.000
Architectural pattern→Foreign cultural communication	0.33	0.038	5.153	0.000
Architectural style→Foreign cultural communication	0.31	0.032	4.83	0.000

#### IV. B. Mediating Effects of Diversified Approaches to Chinese Language Education

In this study, we used AMOS 24.0 to construct a structural equation model to explore the role of Chinese language education in the influence mechanism of foreign cultural communication, and five commonly used evaluation indicators, namely,  $X^2/df$ , RMSEA, GFI, CFI and TLI, were used to assess the fit of the whole model as shown in Table 5. As can be seen from the table, all the indicators fitted by the model have reached good, which is suitable for the next step of mediating role test analysis.

Table 5: Model suitability test

Index	Reference standard	Measured result
$X^2/df$	1-3excellent,3-5good	1.322
RMSEA	<0.05 is excellent, <0.08 is good	0.023
GFI	>0.9 is excellent,>0.8 is good	0.901
CFI	>0.9 is excellent,>0.8 is good	0.965
TLI	>0.9 is excellent,>0.8 is good	0.974

Chinese language education was added as a mediating variable in the model, and the standardized paths as well as the mediating effect codes were written using the Define new estimands function as shown in Table 6, and the mediating effect showed that: the upper and lower limits of the Bias-corrected95%CI test for each mediating path did not include 0, i.e., the three mediating paths of architectural vocabulary→Chinese language education→foreign cultural transmission, architectural pattern→Chinese language education→foreign cultural communication, architectural pattern→Chinese education→foreign cultural communication, and architectural style→Chinese education→foreign cultural communication are all significant. And after adding the mediating variable Chinese education, the direct effect of architectural vocabulary on foreign cultural communication decreased by 0.09; the direct effect of architectural pattern on Chinese education decreased by 0.07; and the direct effect of architectural style on Chinese education decreased by 0.08.

Specifically, first, Chinese language education had a significant partial mediating effect between architectural vocabulary and foreign cultural transmission ( $\beta = 0.061$ , 95% CI: 0.032-0.103,  $p < 0.05$ ); that is to say, from architectural vocabulary, Chinese language education and cultural transmission can be facilitated, in which Chinese language education plays a mediating role. Second, Chinese language education has a significant partial mediating effect in architectural patterns and foreign cultural transmission ( $\beta = 0.045$ , 95% CI: 0.025-0.071,  $p < 0.05$ ). Finally, Chinese language education had a significant partial mediating effect between architectural patterns and foreign cultural transmission ( $\beta = 0.049$ , 95% CI: 0.027-0.081,  $p < 0.05$ ).

Table 6: Mediation effect test

	Bias-corrected 95%CI			Intermediary ratio
	Effect size	Lower	Upper	
Architecture vocabulary → Chinese education → foreign cultural communication	0.061	0.032	0.103	21%
Architectural pattern→Chinese education→ foreign cultural communication	0.045	0.025	0.071	21.3%
Architecture style→Chinese education → foreign culture	0.049	0.027	0.081	27.1%

#### IV. C. Foreign Cultural Communication Strategies for Chinese Residential Architecture

(1) Strengthening the spatial narrative of architecture

Narrative structures are generally applied to scenes in literature, theater, film, and fine arts. However, Chinese residential architecture as a kind of cultural expression on the material level, its typical narrative features can draw on similar literary ideas in practical application to better serve cultural communication. Narrative of architectural space is to express the historical memory and spirit of place carried by space through certain semantic order through certain narrative medium and with the help of spatial elements and carriers of architecture, so as to effectively construct the social and cultural significance of space. The concept of spatial narrative in the view of architecture as a carrier not only considers the narrative within the architectural space, but also builds the harmony and unity between the architecture itself and the external environment. In the context of the building group, it is more important to consider the publicity theme, environment, regional culture and other parts of the building construction links, so that the building is better integrated into the overall environment, showing the unique characteristics of the culture.

### (2) Multi-dimensional communication

With the development of science and technology, modern network communication means are becoming more and more abundant, and cultural communication is also facing new challenges and opportunities in the era of "Internet+". Actively exploring the image of Chinese residential architecture and other forms of combination, using online and offline fusion of publicity mode. Online publicity can be broadened through the production of movies, TV dramas, animated popularization of science and a series of short films with Chinese residential architecture as the background. Offline publicity can be done by combining the image of Chinese residential architecture with cultural and creative products, and increasing contact with traditional architectural culture through the production of postcards, wall paintings, calendars, seals and related books. Propagating traditional culture in a form that is pleasing to modern young people, it continues to integrate with modern civilization and keep up with the times.

### (3) Improve public participation

The public plays an important role in the development of China's residential construction, and is an indispensable force in the process of cultural dissemination, and good public participation can make all aspects of the decision-making operation mechanism give full play to its due function. To play the role of the public in communication, on the one hand, it is necessary to uphold the principle of openness and transparency, establish a monitoring platform for the protection of residential building development and construction, improve the transparency and socialization of information, and safeguard the public's right to know about residential building construction. On the other hand, it is necessary to broaden the channels of public participation and communication, to include the public in the main body of the construction of cultural communication, and to put forward the needs and programs by the public according to their own experience, so that the government can grasp the reality of the needs of different residents, and to take the will of the public as an important reference for the construction and development of the building, so as to achieve the goal of "people-oriented" and "from the people, from the people, from the people". "From the masses, to the masses".

## V. Conclusion

The study adopts multiple regression analysis to establish a correlation model between Chinese residential architecture and foreign cultural communication and characteristic indicators, and then carries out correlation analysis as well as regression analysis, so as to derive the relationship between Chinese residential architecture and foreign cultural communication, and explore the mediating effect of Chinese language education in foreign cultural communication through structural equation modeling. The results of the study show that Chinese residential architecture culture and foreign communication effect show a negative correlation, which indicates that the better the Chinese residential architecture culture is, the better the Chinese language education effect in foreign communication effect is. Chinese language education has a significant partial mediating effect between architectural vocabulary and foreign cultural communication ( $\beta = 0.061$ , 95% CI: 0.032-0.103,  $p < 0.05$ ); Chinese language education has a significant partial mediating effect between architectural pattern and foreign cultural communication ( $\beta = 0.045$ , 95% CI: 0.025-0.071,  $p < 0.05$ ); Chinese language education had a significant partially mediated effect between architectural patterns and foreign cultural diffusion ( $\beta = 0.049$ , 95% CI: 0.027-0.081,  $p < 0.05$ ).

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