

---

## The attitudes to Traditional Chinese Medicine (TCM) of non-native Chinese residents: an empirical study based on residents from Europe, United Kingdom and the USA

SVITLANA KUTIA<sup>1</sup>

WANG YONG

Department of Marketing, School of Business  
Beijing Technology and Business University

JING ZHAO

Institute of Basic Research in Clinical Medicine, TCM Clinic  
China Academy of Chinese Medical Sciences

### Abstract

**Background:** *Most of previous studies have demonstrated increasing in the application of TCM in developed countries with lack of information about residents from Europe, United Kingdom and the USA, their attitude in using TCM in Beijing as a quality alternative to Western Medicine and willing in continuing using after returning to home countries. Our empirical study has an importance in globalization and internationalization the strategic governmental steps in promoting TCM overseas.*

**Objectives:** *to analyze how the experience of using TCM by the expats in Beijing will influence their attitude of using in home countries and willing to recommend to others.*

**Methods:** *the quantitative data were collected based on a questionnaire survey among 103 foreigners with an experience in using the TCM. The Serial Multiple Mediator Model 6 (SMMM6) was used to estimate direct and indirect effects of the pathways analysis: Path 1 "Experience-Continue Using" and Path 2 "Personal Contacts-Introducing".*

---

<sup>1</sup> Corresponding author: [svitlanakutia@gmail.com](mailto:svitlanakutia@gmail.com)

**Results:** *the willingness of continue using and introducing the TCM was because of country of residence and age. The own experience of respondents showed the most influence results. Significant role of mediators: (X1) on Continue Using of TCM (direct effect = 0,3893, total indirect effect = 0,3345) and (X7) on Introducing TCM (direct effect = 0,0014; total indirect = 0,4231).*

**Conclusions:** *current study has provided more advanced comprehension of the attitude to the TCM usage among expats and their willingness to introduce to others and can be as a background for the further research for internationalization the TCM and culture diversity.*

**Key words:** Traditional Chinese Medicine, empirical study, mediators, direct and indirect effects.

## INTRODUCTION

The history of Traditional Chinese medicine (TCM) has 5000 years, it has been the fruit of the Chinese people's intelligence in the struggles against diseases. (Lin et al., 2018; Arad, 2015) The concept of "internationalization of TCM" has been introduced in China in 1996: to achieve the sustainable development of TCMs through fostering international trade and expanding TCMs in the global pharmaceutical market; to facilitate the development of appropriate regulatory systems that allows reasonable market entry under the protection of the local laws and regulations. (Lin et al., 2018; Li C. et al., 2013; Bachok, 2016)

However, according to the China Customs statistics, the import and export value of TCM in 2016 experienced a negative growth for the first time in nearly 10 years despite a slight increment in 2015. (Zhang, 2011) While the export value of TCM in 2016 dropped by 9.13% compared to 2015 from 3.77 to 3.426 billion USD, the import value achieved a big reversal, increasing 14.50% from \$1.025 billion in 2015 to 1.174 billion

USD in 2016. TCM were exported to 185 countries and regions and its main markets still remained in Asia with the dominant target markets located in Hong Kong, Japan, Malaysia, South Korea and Indonesia. Next to Asia was the United States (exported 526 million USD worth of TCM in 2016). Later, The State Council announced in the 13<sup>th</sup> Five-Year Plan “ The Strategic Development Plan for Chinese Medicine (2016–2020)” with the aim to ensure all citizens covered with health care by 2020 and that Chinese Medicine will be an important element in achieving that goal and further supported with scientific research, education and cultural influences. (Li et al. 2018; Sohu Health, 2017)

In recent years China is welcomed more and more foreigners for economic growth, internationalization, globalization and developing.(Tang et al., 2018; Vincent, 2012) Residents of the most developed countries on European and American continents are coming to China, particularly to Beijing mainly because of their interest in education or business in the booming capital of China. Staying in Beijing for more than one year, they may face health problems and because of the lack of proper Western Medicine in pharmacies, they are using TCM (Wang et al., 2017; Sun, 2013). After the detailed literature review we didn't find any information related to the attitude of TCM of the expats from Europe, United Kingdom and the USA that had an experience in TCM treatment staying in China for more that one year. However, we found studies that described that despite challenges for entering the European, UK and the US markets, TCM has been used by an increasing number of people in Europe and has attracted intense research interests from European scientists (Candelise, 2011; Wang, 2016; Li Y. et al., 2013). However, in contrast to the reductionist approach of Western Medicine that is based on anatomy, physiology, pharmacology, cell and molecular biology, TCM is based on thousands of years of

recorded clinical experience, guided by Chinese philosophy, e.g. the Yin-Yang theory emphasising the balance of functional systems. TCM uses a theoretical system with a personalised and holistic approach to describe health and disease (Bachok, 2016; Uzuner, 2012). Today, aspects of TCM are becoming more integrated into healthcare practices in America as well. It combines ancient metaphysical concepts including yin yang, qi, and five phases with the modern practices such as herbal treatment and acupuncture.(Candelise, 2011; Zhang, 2007) But the Western Medicine is still dominating there (Tang, 2018; Dong, 2013; Wu, 2015)

According to the perspectives of TCM mentioned in the latest research publications, we were mostly interested in the following: “Strengthen the international communication on Chinese culture” and “Increasing the input into TCM research”. We are also taking into account the strength and opportunity that were described in the SWOT analysis study provided by the researchers in 2018: Strength (International demand for TCM); Opportunity: (Continuous improvement of attention to TCM by the international community; Opportunity for economic globalization; Chinese government policy support; Continuous recognition of the advantages of TCM). (Lin et al. 2018; Tang et al. 2018; Wu, 2013)

Taking into consideration mentioned above, our current research is focused on a non-native residents of China as a key target audience who can contribute in the internationalization of the TCM by continuing using and recommending it to others after returning to those home countries. We decided to analyze how several factors/variables can influence or otherwise inert the respondents attitude.

Our empirical study will be focused on testing the following Hypothesis:

1. There is an association between experience of using TCM and willingness to introduce to others and continue

to use it in home country among expats from Europe, United Kingdom and the USA who are staying in Beijing.

2. There is a significant difference in the attitude to the TCM between gender, age and country of residence.
3. The respondent's answers related to effectiveness and reliable alternative to Western Medicine will have a mediator effect in the pass between experience of using TCM and willingness to continue to use in home country.
4. The respondent's answers related to effectiveness and reliable alternative to Western Medicine will have a mediator effect in the pass between personal contacts and introducing TCM to friends, relatives and colleagues.

## METHODS

### Survey

The online questionnaire was created using two Applications (wj.qq.com and wjx.cn) and developed via the Chinese social network (WeChat) for gathering data from the permanent foreign residents of Beijing, China that came from Europe, the United Kingdom and the USA (Zhang, 2015; Yu, 2009). The main criteria were: 1) to be an expat from Europe, UK or the USA; 2) have an experience using the TCM in China; 3) stay in Beijing for more that 1 year; 4) be no less than 18 years old and no more than 60 years old.

Our sample size and preliminary survey were based on the following main criteria: (1) access to certain groups of TCM with non-natives of China and (2) access to groups of expats with residents from Europe, the United Kingdom and the USA who were in Beijing of the year. Due to time-consuming cost-benefit analysis, we worked with 103 quality samples. The lack

of enough sampling will be mentioned in limitations and future discussions.(Shuo, 2017)

Our survey included such chapters as the following:

1. The basic data: gender, age, occupation (student, professional, self-employed, housewife, other), country of residence (Europe, United Kingdom, USA).

2. The main data based on the following questions:

- *measured by 3 items (N of visits):*

How often have you visited the pharmaceutical store/pharmacy within the past year (due to sickness rate)? Respondents were asked to indicate their level of visiting pharmacy into visits: 1, 2-5 and more than 6.- measured on a five-point scale:

What sources are informative for you to learn about the TCM?

Respondents were given to respond for 5 main options such as: social media (X3), printed publications (X4), medical institutions (hospitals/clinics/pharmacies) (X5), educational institutions (X6), personal contacts (X7). Answers were scored from 5 [very informative] to 1 [not informative].

- *measured on a ten-point scale:*

X1 - Have you ever take the treatment of TCM? Scored from 1 [never] to 10 [very often].

X2 - Do you think that TCM or TCM non-drug treatment (massage, acupuncture etc.) would be effective in disease treatment, excluding the chronic disease? Scored from 1 [no effect] to 10 [very effective].

X8 - Do you think that TCM is a reliable alternative to Western medicine according to your personal contacts/communications? Scored from 1 [no] to 10 [definitely].

X9 - Can you trust to the media promotion in China that TCM is a good alternative to Western medicine? Scored from 1 [no] to 10 [definitely].

X10 - Are you planning continuing using TCM in your home country after returning from China? Scored from 1 [no] to 10 [of course].

X11 - Will you introduce TCM to your friends, relatives or colleagues? Scored from 1 [no] to 10 [of course].

### **Sampling and data collection procedures**

One hundred and three respondents were interviewed by questionnaires. The respondents spent an average of approximately 2 min to complete the survey. The data were collected in the second decade of December 2018 till the second decade of January 2019. The comprised 112 questionnaires, of which 103 were complete accuracy according to the requirements and therefore were used in the study.

### **Data analysis**

Mediation Modeling was performed to test the hypothesis using PROCESS v3.2.01 for SPSS 25 for Windows, written by Andrew F. Hayes (Hayes, 2017; Hayes, 2013)

Model 1 “Introduce” and Model 2 “Continue Using” were estimated with such dependent variables (Y) as “Introduce to friends, relatives and colleagues” and “Continue using in home country” respectively and Independent variables (X) as “Have you ever take the treatment of TCM” and “What sources are informative (Personal Contacts)” for both models. Mediators were implemented as “Reliable alternative to Western Medicine” and “the TCM Effectiveness”. 4 control variables were implemented as age, country, occupation and number of visits. (Pearl, 2001; Hayes, 2004)

## RESULTS

The respondent's demographics (gender, age, country of residence, occupation and number of visits) are listed in Table 1.

**Table 1. Demographics**

Summary of the statistics from the data set (N = 103)	
	Percentage
Gender	
Female	56,3
Male	43,7
Age (years)	
18-25	33
26-30	34
31-35	15,5
36-40	3,9
41-45	9,7
46-50	3,9
Country of residence	
Europe	61,2
United Kingdom	9,7
USA	29,1
Occupation	
Student	46,6
Professional	45,6
Self-employed	1,9
Housewife	1,9
Other	3,9
Number of visits	
1 visit	23,3
2-5 visits	68,9
more than 6	7,8

The mean, standard deviations are shown in Table 2. The description of X variances have been shown in the Survey of the paragraph Method.

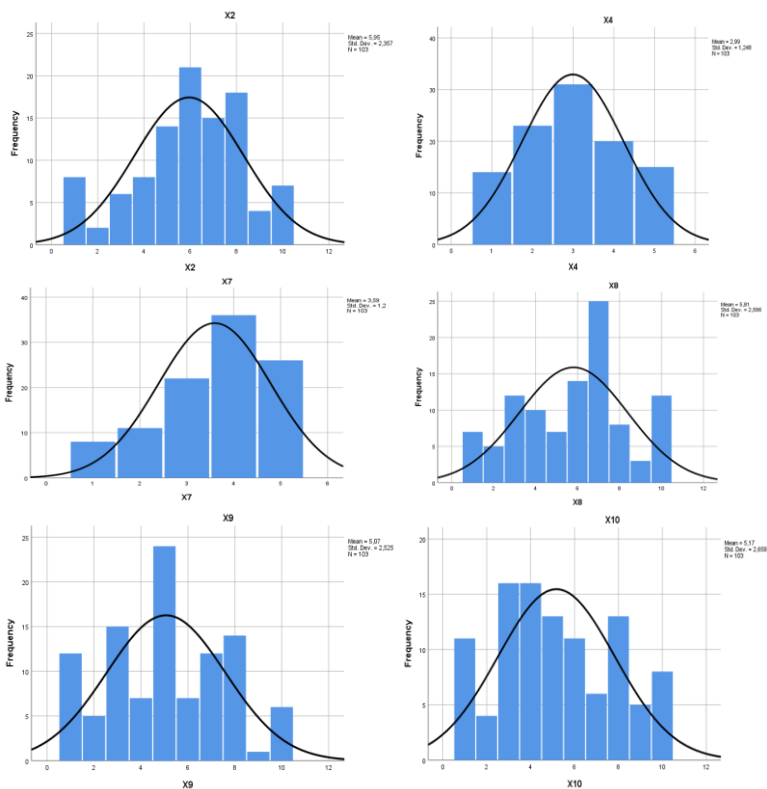
**Table 2. Descriptive Statistics**

	Mean		Std. Deviation
	Statistic	Std. Error	Statistic
X1	4,69	0,243	2,462
X2	5,95	0,232	2,357
X3	2,65	0,152	1,545
X4	2,99	0,123	1,248
X5	3,58	0,129	1,31
X6	2,98	0,148	1,502
X7	3,59	0,118	1,2
X8	5,81	0,255	2,586
X9	5,07	0,249	2,525
X10	5,17	0,262	2,658
X11	6,07	0,289	2,928



The distribution of answers for questions X2, X4, X7, X8, X9, X10 are represented as frequency histograms on the Figure1. Black line is a theoretical normal distribution curve.

The correlation matrix is shown in Table 3. The main variables have shown the significant correlation. As expected, the question X2 has shown the significant correlation with most of other variances. Correlation is significant at the 0.01 level (2-tailed) has found in the X2, X8 and X9 questions. Correlation at the 0.05 level (2-tailed) has found in the X1, X3, X7 and X11 questions. The highest positive coefficient of correlation was obtained between variables X2 and X8 ( $r = 0,849$ ).



**Figure 1. Frequency histograms of answers:** a) X2 - Do you think that TCM or TCM non-drug treatment (massage, acupuncture etc.) would be effective in disease treatment, excluding the chronic disease? ; b) X4 - What

**Svitlana Kutia, Wang Yong, Jing Zhao– The attitudes to Traditional Chinese Medicine (TCM) of non-native Chinese residents: an empirical study based on residents from Europe, United Kingdom and the USA**

sources are informative for you to learn about the TCM? Printed Publications; c) X7 - What sources are informative for you to learn about the TCM? Personal Contacts; d) X8 - Do you think that TCM is a reliable alternative to Western medicine according to your personal contacts/communications?; e) X9 - Can you trust to the media promotion in China that TCM is a good alternative to Western medicine?; f) X10 - Are you planning continuing using TCM in your home country after returning from China?

The correlation matrix is shown in Table 3. The main variables have shown the significant correlation. As expected, the question X2 has shown the significant correlation with most of other variances. Correlation is significant at the 0.01 level (2-tailed) has found in the X2, X8 and X9 questions. Correlation at the 0.05 level (2-tailed) has found in the X1, X3, X7 and X11 questions. The highest positive coefficient of correlation was obtained between variables X2 and X8 ( $r = 0,849$ ).

**Table 3. Pearson Correlations**

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X2	,523**	1	,267**	-0,01	,263**	0,047	,312**	,849**	,740**	,668**	,748**
X8	,571**	,849**	,309**	-	,277**	0,007	,300**	1	,820**	,652**	,719**
X9	,497**	,740**	,471**	0,072	,355**	0,143	0,184	,820**	1	,600**	,707**
X11	,563**	,748**	,350**	0,016	0,174	-	,237*	,719**	,707**	,845**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

In order to determine the significance of the impact of gender on the results of the questionnaire was used Independent Samples T-test. The results are shown in Table 4 (Appendix).

In order to identify the differences between the respondent countries and attitude to TCM, One-Way ANOVA was performed in SPSS. As tested variables were chosen X10 and X11 and as factor was chosen Country (1- Europe; 2-United Kingdom; 3- USA). The results of the One-Way ANOVA and Post Hoc Test are shown in Table 5.

**Svitlana Kutia, Wang Yong, Jing Zhao– The attitudes to Traditional Chinese Medicine (TCM) of non-native Chinese residents: an empirical study based on residents from Europe, United Kingdom and the USA**

**Table 5. One-Way ANOVA and Post Hoc Test**

Dependent variable list		Sum of Squares	df	Mean Square	F	Sig.
X10 (Are you planning continuing using TCM in your home country after returning from China?)	Between Groups	9,408	2	4,704	0,661	0,518
	Within Groups	711,446	100	7,114		
	Total	720,854	102			
X11 (Will you introduce TCM to your friends, relatives or colleagues?)	Between Groups	47,878	2	23,939	2,896	0,060
	Within Groups	826,646	100	8,266		
	Total	874,524	102			

Dependent Variable				Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
X10	LSD	1,00	2,00	0,897	0,908	0,326	-0,90	2,70
			3,00	0,463	0,592	0,435	-0,71	1,64
		2,00	1,00	-0,897	0,908	0,326	-2,70	0,90
			3,00	-0,433	0,974	0,657	-2,37	1,50
		3,00	1,00	-0,463	0,592	0,435	-1,64	0,71
			2,00	0,433	0,974	0,657	-1,50	2,37
X11	LSD	1,00	2,00	1,703	0,979	0,085	-0,24	3,64
			3,00	1,270*	0,638	0,049	0,00	2,54
		2,00	1,00	-1,703	0,979	0,085	-3,64	0,24
			3,00	-0,433	1,050	0,681	-2,52	1,65
		3,00	1,00	-1,270*	0,638	0,049	-2,54	0,00
			2,00	0,433	1,050	0,681	-1,65	2,52

\*. The mean difference is significant at the 0.05 level.

1 - European residents; 2 - United Kingdom residents; 3 - USA residents.

According to the Table 5 One -Way ANOVA showed that there is no significant impact of factor Country in X10 and X11 in total (F = 0,661, P= 0,518; F=2,896, P=0,060). However, answering the question X11 the Post Hoc LSD test showed the significant mean difference between Europe and the USA respondents (I-J: 1,270; P = 0,049).

One-Way ANOVA was also performed taking into the consideration factor Age. The results showed that there is no significant impact of factor Age on the attitude X10 and X11 in total. However, Post Hoc LSD test showed that there is a

significant difference in the age group “46-50” comparing to others answering the questions X10, X11.

### **Mediation Analysis**

In accordance with the mediation analysis that are most often guided by the procedures outlined by Baron and Kenny (Baron, 1986), the potential mediation effect of the respondent’s experience and external sources (social medial, printed publications, medical institutions, educational institutions, personal contacts) on introducing and continue using was ascertained. A necessary component of mediation is a statistically and practically significant indirect effect. The direct and indirect effects were tested using the macros created by A.F.Hayes (Hayes, 2017; Hayes, 2014) through the Serial Multiple Mediator Model that is shown in statistical diagram form with two mediators (Reliable alternative and Effective). The diagram depicts two -mediator model in which X is modeled as affecting Y through four pathways. One pathway is indirect and runs from X to Y through M1 only, a second indirect path runs through M2 only, and a third indirect influence passes through both M1 and M2 sequentially, with M1 affecting M2. The remaining effect of X is direct from X to Y without passing through wither M1 or M2. This statistical model translates into three equations, because the model contains three consequent variables:

Regardless of the number of mediators in the model, the direct effect is  $c'$  and interpreted the estimated difference in Y between two cases that differ by one unit on X but who are equal on all mediators in the model. (Hayes, 2005, 2012)

This model has three specific indirect effects and one direct effect. The three indirect effects are estimated as the product of the regression weights linking X to Y through two M.

The specific indirect effect through of X on Y through only M1 is  $a_1b_1$  (Experience/Sources →Reliable alternative →Introducing ; Continue Using);

The specific indirect effect through M2 only is  $a_2b_2$  (Experience/Sources →Effective →Introducing ; Continue Using);

The specific indirect effect through both M1 and M2 in serial is  $a_1d_2b_2$  (Experience/Sources →Reliable alternative →Effective →Introducing ; Continue Using).

Combined, these three indirect effects sum to the total indirect effect of X:  $a_1b_1 + a_2b_2 + a_1d_2b_2$ . When the total indirect effect of X is added to the direct of X, the result is c, the total effect of X, which can be estimated from a regression estimating Y from X. That is,

$$c = c' + a_1b_1 + a_2b_2 + a_1d_2b_2$$

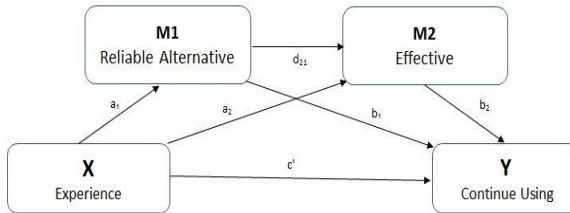
As in the simple and parallel multiple mediator models, the total indirect effect of X on Y in the serial multiple mediator model is the difference between the total effect of X on Y and direct effect of X on Y:

$$c - c' = a_1b_1 + a_2b_2 + a_1d_2b_2$$

In the PROCESS v3.2.01 for SPSS 25 for Windows (written by Andrew F. Hayes) based on conceptual Serial Multiple Mediator Model 6 it was performed the mediation analysis and tested Hypothesis 1, 2, 3, 4. The parameters of linear regression models of direct and indirect effects were analyzed. Model summaries ( $R^2$ , MSE, F, P values, etc.) are represented in Appendix. The total, direct and indirect effects were calculated (Table 6) according to the tested hypothesis and independent-dependent variables relationship. (Hayes, 2013; Edwards, 2007)

## Paths analysis

### *Path 1: Experience-Continue Using*



**Figure 2. Serial Multiple Mediation Model #1**

The path analysis demonstrated a direct effect of Experience (X1) on Continue Using (X10), with indirect effects of Reliable Alternative (X8) and Effective (X2) on Continue Using (X10). All possible indirect paths were valid when controlling for variables (Age, Occupation, Country of residence and Number of Visits) as covariates. (Figure 2)

Indirect path1:  $X1 \rightarrow X8 \rightarrow X10 = 0,244$

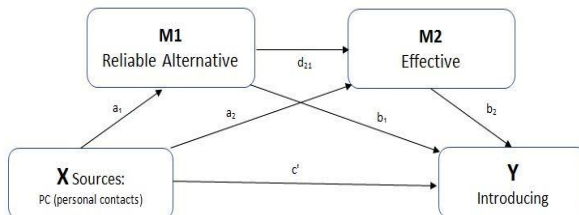
Indirect path2:  $X1 \rightarrow X2 \rightarrow X10 = 0,0326$

Indirect path3:  $X1 \rightarrow X8 \rightarrow X2 \rightarrow X10 = 0,0326$

### Model Summary 1

R	R-sq	MSE	F	df1	df2	p
,6914	,4781	3,8787	17,7701	5,0000	97,0000	,0000

### *Path 2: Personal Contacts-Introducing*



**Figure 3. Serial Multiple Mediation Model #2**

The path analysis demonstrated a direct effect of Personal Contacts (X7) on Introducing (X11), with indirect effects of

Reliable Alternative (X8) and Effective (X2) on Introducing (X11). All possible indirect paths were valid when controlling for variables (Age, Occupation, Country of residence and Number of Visits) as covariates. (Figure 3)

Indirect path1:  $X7 \rightarrow X8 \rightarrow X11 = 0,2989$

Indirect path2:  $X7 \rightarrow X2 \rightarrow X11 = 0,0151$

Indirect path3:  $X7 \rightarrow X8 \rightarrow X2 \rightarrow X11 = 0,1091$

### Model Summary 2

R	R-sq	MSE	F	df1	df2	p
,3605	,1300	7,8439	2,8982	5,0000	97,0000	,0176

**Table 6. Direct and Indirect Effects of X on Y**

	Y : Continue X : Have_you	Y : Introduc X : What_sou_PC
Indirect effect 1 (a1b1)	0,244	0,2989
Indirect effect 2 (a2b2)	0,0326	0,0151
Indirect effect 3 (a1d21b2)	0,0579	0,1091
Direct effect (c')	0,3893	0,0014
Total	0,7238	0,4245

The details of Model Summary is shown in the Table 7 of Appendix.

## DISCUSSION

Our study describes the attitude of foreigners (from Europe - 61,2%, United Kingdom - 9,7%, the USA - 29,1% that are currently permanent residents of Beijing that had an experience in using the TCM) to those willingness in introducing TCM to others and continue using TCM in those home countries. The results showed that among 103 respondent there were 56,3% females to 43,7% males between 18-50 years old who are mostly students and professionals (46,3% and 45,6% respectively).

Most of answers (variables) were distributed normally except X1, X5, X7 that have a clear skewness.

Most of answers have a positive correlation that was expected and key variables (X1, X2, X8, X10, X11) showed a significant correlation at 0,05 level. However, there were no significant correlation between the Sources (Social Media, Printed Publication, Medical Institutions, Educational Institutions and Personal Contacts) and target X10 and X11 variables which means that there is no matter which source of TCM can influence on their desire to Continue to use and Introduce the TCM.

Focusing on main questions related to Introducing to others (X11) and Continue using in home country (X10) the results show on Independent Samples test that there is not a significant difference between male and female that are planning to Continue using, but there is a difference between planning to Introduce to others ( $t=-0,961$ ;  $P=0,339$  and  $t=-2,242$ ;  $P=0,028$  respectively).

According to the One-Way ANOVA choosing the factor Country, it was found that there is no significant impact of this factor on questions X10 and X11 ( $F=0,661$ ;  $P=0,518$  and  $F=2,896$ ;  $p=0,060$  respectively). However, Post Hoc LSD test showed a significant mean difference between opinions of residents from different countries (Europe and the USA), mean difference: 1,270;  $P = 0,049$ , see Table 5. This can be partially explain because of mentality, style of life, specifics of sample, ect. that is why more deep research is needed to identify the real reason. One-Way ANOVA was also performed taking into the consideration factor Age. The results showed that there is no significant impact of factor Age on the attitude X10 and X11 in total. However, Post Hoc LSD test showed that there is a significant difference in the age group “46-50” comparing to others answering the questions X10, X11.

Using conceptual Serial Multiple Mediator Model 6 and PROCESS extension in SPSS by A.F. Hayes, it was received the set of indirect, direct and total linear regression models which



explain the relationship between experience of using TCM and willingness to continue to use (Table 4,5). All regression model summaries shows a good fit of experimental data ( $P < 0,05$ ). According to conceptual model mentioned above, direct effect independent variable (X1) on dependent (X10) = 0,3893, total indirect effect = 0,3345 (Table 6) which means that there is a significant role of Mediators on Continue Using of TCM (X10). Furthermore, the Mediator 1 (Reliable Alternative to Western Medicine) shows the strongest influence among intermediate pathways with effect 0,244. Thus, our third hypothesis was accepted and mediators (X2, X8) have an important role in comprehension of relationship between X and Y (Experience and Continue to Use respectively).

Performing the same path analysis we have investigated the relationship between TCM sources (Personal Contacts) and willingness to introduce to others among foreigners through Mediators (X2, X8). According to the conceptual model, direct effect independent variable (X7) on dependent (X11) = 0,0014, total indirect effect = 0,4231 (Table 6,7) is with a significant difference, which means that the direct effect is much lower than total indirect and both Mediators are extremely helpful to describe the relationship X and Y.

## CONCLUSION

This study helped to get the more holistic comprehension of the foreigners attitude of using TCM. It was shown that the influence on the willingness of continue using and introduce the TCM was because of country of residence and age, but according to our study the sources were not much impactful. However, the own experience of respondents showed the most influence results. Mediation modeling can be a useful tool for such kind of research. Thus, as it was mentioned above, the study is important according to Chinese governmental plans

and willingness by most of TCM researches and medical doctors to share the TCM practice overseas and it needs more resources and time to gather data and analyse information for making more clear results to be helpful in internationalization and culture diversity.

## REFERENCES

1. Arad L. (2015), A Multi-bed Chinese medicine clinic model based on clinical excellence, *Journal of Chinese Medicine*, (109), 54-58
2. Bachok et al. (2016) Awareness of traditional Chinese medicine in relation to purchase intention among Malay Muslim in Malaysia, *IRJIMS, A Peer-Reviewed monthly research journal*, Volume-II, Issue-III, 1-12
3. Baron R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality & Social Psychology*, 51, 1173-1182.
4. Candelise L., (2011) China perspectives: Chinese Medicine outside of China, vol.3, 43-50
5. Dong J. (2013) The relationship between Traditional Chinese Medicine and modern medicine, Hindawi Publishing Corporation, Evidence-Based Complementary and Alternative Medicine, 10 pages.
6. Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, 12(1), 1–22. <http://dx.doi.org/10.1037/1082-989X.12.1.1>.
7. Hayes A.F.(2004), SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36 (4), 717-731
8. Hayes, A. F. (2005). *Statistical methods for communication science*. New York, NY: Routledge.

9. Hayes, A. F. (2013). Introduction to mediation, moderation, and conditional process analysis: a regression-based approach. The Guilford Press. *Journal of Educational Measurement*, 51(3), <http://dx.doi.org/10.1111/jedm.12050>.
10. Hayes, A. F., & Agler, R. A. (2014). On the standard error of the difference between two independent regression coefficients in moderation analysis: A commentary on Robinson, Tomek, and Schumacker (2013). *Multiple Linear Regression Viewpoints*, 40(2), 16–27.
11. Hayes A.F. & Montoya A.K. (2017) A Tutorial on Testing, Visualizing, and Probing an Interaction Involving a Multicategorical Variable in Linear Regression Analysis, *Communication Methods and Measures*, 11:1, 1-30
12. Hayes, A. F., Glynn, C. J., & Hude, M. E. (2012). Cautions regarding the interpretation of regression coefficients and hypothesis tests in linear models with interactions. *Communication Methods and Measures*, 6, 1–11.
13. Li C. (2013) Research on the current situation and Countermeasures of Chinese medicine in the international market. *J Qiqihar Univ Med.*;34(4):567–8.
14. Li et al. (2018) Internationalization of Traditional/Complementary Medicine products: market entry as medicine, *Chinese Medicine*, 11 <https://doi.org/10.1186/s13020-018-0209-6>
15. Li Y. (2013) The way Chinese medicine goes out is a long and tortuous way. *China's Foreign Trade*;7:92–3.
16. Lin et al. (2018) Internationalization of traditional Chinese medicine: current international market, internationalization challenges and prospective suggestions, *Chinese Medicine*, 13(1), 9 <https://doi.org/10.1186/s13020-018-0167-z>
17. Pearl, J. (2001). Direct and indirect effects. In J. Breese, & D. Koller (Eds.). *Proceedings of the seventeenth conference on uncertainty in artificial intelligence* (pp. 411–420). San Francisco, CA: Morgan Kaufmann.
18. Sun D.-Z. et al.(2013), “Differences in the origin of philosophy between Chinese medicine and western medicine: exploration of the holistic advantages of Chinese medicine,” *Chinese Journal of Integrative Medicine*, vol. 19, no. 9, pp. 706–711.

19. Shuo Feng et al. (2017) Research Capacity at Traditional Chinese Medicine (TCM) Centers in China: A Survey of Clinical Investigators. Evidence-Based Complementary and Alternative Medicine. Volume 2017, Article ID 4231680, 8 pages <https://doi.org/10.1155/2017/4231680>
20. Sohu health.(2017) The United States became the largest market for Chinese medicine exports in 2016 [EB/OL]. 2016. [http://mt.sohu.com/health/d20170228/127506057\\_377310.shtml](http://mt.sohu.com/health/d20170228/127506057_377310.shtml). Accessed 28 Feb 2017.
21. Tang et al. (2018) SWOT analysis and revelation in traditional Chinese medicine internationalization, Chinese Medicine, 01, 2018 <https://doi.org/10.1186/s13020-018-0165-1>
22. Uzuner et al. (2012) Traditional Chinese medicine research in the post-genomic era: Good practice, priorities, challenges and opportunities, Elsevier, Journal of Ethnopharmacology, (140), 458-468
23. Vincent et al. (2012) Views of traditional Chinese medicine amongst Chinese population: a systematic review of qualitative and quantitative studies, John Wiley & Sons Ltd, Health Expectations, 17 pages, 622-636
24. Wang et al. (2017) An investigation Into Traditional Chinese Medicine Hospitals in China: Development Trend and Medical Service Innovation. International Journal of Health Policy and Management, 6(1), 19–25
25. Wang et al. (2016) Current status of standardization of traditional Chinese medicine in China, Hindawi Publishing Corporation, Evidence-Based Complementary and Alternative Medicine, 7 pages
26. Wu G. (2015) International opportunities and challenges of Chinese medicine. Co-op Econ Sci.;11:83–4.
27. Wu S. (2013) When will the traditional Chinese medicine dominate the international market. China Inspection Quarantine.;3:49–50.
28. Yu-fen HAN et al.(2009) A Survey of TCM Treatment for Endometriosis Journal of Traditional Chinese Medicine, Volume 29, Issue 1, March 2009, Pages 64-70

29. Zhang B, Zhang J. (2015) Twenty years' review and prospect of modernization research on traditional Chinese medicine. *China J Chin Materia Med.*;40(17):3331–4.
30. Zhang L. (2011) Discuss on the export barriers and Countermeasures of traditional Chinese medicine. *Chin Bus Trade.*;7:204–5.
31. Zhang M, Chang Y. (2007) On the research and development mode of the combination of Chinese and Western pharmacy. *Lishizhen Med Materia Med Res.*;18(3):737–8.

**Svitlana Kutia, Wang Yong, Jing Zhao– The attitudes to Traditional Chinese Medicine (TCM) of non-native Chinese residents: an empirical study based on residents from Europe, United Kingdom and the USA**

**APPENDIX**

**Table 3. Pearson Correlations**

		Correlations										
		X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	Pearson Correlation	1	,523**	,195*	0,05	0,148	-0,002	0,143	,571**	,497**	,653**	,563**
	Sig. (2-tailed)		0	0,048	0,616	0,136	0,987	0,151	0	0	0	0
	N	103	103	103	103	103	103	103	103	103	103	103
X2	Pearson Correlation	,523**	1	,267**	-0,01	,263**	0,047	,312**	,849**	,740**	,668**	,748**
	Sig. (2-tailed)	0		0,006	0,919	0,007	0,639	0,001	0	0	0	0
	N	103	103	103	103	103	103	103	103	103	103	103
X3	Pearson Correlation	,195*	,267**	1	0,069	0,097	-0,028	-0,004	,309**	,471**	0,189	,350**
	Sig. (2-tailed)	0,048	0,006		0,486	0,331	0,776	0,971	0,001	0	0,055	0
	N	103	103	103	103	103	103	103	103	103	103	103
X4	Pearson Correlation	0,05	-0,01	0,069	1	,333**	,361**	-0,134	-0,101	0,072	0,012	0,016
	Sig. (2-tailed)	0,616	0,919	0,486		0,001	0	0,179	0,311	0,472	0,902	0,87
	N	103	103	103	103	103	103	103	103	103	103	103
X5	Pearson Correlation	0,148	,263**	0,097	,333**	1	,424**	0,059	,277**	,355**	0,17	0,174
	Sig. (2-tailed)	0,136	0,007	0,331	0,001		0	0,554	0,005	0	0,085	0,079
	N	103	103	103	103	103	103	103	103	103	103	103
X6	Pearson Correlation	-0,002	0,047	-0,028	,361**	,424**	1	-0,053	0,007	0,143	0,077	-0,042
	Sig. (2-tailed)	0,987	0,639	0,776	0	0		0,592	0,947	0,151	0,439	0,673
	N	103	103	103	103	103	103	103	103	103	103	103
X7	Pearson Correlation	0,143	,312**	-0,004	-0,134	0,059	-0,053	1	,300**	0,184	0,087	,237*
	Sig. (2-tailed)	0,151	0,001	0,971	0,179	0,554	0,592		0,002	0,063	0,382	0,016
	N	103	103	103	103	103	103	103	103	103	103	103
X8	Pearson Correlation	,571**	,849**	,309**	-0,101	,277**	0,007	,300**	1	,820**	,652**	,719**
	Sig. (2-tailed)	0	0	0,001	0,311	0,005	0,947	0,002		0	0	0
	N	103	103	103	103	103	103	103	103	103	103	103
X9	Pearson Correlation	,497**	,740**	,471**	0,072	,355**	0,143	0,184	,820**	1	,600**	,707**
	Sig. (2-tailed)	0	0	0	0,472	0	0,151	0,063	0		0	0
	N	103	103	103	103	103	103	103	103	103	103	103
X10	Pearson Correlation	,653**	,668**	0,189	0,012	0,17	0,077	0,087	,652**	,600**	1	,845**
	Sig. (2-tailed)	0	0	0,055	0,902	0,085	0,439	0,382	0	0		0
	N	103	103	103	103	103	103	103	103	103	103	103
X11	Pearson Correlation	,563**	,748**	,350**	0,016	0,174	-0,042	,237*	,719**	,707**	,845**	1
	Sig. (2-tailed)	0	0	0	0,87	0,079	0,673	0,016	0	0	0	
	N	103	103	103	103	103	103	103	103	103	103	103

\*\* Correlation is significant at the 0.01 level (2-tailed).  
\* Correlation is significant at the 0.05 level (2-tailed).

**Svitlana Kutia, Wang Yong, Jing Zhao– The attitudes to Traditional Chinese Medicine (TCM) of non-native Chinese residents: an empirical study based on residents from Europe, United Kingdom and the USA**

**Table 4. Independent Samples Test**

		Levene's Test for Equality of Variances		Independent Samples Test						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
X1	Equal variances assumed	8,085	0,005	-2,839	101	0,005	-1,343	0,473	-2,281	-0,404
	Equal variances not assumed			-2,937	100,972	0,004	-1,343	0,457	-2,249	-0,436
X2	Equal variances assumed	0,419	0,519	-1,166	101	0,246	-0,545	0,467	-1,472	0,382
	Equal variances not assumed			-1,159	92,178	0,25	-0,545	0,471	-1,48	0,389
X3	Equal variances assumed	0,72	0,398	-2,404	101	0,018	-0,721	0,3	-1,316	-0,126
	Equal variances not assumed			-2,393	93,071	0,019	-0,721	0,301	-1,319	-0,123
X4	Equal variances assumed	0,737	0,393	-2,029	101	0,045	-0,496	0,244	-0,98	-0,011
	Equal variances not assumed			-2,055	98,537	0,043	-0,496	0,241	-0,975	-0,017
X5	Equal variances assumed	1,513	0,221	-0,942	101	0,349	-0,245	0,26	-0,762	0,271
	Equal variances not assumed			-0,963	100,342	0,338	-0,245	0,255	-0,75	0,26
X6	Equal variances assumed	0,586	0,446	1,176	101	0,242	0,35	0,298	-0,24	0,941
	Equal variances not assumed			1,171	93,158	0,244	0,35	0,299	-0,244	0,944
X7	Equal variances assumed	1,656	0,201	0,885	101	0,378	0,211	0,239	-0,262	0,684
	Equal variances not assumed			0,867	86,267	0,388	0,211	0,244	-0,273	0,695
X8	Equal variances assumed	1,691	0,196	-0,864	101	0,39	-0,444	0,514	-1,465	0,576
	Equal variances not assumed			-0,85	88,003	0,398	-0,444	0,523	-1,484	0,595
X9	Equal variances assumed	0,293	0,59	-0,869	101	0,387	-0,436	0,502	-1,433	0,56
	Equal variances not assumed			-0,853	87,103	0,396	-0,436	0,512	-1,454	0,581
X10	Equal variances assumed	4,532	0,036	-0,961	101	0,339	-0,508	0,528	-1,556	0,54
	Equal variances not assumed			-0,931	81,195	0,354	-0,508	0,545	-1,592	0,577
X11	Equal variances assumed	5,911	0,017	-2,289	101	0,024	-1,305	0,57	-2,435	-0,174
	Equal variances not assumed			-2,242	88,162	0,028	-1,305	0,582	-2,461	-0,148

**Svitlana Kutia, Wang Yong, Jing Zhao– The attitudes to Traditional Chinese Medicine (TCM) of non-native Chinese residents: an empirical study based on residents from Europe, United Kingdom and the USA**

**Table 7. Model Summary**

	coeff	se	t	p	R	R-sq	MSE	F	df1	df2	P	
Y : Continue X : Have_you M1 : Do_you_t M2 : Reliable												
constant	6.7011	0.9812	6.8298	0								Indirect effect (a1b1)
What_sou_MI	0.5068	0.0728	6.9598	0								
Model Summary					0.667	0.4449	3.2431	15,5517	5	97	0	
constant	1.6866	0.8378	2.013	0.0469								Indirect effect (a2b2)
What_sou_MI	0.2188	0.0626	3.4975	0.0007								
Model Summary					0.8805	0.7753	1.5969	55,191	6	96	0	
constant	1.2691	1.1223	-1.1308	0.261								Direct effect (c)
What_sou_MI	0.3893	0.0872	4.4654	0								
Model Summary					0.7986	0.6377	2.7492	23,887	7	95	0	
constant	2.9743	1.073	2.772	0.0067								Total
What_sou_MI	0.7238	0.0796	9.0883	0								
Model Summary					0.6914	0.4781	3.8787	17,7701	5	97	0	
Y : Introduc X : What_sou_PC M1 : Do_you_t M2 : Reliable												
constant	6.889	1.3524	5.0939	0								Indirect effect (a1b1)
What_sou_PC	0.4306	0.1854	2.3231	0.0223								
Model Summary					0.46	0.2116	4.6063	5,2079	5	97	0.0003	
constant	1.1195	0.9509	1.1773	0.242								Indirect effect (a2b2)
What_sou_PC	0.0541	0.1189	0.4552	0.65								
Model Summary					0.8644	0.7472	1.7965	47,2812	6	96	0	
constant	0.5365	1.3643	0.3933	0.695								Direct effect (c)
What_sou_PC	0.0014	0.1696	0.0081	0.9936								
Model Summary					0.7772	0.604	3.6456	20,6983	7	95	0	
constant	7.3762	1.7648	4.1797	0.0001								Total
What_sou_PC	0.4245	0.2419	1.7549	0.0824								
Model Summary					0.3605	0.13	7.8439	2,8982	5	97	0.0176	