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ANALYSIS OF FACTORS INFUENCING ON FOREIGN LANGUAGE LEARNING MOTIVATION OF CHINESE STUDENTS ABOVE MATRICULATION LEVEL BASED ON SEM AND fsQCA METHODS

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Abstract. Motivation in educational activity is a specific type of motivation embedded in the structure of teaching and learning processes. The relevance of this study lies in examining motivation as a crucial component of educational activity, which becomes a defining characteristic of students as active participants in the learning process. The article identifies and explores factors influencing the motivation of Chinese students with secondary education to learn foreign languages. The article aims to validate the motivational factors among secondary education students in foreign language learning. The research objectives include: identifying the factors affecting motivation and the psychological-pedagogical conditions of their development in foreign language learning; analyzing the factors influencing Chinese secondary education students' motivation to study foreign languages using SEM and fsQCA methods; investigating existing combinations of these factors leading to high motivation; and selecting the most effective combinations. The research methods used include: theoretical analysis of psychological-pedagogical and methodological literature, data collection, empirical analysis, comparative analysis, structural equation modeling (SEM), and fuzzy-set qualitative comparative analysis (fsQCA). Based on the applied research methods, six factors positively influencing Chinese secondary education students' motivation to learn foreign languages were identified. The study confirmed the existence of these six factors and revealed five combinatorial pathways among all possible combinations of antecedent factors leading to high motivation. The study proposes various factor combinations to foster high motivation and suggests a new direction for further in-depth research on enhancing motivation strategies.

Keywords: motivation for foreign language learning, structural equation modeling (SEM), fuzzy-set qualitative comparative analysis (fsQCA), factor combinations, expectancy-confidence, intrinsic interest, task value, pedagogical support, goal orientation, emotional attribution

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АНАЛИЗ ФАКТОРОВ, ВЛИЯЮЩИХ НА МОТИВАЦИЮ ИЗУЧЕНИЯ ИНОСТРАННОГО ЯЗЫКА У КИТАЙСКИХ СТУДЕНТОВ, ИМЕЮЩИХ СРЕДНЕЕ ОБРАЗОВАНИЕ, НА ОСНОВЕ МЕТОДОВ SEM И fsQCA

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Аннотация. Мотивация учебной деятельности является определенным видом мотивации, включенным в структуру преподавательской и образовательной деятельности. Актуальность исследования заключается в рассмотрении мотивации как важного компонента в образовательной деятельности, которая становится существенной характеристикой студента как субъекта деятельности. В статье выделяются и исследуются факторы, влияющие на мотивацию изучения иностранных языков у китайских студентов, имеющих среднее образование. Цель статьи – валидировать факторы мотивации студентов, имеющих среднее образование, к изучению иностранных языков. Задачи исследования: выявить факторы, влияющие на мотивацию, и психолого-педагогические условия их формирования в процессе изучения иностранных языков; провести анализ факторов, влияющих на мотивацию китайских студентов со средним образованием к изучению иностранных языков, применяя SEM- и fsQCA-методы; исследовать уже существующие комбинации данных факторов, приводящих к высокой мотивации; выбрать наилучшие комбинации. Использованы методы исследования: теоретический анализ психолого-педагогической и методической литературы, метод сбора данных, эмпирический анализ, сравнительный анализ, метод моделирования структурными уравнениями (SEM) и нечетко-множественный сравнительный анализ (fsQCA). С учетом примененных методов исследования было выделено шесть факторов, позитивно влияющих на мотивацию к изучению иностранных языков у китайских студентов, имеющих среднее образование. Исследование подтвердило существование шести факторов, влияющих на мотивацию к изучению иностранных языков у китайских студентов, имеющих среднее образование, и выявило пять комбинаторных путей среди всех возможных комбинаций с предшествующими факторами, ведущими к высокой мотивации. Предложены комбинации разных факторов для формирования высокой мотивации, а также обозначено новое направление для более глубокого изучения способов ее повышения.

Ключевые слова: мотивация к изучению иностранных языков, метод моделирования структурными уравнениями (SEM), нечетко-множественный сравнительный анализ (fsQCA), комбинация факторов, уверенность – ожидание, внутренний интерес, ценность задачи, педагогическая поддержка, целевая ориентация, эмоциональная атрибуция

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Introduction

With the increase in the number of Chinese students going to Russia, it is important to explore the factors influencing the motivation of Chinese students to learn foreign languages in order to improve the effectiveness of foreign language learning among this group [7, 24]. Most Chinese students study languages through preparatory courses and apply for admission to faculties after obtaining language completion certificates. A considerable number of students also choose English language programs, which demonstrate the high level of internationalisation in Russia [8]. There are unifactorial, bifactorial, and multifactorial theories on the factors influencing Chinese students' motivation to learn a foreign language. For example, for unifactorialists, Qi H., Li H. focus on the affective factors of foreign language learning motivation [17, p. 404–406]. For two-factor theorists, Chen Y.B. [6, p. 151],

Chen H.J., Shu D.F. talk about the maintenance of motivation in terms of either internal or external motivation [4, p. 74–82]. Amoah, S. and Yeboah, J. categorised Chinese students' motivation for speaking English into instrumental and integrative motivation [1, p. 56–69]. Multifactorialists: Zhang H., Du X.R. categorised students' English learning motivation into four types [27, p. 105]. Shen G.B., Di X., Ma S.H. proposed five influences on Chinese college students' motivation to learn Arabic [21, p. 983]. With the in-depth exploration of many researchers, we realize that the factors influencing students' foreign language learning motivation are not single and unchanging. Research on the factors influencing Chinese students' motivation to learn a foreign language is mostly based on the data obtained from questionnaires, using quantitative methods such as SPSS correlation analysis, SPSS, and t-tests (Zhang Y.L., Guo D.J.) [28, p. 352–353], and typical correlation analysis (Gao Y.H. et al.) [12, p. 18–24]. Gao Y.H. et al. conducted factor analysis and multivariate analysis of variance (ANOVA) on the types of English learning motivation among Chinese undergraduates using SPSS statistical software [11, p. 28–38]. Zhou C.B., Wang W.B. used SPSS statistical software to conduct a principal component factor analysis of negative motivational influences on college students in foreign language learning [29, p. 48–55]. Regarding the research on the factors influencing foreign language learning motivation, there is no further validation of these factors [26], and there is a lack of systematic empirical materials to support the research methodology. These studies lacked qualitative, advanced statistical analyses (e. g., structural equation modelling, cohort analysis).

AMOS structural equation modelling can be scientifically validated for these factors [25]. AMOS is a multivariate statistical method that combines factor analysis and path analysis, used to examine the relationships between observed variables and latent variables [2]. Qualitative Comparative Analysis (QCA), pioneered by sociologist Charles C. Ragin in 1987, represents an innovative methodological approach that effectively integrates the strengths of both qualitative and quantitative analyses. Through the application of set theory and Boolean algebra, it systematically examines the sufficiency and necessity of causal relationships (Ragin C.C.) [19]. As a significant branch of QCA methodology, fuzzy-set Qualitative Comparative Analysis (fsQCA) proves particularly valuable for assessing the impact pathways of multivariate combinations on outcomes [3]. Kraus S. et al. emphasize that fsQCA provides novel analytical perspectives for interpreting complex social phenomena by combining the in-depth understanding characteristic of qualitative investigation with the rigor of quantitative analysis [16, p. 15–33].

In recent years, fsQCA has demonstrated unique methodological value in educational research. For instance, Hao H.X. et al. employed an integrated approach combining Structural Equation Modeling (SEM) with fsQCA to reveal the configurational effects of multiple support factors on college students' motivation in physical education [13]. Teng C. utilized this method to analyze the multivariate influencing factors of college students' online learning satisfaction during the COVID-19 pandemic. Similarly [23], Fan J.W., Tian M. identified critical pathway combinations affecting international students' satisfaction with online Chinese language learning through fsQCA [9, p. 1086]. Collectively, these studies substantiate the distinctive advantages of fsQCA in uncovering complex causal relationships in educational research (Furnari S., Crilly D., Misangyi V.F.) [10, p. 778–799].

Building upon the theoretical foundation established in the prior study “Analysis of the Influencing Factors of Foreign Language Learning Motivation of Chinese Students Above Matriculation Level” [14], this research focuses on six key influencing factors: confidence expectation, intrinsic interest, task value, educational assistance, goal-driven, and emotion attribution. Existing literature reveals a significant research gap regarding systematic investigations of foreign language learning motivation among Chinese students above matriculation level, particularly concerning the combinatorial effects of multiple factors. To address this gap, the present study adopts a mixed-methods research design: first employing AMOS software to construct a Structural Equation Model (SEM) to validate the theoretical construct validity of each influencing factor; subsequently applying fuzzy-set Qualitative Comparative Analysis (fsQCA) to thoroughly investigate the multiple conditional configurations that lead to high foreign language learning motivation.

Materials and Methods

In this paper, we follow up on the data analyzed in the previous “Analysis of the Influencing Factors on Foreign Language Learning Motivation of Chinese Students Above the Matriculation

Level" [15] with a more in-depth study. We have analyzed the data using principal component factor analysis using SPSS statistical software. In this article, we have used Amos structural equation modelling to verify the validity of the influencing factors. Amos structural equation modelling was used to verify whether the influencing factors were valid or not, and structural equation modelling (SEM) was constructed with confidence expectation, intrinsic interest, task value, educational assistance, goal-driven, and emotional attribution as the independent variables and motivation for foreign language learning of matriculated and above students as the dependent variable. The fsQCA qualitative comparative analysis was used to explore the effects of the factor combinations on the foreign language learning motivation of Chinese students above matriculation level.

Confirmatory Factor Analysis

In this study, the raw data of the questionnaire was read using AMOS software and a validation factor analysis was conducted on the six factors in the model to test whether the hypotheses stated above were valid. As a result of the above analysis, a total of 18 question items were retained and the results of the model fit are shown in Table 1. AMOS software was used to construct a structural equation model of foreign language learning motivation of Chinese students above matriculation level. Delete the invalid data and MI correction method (connect the two residual items with higher MI values with "double arrows") were used to obtain the final model. The final model was obtained. The model fit showed a chi-square/degree of freedom ratio ($\chi 2/df$) = 1.603 (< 3); goodness-of-fit index (GFI) = 0.940, corrected goodness-of-fit index (AGFI) = 0.907, comparative goodness-of-fit index (CFI) = 0.976, and normative goodness-of-fit index (NFI) = 0.940 (all > 0.9); root mean square of approximation error (RMSEA) = 0.046 (< 0.05). 046 (< 0.05), indicating a good model fit. Overall the model fit is good and the obtained model path coefficient plot is shown in Fig. 1.

Validity Testing

The validity test is divided into content validity test, convergent validity test and discriminant validity. Through KMO and Bartlett's test of sphericity, the KMO value is KMO = 0.934 > 0.8, which indicates that the data of the questionnaire can be analyzed by factor analysis. The factor loadings were rotated according to the orthogonal rotation method, and the factor loadings were all greater than 0.55, indicating that the questionnaire has good content validity. The combined reliability CR of each factor is greater than 0.5 and the mean extracted variance AVE is greater than 0.36 (acceptable), indicating that the study scale has good convergent validity. The average

Table 1

Standardized Measurement Model Fit Results

Evaluation Indicators	Statistical Values	Standard Values	Fit Status
$\chi 2$	174.715	—	—
df	109.000	—	—
$\chi 2$/ df	1.603	<3	good
CFI	0.976	>0.9	good
TLI	0.966	>0.9	good
GFI	0.940	>0.9	good
NFI	0.940	>0.9	good
IFI	0.976	>0.9	good
RMSEA	0.046	< 0.05	good

variance extracted for each factor, AVE, is greater than the square of the correlation coefficient between the factor and the other factors, indicating that the scale has good discriminant validity. The correlation coefficients of the six latent variables in this study ranged from 0.23 to 0.85, less than the square root of the AVE values of the corresponding latent variables ranged from 0.66 to 0.92, suggesting that the six latent variables can effectively measure the motivation of Chinese matriculated and above students to learn foreign languages. In summary, the scales in this study have good reliability and validity (AVE, CR values shown in Table 2, 3), the output of the reliability coefficient analysis of the six factors as well as the total scale, and the results of the internal consistency reliability analysis using the alpha reliability coefficient showed that the reliability coefficient of the total scale of the remaining 18 question items was 0.833.

Results

Correlation analysis between variables

Correlation analysis between students' motivation to learn foreign language and each variable: through Table 3 we can see that the square root value of each dimension is greater than the Pearson correlation coefficient value of that dimension and other dimensions, so the discriminant validity between dimensions meets the standard, for example, the AVE square root value of factor 1 self-confidence expectancy 0.922 is greater than the correlation coefficient of 0.85, so factor 1 self-confidence Expectation meets the standard. Correlation analysis between English learning motivation and each variable first observe the sig (called correlation, also P-value) between two variables, if sig $\leq$ 0.05, it means that there is a significant correlation; if sig > 0.05, it means that there is not a significant correlation; Pearson's correlation analysis showed that Chinese

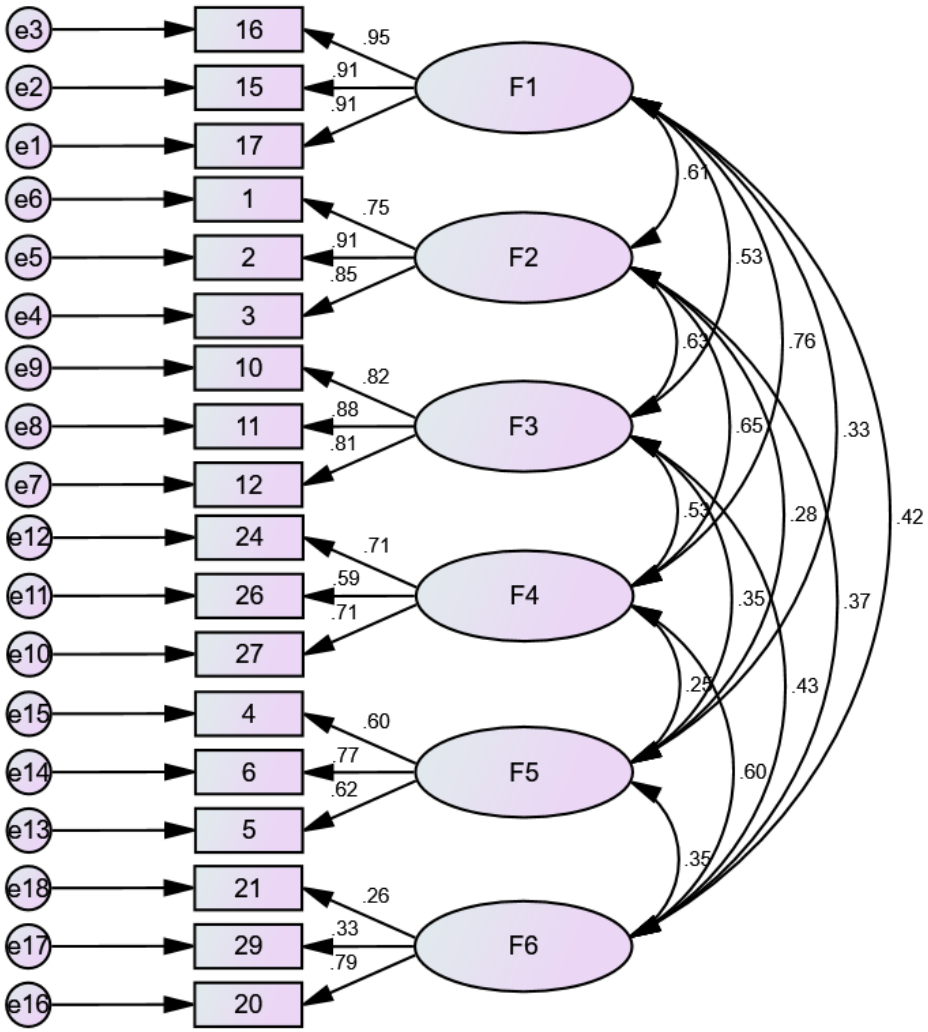

Fig. 1. Validated factor analysis of motivation to learn foreign languages among Chinese students above matriculation level (standardized path)

Table 2

Results of Scale Validity Testing: AVE and CR

Pathway			Estimate	S.E.	C.R.	P	AVE	CR
Q20	<---	F1	0.907				0.85045	0.9446
Q18	<---	F1	0.91	0.041	25.001	***		
Q19	<---	F1	0.949	0.038	27.705	***		
Q6	<---	F2	0.855				0.704	0.876
Q5	<---	F2	0.904	0.055	18.491	***		
Q4	<---	F2	0.751	0.056	14.748	***		
Q15	<---	F3	0.808				0.69	0.87
Q14	<---	F3	0.878	0.063	16.498	***		
Q13	<---	F3	0.806	0.067	15.202	***		
Q30	<---	F4	0.696				0.468	0.724
Q29	<---	F4	0.636	0.086	9.481	***		
Q27	<---	F4	0.718	0.095	10.661	***		
Q8	<---	F5	0.614				0.43	0.69
Q9	<---	F5	0.752	0.155	7.418	***		
Q7	<---	F5	0.6	0.116	7.301	***		
Q23	<---	F6	0.898				0.446	0.56
Q32	<---	F6	0.293	0.099	3.195	0.001		

Note: *** $P \leq 0.001$.

Table 3

Results of Discriminant Validity Testing

	F1	F2	F3	F4	F5	F6
F1	0.85045					
F2	0.619	0.704				
F3	0.543	0.629	0.69			
F4	0.795	0.646	0.543	0.468		
F5	0.321	0.273	0.348	0.231	0.43	
F6	0.398	0.339	0.405	0.532	0.269	0.446
√AVE	0.922198	0.839047	0.830662	0.684105	0.655744	0.667832

Note: Pearson's correlation with AVE square root value.

students above matriculation level motivation to learn foreign languages was positively correlated with Confidence Expectation, Intrinsic Interest, Task Value, Educational Assistance, Goal-Driven and Emotion Attribution. We construct a model of the factors influencing foreign language learning motivation of Chinese students above matriculation level based on structural equation modelling (Fig. 2).

Selection of variables

Since quantitative research and qualitative research have their own advantages and disadvantages in academic research [5, p. 28–35], this study used qualitative comparative analysis fsQCA to qualitatively analyze the factors influencing the motivation to learn foreign languages of Chinese students above matriculation level. Based on the fact that the effects of Emotion Attribution, Task Value, Educational Assistance, Goal-Driven, Intrinsic Interest and Confidence Expectation on students' motivation to learn a foreign language are supported by theoretical and empirical findings, and are significantly and positively correlated with motivation to learn a foreign language, six variables of Confidence Expectation, Intrinsic Interest, Task Value, Educational Assistance, Goal-Driven and Emotion Attribution are selected as antecedent variables for this study.

Calibration of variables

The first prerequisite for fsQCA analysis is to calibrate the variables involved in the study in order to improve the interpretability of the results. First, the six variables of the antecedent

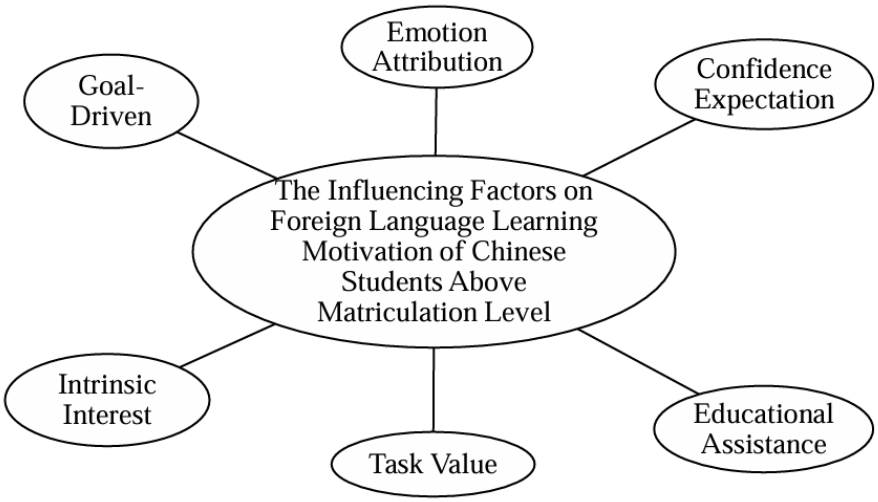

Fig. 2. A model of factors influencing foreign language learning motivation of Chinese students above matriculation level based on structural equation modeling, empirical analysis, and discussion based on fsQCA

variables, Confidence Expectation, Intrinsic Interest, Task Value, Educational Assistance, Goal-Driven and Emotion Attribution were averaged; then the data were calibrated using the fsQCA 3.0 software's Calibrate function in accordance with Ragin's [18, p. 49] criteria of 5% (fully out), 95% (fully in), and 50% (crossover point). The data were calibrated using the Calibrate function in the fsQCA 3.0 software.

This study employs a systematic triple-diagnostic procedure to examine the factors influencing high foreign language learning motivation (Y) among Chinese students above matriculation level. First, necessity analysis is conducted to evaluate the degree of necessity for six antecedent conditions (Confidence Expectation, Intrinsic Interest, Task Value, Educational Assistance, Goal-Driven, and Emotion Attribution) by calculating consistency scores, aiming to identify potential necessary conditions. Second, in the sufficiency analysis phase, this study not only examines the sufficiency performance of individual antecedent variables (such as Confidence Expectation or Task Value) but, more importantly, adopts the standard analysis approach to systematically compare complex solutions, intermediate solutions, and parsimonious solutions, with particular focus on analyzing their coverage differences. Finally, building upon the methodological characteristics of fuzzy-set Qualitative Comparative Analysis (fsQCA), this study emphasizes multiple-conjunctural causation analysis. By deconstructing the configurational paths formed by six antecedent conditions (Confidence Expectation, Intrinsic Interest, Task Value, Educational Assistance, Goal-Driven and Emotion Attribution), we thoroughly investigate the differential impact mechanisms of various condition combinations on high foreign language learning motivation (Y). This configurational analysis effectively captures interaction effects (e. g., the synergistic effect between Confidence Expectation and Educational Assistance) and substitutable relationships (e. g., alternative pathways between Goal-Drive and Intrinsic Interest) among factors, thereby revealing more complex causal patterns.

Necessity and sufficiency analyses of individual antecedent variables

Generating different truth tables based on the effects of different combinations of independent variables on the dependent variable, analyzing the necessity and sufficiency of the antecedent conditions of each variable, and deriving the necessary conditions for individual factors, as shown in Table 4. The goodness-of-fit indicator is similar to the significance of the coefficients in regression analysis, i. e., the p-value, which refers to the degree of consistency between the conditional variable and the outcome, i. e., the extent to which an outcome requires the presence of a particular variable [20, p. 153]. From Table 4, we can see that f1 (Confidence Expectation), f2 (Intrinsic Interest), f3 (Task Value), f4 (Educational Assistance), f5 (Goal-Driven), and f6 (Emotion Attribution) have the highest degree of agreement of 1.000000, which meets the criterion of absolute necessity of 0.9, i. e., all the six indexes can be the necessary conditions for the motivation to learn a foreign language. At the same time, the coverage rate of each antecedent variable is

Table 4

Analysis of sufficient and necessary conditions for causal variables (with the dependent variable taking the value of 1)

variable name	Consistency	Coverage
f1	1.000000	0.303103
~f1	-2.299213	1.000000
f2	1.000000	0.279068
~f2	-2.583356	1.000000
f3	1.000000	0.255620
~f3	-2.912054	1.000000
f4	1.000000	0.274955
~f4	-2.636952	1.000000
f5	1.000000	0.299915
~f5	-2.334280	1.000000
f6	1.000000	0.282281
~f6	-2.542569	1.000000

lower than 0.8, which means that none of the six variables can affect the motivation to learn a foreign language alone.

Analysis of multiple conditional combinations

This study entailed combining and analyzing multiple antecedent variables to explore the effect of combining paths on the outcome variables. The case frequency threshold was set to 1, and a default value of 0.8 was used for the original consistency threshold. Normalization analysis was carried out to obtain ~f1fs f2fs f3fs f4fs ~f5fs ~f6fs and ~f1fs ~f2fs f3fs f4fs ~f5fs f6fs as the two equivalent qualitative implication terms, because in Chinese students' foreign language learning is still the main factor of completing the learning task with the teacher's help, and the task of learning a foreign language is more affected by the teacher-assisted factors, which are more direct, so we choose ~f1fs ~f2fs f3fs f4fs ~f5fs f6fs as the qualitative implication term. Therefore, ~f1fs ~f2fs f3fs f4fs ~f5fs f6fs is chosen as the qualitative implication term. Since all six indicators f1 (Confidence Expectation), f2 (Intrinsic Interest), f3 (Task Value), f4 (Educational Assistance), f5 (Goal-Driven), f6 (Emotion Attribution) are necessary for motivation to learn a foreign language, i. e., they all contribute to the emergence of the outcome. Complex and intermediate solutions were obtained after the run. There are no sufficiently parsimonious explanations to cover most cases. There may be multiple combinations of conditions, all of which have an effect on the outcome, but none of which is universally necessary. This situation may lead to failure to recognize a parsimonious solution. This, together with the fact that the theoretical framework of the research problem may be inherently complex, leads to multiple combinations of conditions that are significant. Therefore, there are only complex and intermediate solutions and no parsimonious solutions. In this paper, the intermediate solution is chosen to explain the outcome variables. The intermediate solution provides a relatively parsimonious explanation, which can help understand which combinations of conditions have an effect on the outcome in most cases. Construct the intermediate solution model: model: y = f (f1fs, f2fs, f3fs, f4fs, f5fs, f6fs). (Within the fsQCA framework, Y represents

Table 5

Reporting of fsQCA Analysis Results

Foreign Language Learning Motivation										
Conditional Configuration	Configuration S1	Configuration S2	Configuration S3	Configuration S4	Configuration S5	Configuration S6	Configuration S7	Configuration S8	Configuration S9	Configuration S10
F1(Confidence Expectation)	•		⊗		⊗	•		•		⊗
F2(Intrinsic Interest)	•			⊗		⊗	•			•
F3(Task Value)		⊗			⊗	•	⊗			
F4(Educational Assistance)		⊗	⊗	•					•	⊗
F5(Goal-Driven)		⊗		⊗	•		•	•	•	⊗
F6(Emotional Attribution)			⊗					•	•	
Consistency	1	1	1	1	1	1	1	1	1	1
Original Coverage	0.419798	0.298301	0.344469	0.251435	0.255592	0.272274	0.233719	0.299736	0.309024	0.196178
Unique Coverage	0.0500719	0.0241131	0.0248905	0.0123358	0.00482893	0.00292128	0.0033561	0.00318843	0.0147121	0.00151718
Overall Consistency	1									
Overall Coverage	0.685634									

the outcome variable, specifically denoting high foreign language learning motivation in this study). The overall coverage is 0.685634, and the overall consistency is 1. The combined paths are well explained. From the results of the fsQCA software operation (Table 5), it can be seen that among all the combinations of antecedent variables, there are 10 paths affecting the motivation of students above matriculation to learn foreign languages (Table 6).

Remarks to Table 5: ● indicates the presence of an edge and ⊗ indicates the absence of an edge. "Blank" indicates both presence and absence of the condition in the configuration. The simultaneous presence or absence of both intermediate and parsimonious solutions is core presence or core absence. Only the presence or absence of an intermediate solution is the presence or absence of an edge.

In fsQCA (fuzzy-set Qualitative Comparative Analysis), the symbol "～" denotes logical negation, representing the absence or low membership of a certain condition or set (in the context of fuzzy-set analysis). Following fsQCA procedures, we denoted the ten derived solution configurations as S1 to S10 for analytical clarity. We excluded group states S2 and S3 because foreign language learning motivation is a combination of multiple conditions rather than single factors. Therefore, we also excluded the single-condition group states S4, S5, and S10. The qualitative comparative analysis results show that there are five modes triggering high foreign language learning motivation (Table 7).

These five factor combinations are antecedent combinations that form high foreign language learning motivation. Comparing the coverage of these five triggering patterns, it can be

Table 6

Paths affecting the motivation of students to learn foreign languages

Configuration	Conditional Configuration
S1	(f1fs*f4fs) Confidence Expectation* Educational Assistance
S2	(~f3fs*~f4fs*~f5fs) ~ Task Value* ~ Educational Assistance* ~Goal-Driven
S3	（~f1fs*~f4fs*~f6fs）~Intrinsic Interest* ~ Educational Assistance * ~Goal-Driven
S4	（~f2fs*f4fs*~f5fs）~Intrinsic Interest * Educational Assistance* ~Goal-Driven
S5	（~f1fs*~f3fs*f5fs） ~Confidence Expectation* ~Task Value* Goal-Driven
S6	（f1fs*~f2fs*f3fs）Confidence Expectation* ~ Intrinsic Interest * Task Value
S7	（f2fs*~f3fs*f5fs）Intrinsic Interest * ~ Task Value * Goal-Driven
S8	（f1fs*f5fs*f6fs）Confidence Expectation * Goal-Driven * Emotional Attribution
S9	（f4fs*f5fs*f6fs） Assisted Learning Synergy * Goal Driven * Emotional Attribution
S10	（~f1fs*f2fs*~f4fs*~f5fs）~Confidence Expectation*Intrinsic Interest*~ Educational Assistance *~Goal-Driven

Table 7

Modes for triggering high foreign language learning motivation

Configuration	Conditional Configuration
S1	(f1fs*f4fs) Confidence Expectation* Educational Assistance
S6	(f1fs*~f2fs*f3fs) Confidence Expectation * ~ Intrinsic Interest * Task Value
S7	(f2fs*~f3fs*f5fs) Intrinsic Interest * ~ Task Value * Goal-Driven
S8	(f1fs*f5fs*f6fs) Confidence Expectation* Goal-Driven * Emotion Attribution
S9	(f4fs*f5fs*f6fs) Educational Assistance * Goal-Driven * Emotion Attribution

seen that the explanatory power of pattern S1: f1fs*f4fs Confidence Expectation*Educational Assistance for high foreign language learning motivation literacy is greater than the explanatory power of S6, S7, S8, S9. Confidence Expectation and Intrinsic Interest are the dimensions of intrinsic factors that can most influence students' foreign language learning motivation, and Task Value and Goal-Drive are the dimensions of extrinsic factors that can most influence students' foreign language learning motivation. Diversified and personalized foreign language learning programs should be developed to promote students' foreign language learning according to their characteristics.

Conclusion

1. The significance of this study, based on SEM and fsQCA methods, combines qualitative analysis and empirical research, and applies AMOS structural equation modelling to scientifically validate the influencing factors of Chinese students' motivation to learn foreign languages above matriculation level, laying a foundation for subsequent research. This study enriches the motivational influences on foreign language learning of Chinese students above matriculation level and provides new ideas for a more in-depth discussion of the influences on Chinese students' motivation to learn foreign languages.

2. Using the fsQCA approach, it was found that Chinese students' motivation to learn a foreign language is influenced by overlapping multifactorial and multivariate factors rather than by individual causes, and that each prerequisite is a necessary but not a sufficient condition leading to an outcome [22, p. 394]. Comparing the coverage of these five triggering patterns, it can be seen that pattern S1: f1fs*f4fs Confidence Expectation*Educational Assistance has greater explanatory power for high motivational literacy in foreign language learning than S6, S7, S8, and S9. Confidence Expectation and Intrinsic Interest are the dimensions of intrinsic factors that most influence students' motivation to learn a foreign language. Task Value and Goal-Driven are the dimensions of extrinsic factors that most influence students' motivation to learn foreign languages.

3. In the future, we can develop diversified and personalized foreign language learning plans according to the students' foreign language learning situation to promote students' interest in foreign language learning. The limitation of this study is that the research object is limited to Chinese students, and there are more English and Russian students. The applicability of the findings of this study to students from other countries or multilingual environments needs to be further empirically investigated.

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