



An Empirical Research on English Learning Strategies of Li Nationality College Students

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Abstract. English learning strategy is one of the decisive factors for learners' English achievements. In order to know Li nationality college students' present condition of using English learning strategies, a questionnaire survey has been conducted from three perspectives including metacognitive strategy, cognitive strategy, affective/social strategy. On the basis of an empirical research upon the results through SPSS, it has come to the conclusion: the level of affective/social strategy of Li nationality college students is a little bit higher than that of their cognitive strategy and metacognitive strategy; cognitive strategy has a significant positive influence on both affective/social strategy and metacognitive strategy, and affective/social strategy has a significant positive influence on metacognitive strategy. Meanwhile, affective/social strategy plays as a partial intermediation between cognitive strategy and metacognitive strategy.

Keywords: English learning strategy · Li nationality college students · Empirical research

1 Introduction

Learning strategies is a term referring to the processes, rules, actions, skills and control methods that are consciously deployed by learners to help them to learn effectively [1, 2]. It can either be implicit rules, or explicit operation program or steps. Learners can obtain and accumulate learning strategies through practice in English learning. At present, Oxford's study on English learning strategies has the greatest influence. In his study, language learning strategies are classified as two types: direct strategies and indirect strategies, and the former include memory strategy, cognitive strategy, metacognitive strategy and compensation strategy, while the latter mainly include affective strategy and social strategy [3, 4]. Most of the researchers think that English learners' achievement is closely related to the efficiency and frequency of using learning strategies [5–9].

Li nationality is not only the indigenous people but also the minority with the largest population in Hainan island. Its special culture is a crucial resource for Chinese cultural tourism, attracting numerous tourists from home and abroad every year. In order to popularize Li culture and promote the development and protection of Li cultural tourism, a group of talents who are quite familiar with the Li culture and can use Li language, Chinese and English proficiently are badly in need. Then, Li nationality college

students exactly become the “pyramid” for the reserve of talents who can meet the needs above [10].

In China, the study on English learning strategies is marked with a late start. Most of the current studies focus on the whole group of college students, with almost none being conducted for Li nationality students on an ad hoc basis. Meanwhile, most of them are subjective analyses or description statistics based on frequency or percentage statistics [11], and uncertainty still remains in their conclusions. In this research, a questionnaire based on both direct and indirect English learning strategies is conducted on Li nationality students, and after a strict statistic analysis of the results, it aims to summarize the features of Li nationality college students on using English learning strategies, thus to provide some advice for them to use these strategies effectively.

2 Research Methods and Process

2.1 Research Participants, Methods and Contents

Based on English learning strategies, a sampling questionnaire survey is conducted on Li nationality college students in Sanya. The questionnaire is delivered to students through the platform of wenjuan.com, and SPSS is used to analyze the results. 144 questionnaires have been gathered, with 143 valid.

In the 143 participants, there are 76 females, accounting for 53.1%. 77 participants are freshmen and 49 participants are sophomores, accounting for 88.1% in total. Through the frequency analysis of demographic variables, the result is shown in Table 1.

Table 1. Frequency Statistics (N = 143)

Variables	Attribute	Frequency	Percentage (%)
Gender	male	67	46.9
	female	76	53.1
Grade	freshman	49	34.3
	sophomore	77	53.8
	junior	16	11.2
	senior	1	0.7

The learning strategies mentioned in the questionnaire mainly include memory strategy, cognitive strategy, metacognitive strategy, affective strategy, social strategy and compensation strategy. The questionnaire adopts Likert Scale, and the format of each item is as follows: “strongly agree”, “agree”, “neither agree nor disagree”, “disagree”, “strongly disagree”, with each option respectively scoring 5 points, 4 points, 3 points, 2 points, 1 point, with 3-point the critical value. High score represents high level and consciousness of using strategies, and vice versa.

2.2 Empirical Analysis Procedure

Validity Test

In order to test the questionnaire structure, factor analysis is conducted on 47 items. Before factor analysis, it is necessary to check whether the KMO value is greater than 0.7, thus to check whether Bartlett's test reaches significant or not. As it is shown in Table 2, KMO value is 0.935, greater than 0.7, while the value of Bartlett's test is 6778.558, and its significance level is lower than 0.001, suggesting that this sample is fit for factor analysis.

Table 2. Check list of KMO and Bartlett in the first factor analysis

KMO		0.935
Bartlett's test	Approximate chi-square	6778.558
	df	1081
	Sig.	0.000

By using PCA(Principal Component Analysis), factor analysis is conducted on the 47 items, and the analysis result is listed in a table, including extractive factors, factor loading, accumulated variance contribution rate, etc.

Table 3. Contribution rate of each factor in the first factor analysis

Factor	Characteristic root	Accumulated contribution rate (%)
1	6.244	13.285
2	5.873	25.78
3	5.13	36.695
4	4.541	46.356
5	4.443	55.809
6	4.378	65.124
7	3.978	73.589

As shown in Table 3, when extracting 7 factors whose characteristic roots are greater than 1, the accumulated variance contribution rate reaches 73.589%. The Rotated component matrix is shown in Table 4. The maximum factor loading value for Item 15, 20, 23, 28, 36, 42, 44, 46 and 47 are all below 0.5, so these nine items should be removed. As two high factor loading values (above 0.5) simultaneously exist in Item 5 and 49, these two items should also be removed. Factor analysis will be used again on the items after removing the unqualified.

Table 4. Rotated component matrix of the first factor analysis

Item No.	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
31	0.768	0.229	0.245	0.105	0.104	0.117	0.261
32	0.71	0.239	0.219	0.179	0.298	0.178	0.243
34	0.636	0.234	0.447	0.231	0.086	0.02	0.262
33	0.623	0.129	0.281	0.253	0.333	0.289	0.156
30	0.594	0.301	0.222	0.313	0.205	0.247	0.106
37	0.534	0.281	0.054	0.434	0.312	0.281	0.086
40	0.53	0.126	0.244	0.329	0.431	0.133	0.272
50	0.513	0.23	0.209	0.255	0.388	0.268	0.208
44	0.496	0.314	0.154	0.187	0.496	0.186	0.22
36	0.418	0.174	0.036	0.388	0.409	0.248	0.311
12	0.164	0.8	0.223	0.123	0.003	0.045	0.237
13	0.142	0.655	0.114	0.218	0.188	0.319	0.281
9	0.282	0.654	0.019	0.164	0.104	0.339	0.267
18	0.166	0.607	0.263	0.198	0.264	0.35	0.175
17	0.075	0.597	0.241	0.239	0.323	0.427	0.051
5	0.241	0.567	0.186	0.097	0.179	0.059	0.523
4	0.288	0.542	0.386	0.127	0.187	0.121	0.166
16	0.177	0.536	0.462	0.074	0.426	0.054	-0.048
15	0.318	0.432	0.421	0.276	0.103	0.271	0.073
28	0.264	0.431	0.336	0.291	0.308	0.328	0.124
27	0.189	0.205	0.698	0.105	0.305	0.191	0.152
14	0.213	0.358	0.65	0.164	-0.053	-0.019	0.311
24	0.45	0.271	0.579	0.101	0.177	0.344	0.129
29	0.268	0.035	0.573	0.105	0.32	0.196	0.419
22	0.371	0.251	0.561	0.037	0.311	0.234	0.265
25	-0.054	0.183	0.507	0.489	0.191	0.406	0.119
20	0.31	0.217	0.469	0.059	0.289	0.265	0.417
35	0.171	0.128	0.102	0.833	-0.045	0.09	0.212
38	0.263	0.269	0.039	0.74	0.298	0.252	-0.053
39	0.221	0.166	0.296	0.6	0.351	0.05	0.136
41	0.265	0.305	0.068	0.526	0.395	0.232	0.082
42	0.376	0.017	0.178	0.483	0.378	0.381	0.271
47	0.275	0.082	0.301	0.422	0.41	0.363	0.333
45	0.296	0.196	0.193	0.16	0.686	0.286	0.321
43	0.197	0.27	0.307	0.229	0.642	0.028	0.043
48	0.254	0.05	0.425	0.248	0.539	0.096	0.359
46	0.328	0.23	0.082	0.403	0.447	0.355	0.266
26	0.176	0.251	0.248	0.286	0.176	0.662	0.196
10	0.231	0.394	0.006	0.12	0.148	0.632	0.354
49	0.504	0.126	0.19	0.302	0.109	0.536	0.193

(continued)

Table 4. (continued)

Item No.	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
21	0.346	0.353	0.352	0.148	-0.018	0.526	0.314
19	0.313	0.361	0.318	0.17	0.231	0.524	0.209
23	0.21	0.385	0.384	0.347	0.162	0.444	-0.104
11	0.224	0.228	0.419	0.142	0.165	0.202	0.625
8	0.265	0.283	0.249	0.116	0.182	0.341	0.622
6	0.243	0.377	0.231	0.197	0.163	0.166	0.6
7	0.382	0.378	0.125	0.178	0.183	0.184	0.538

Before doing the next factor analysis, unqualified items should be removed. Unqualified items refer to the items whose maximum factor loading value is lower than 0.5, and the factor loading value of many factors are simultaneously above 0.5. Factor analysis is conducted again after removing the unqualified items. The final questionnaire structure is formed when doing the seventh factor analysis. As shown in Table 5, when doing the seventh factor analysis, the KMO value is 0.943, greater than 0.7, and the value of Bartlett’s test is 10216.411, with its significance level lower than 0.001, so the sample is fit for factor analysis.

Table 5. Check list of KMO and Bartlett in the seventh factor analysis

KMO		0.926
Bartlett’s test	Approximate chi-square	2380.205
	df	210
	Sig.	0.000

Table 6. Contribution rate of each factor in the seventh factor analysis

Factor	Characteristic root	Accumulated contribution rate (%)
1	5.766	27.456
2	5.113	51.801
3	3.386	67.925

As shown in Table 6, when extracting 3 factors whose characteristic roots are greater than 1, the accumulated variance contribution rate reaches 67.925%. The Rotated component matrix is shown in Table 7. The three factors are renamed as follows: Factor 1 is renamed as “metacognitive strategy”, including item 29, 30, 31, 32, 33, 34, 40, 48, 50; Factor 2 is renamed as “cognitive strategy”, including item 4, 10, 13, 16, 17, 18, 21 and 26; Factor 3 is renamed as “affective/social strategy”, including item 35, 38, 39 and 41. All the maximum factor loading values of these items are above 0.5, and high load only exists in one factor, suggesting that the construct validity is good.

Table 7. Rotated component matrix of the seventh factor analysis

Item No.	Factor 1	Factor 2	Factor 3
31	0.816		
32	0.776		
34	0.765		
33	0.748		
40	0.72		
29	0.7		
48	0.645		
30	0.628		
50	0.613		
17		0.8	
18		0.774	
13		0.737	
10		0.712	
21		0.682	
26		0.639	
4		0.607	
16		0.572	
38			0.828
35			0.768
39			0.704
41			0.669

Reliability Test

Reliability test is respectively conducted on cognitive strategy, affective/social strategy and metacognitive strategy, and Table 8 reports the results. According to the result, Cronbach's α coefficient will not rise no matter which item is removed, suggesting that all these items can be kept. The Cronbach's α coefficient of cognitive strategy, affective/social strategy, metacognitive strategy are respectively 0.914, 0.862, 0.942, all above 0.7, suggesting that the result of reliability test is good.

Table 8. Result of Reliability Test

Variables	Item No.	Cronbach's α coefficient after deleting this item	Cronbach's α coefficient of the variable
Cognitive Strategy	4	0.907	0.914
	10	0.905	
	13	0.901	
	16	0.912	
	17	0.897	
	18	0.897	
	21	0.901	
	26	0.904	

(continued)

Table 8. (continued)

Variables	Item No.	Cronbach's α coefficient after deleting this item	Cronbach's α coefficient of the variable
Affective/Social Strategy	35	0.862	0.862
	38	0.778	
	39	0.822	
	41	0.832	
Metacognitive Strategy	29	0.939	0.942
	30	0.935	
	31	0.934	
	32	0.93	
	33	0.931	
	34	0.935	
	40	0.933	
	48	0.939	
	50	0.935	

Correlation Analysis

Description statistics and correlation analysis are used to analyse cognitive strategy, affective/social strategy, metacognitive strategy, and Table 9 reports the results. This scale is a 5-point scale, with 3 point a mid-value. According to the result of description statistics, the average value of affective/social strategy is above 3, suggesting that the participants get a relatively high score in affective/social strategy; the average value of both cognitive strategy and metacognitive strategy are all below 3, suggesting that the participants get a relatively low score in these two strategies. According to the result of correlation analysis, among the three variables including cognitive strategy, affective/social strategy, metacognitive strategy, positive correlation exists between each two variables ($p < 0.001$).

Table 9. Description statistics and correlation analysis

	Cognitive strategy	Affective/Social strategy	Metacognitive strategy
Cognitive strategy	1		
Affective/Social strategy	0.655***	1	
Metacognitive strategy	0.756***	0.683***	1
Mean value (M)	2.858	3.136	2.750
Standard deviation (SD)	0.898	0.947	0.887

Note: *stands for $p < 0.05$, **stands for $p < 0.01$, ***stands for $p < 0.001$

Mesomeric Effect Model

Structural equation model is built to test the mesomeric effect of affective/social strategy between cognitive strategy and metacognitive strategy. [12] Because there are too many constitute indexes of cognitive strategy and metacognitive strategy, items are packed in order to simplify the model and improve the degree of model fitting. The items of cognitive strategy is packed in 4 packages(X1 ~ X4), and the items of metacognitive strategy is packed in 3 packages(Y1 ~ Y3). As shown by the model modified index (MI), there is a high correlation between X1 and X2, so correlation is set on the residual to modify the model, and the final structural equation model is obtained as it is shown in Fig. 1.

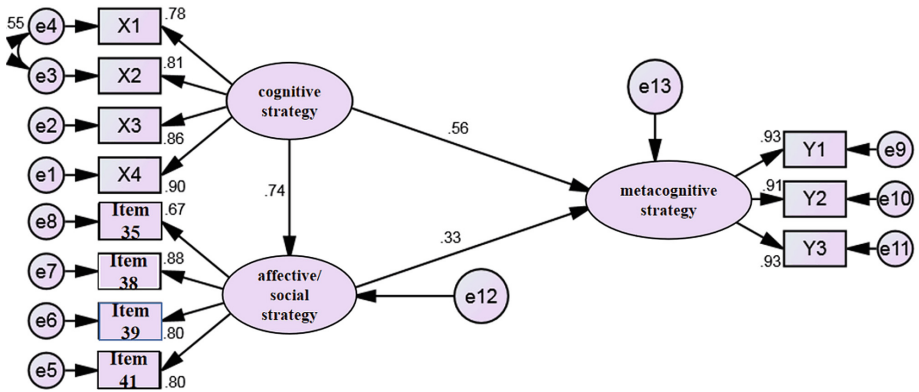


Fig. 1. Diagrammatic figure of mesomeric effect

The main fit index of each item in this structural equation model is shown in Table 10. $X^2/df = 1.824 < 3$, $RMSEA = 0.076 < 0.08$, $RMR = 0.044 < 0.05$, $GFI = 0.916 > 0.9$, $NFI = 0.948 > 0.9$, $RFI = 0.928 > 0.9$, $IFI = 0.976 > 0.9$, $TLI = 0.966 > 0.9$, $CFI = 0.975 > 0.9$, all of them are inside the fitting range, suggesting that this structural equation model is acceptable.

Table 10. Global fitting result of structural equation model

Model fitting index	Critical value	Research model	Fitting judgement
X^2/df	<3	1.824	Yes
RMSEA	<0.08	0.076	Yes
RMR	<0.05	0.044	Yes
GFI	>0.9	0.916	Yes
NFI	>0.9	0.948	Yes
RFI	>0.9	0.928	Yes
IFI	>0.9	0.976	Yes
TLI	>0.9	0.966	Yes
CFI	>0.9	0.975	Yes

Table 11 reports the path coefficients of this structural equation model. As it is shown in the result, cognitive strategy has a significant positive influence on affective/social strategy ($\beta = 0.737$, $t = 8.329$, $p < 0.001$), and it also has a significant positive influence on metacognitive strategy ($\beta = 0.332$, $t = 3.421$, $p < 0.001$); and affective/social strategy has a significant positive influence on metacognitive strategy ($\beta = 0.561$, $t = 5.729$, $p < 0.001$).

In order to test the indirect effect of cognitive strategy on metacognitive strategy with affective/social strategy as a mediating variable, after using bootstrap method to sample for 2000 times, the indirect effect value is 0.245, while the confidence interval is [0.075, 0.511], except 0, suggesting that the indirect effect is significant and positive. The direct effect is the effect of cognitive strategy on affective/social strategy in the model, and its value is 0.561, suggesting that the direct effect is significant and positive. Gross effect refers to the sum of direct effect and indirect effect, and its value is 0.806, positive. Thus, affective/social strategy plays as a partial intermediation between cognitive strategy and metacognitive strategy, and indirect effect accounts for 30.4% of the gross effect.

Table 11. The Path coefficient of structural equation model

Influence path	β	S.E.	C.R.	P
cognitive strategy \rightarrow affective/social strategy	0.737	0.087	8.329	***
affective/social strategy \rightarrow metacognitive strategy	0.332	0.097	3.421	***
cognitive strategy \rightarrow metacognitive strategy	0.561	0.096	5.729	***

3 Conclusion

Through the empirical analysis, it is easy to know that Li nationality college students do not use English learning strategies so often. When using English learning strategies, the frequency of using affective/social strategy is a little bit higher than that of using cognitive strategy and metacognitive strategy. Also, cognitive strategy has a significant positive influence on both affective/social strategy and metacognitive strategy, and affective/social strategy has a significant positive influence on metacognitive strategy. Meanwhile, affective/social strategy plays as a partial intermediation between cognitive strategy and metacognitive strategy.

To a large extent, English learning strategy is one of the decisive factors for learners' English achievement. In order to improve learners' English ability, firstly, college English teachers should introduce more English learning strategies to Li nationality students [13], and intensify their cognitive strategy. Secondly, both teachers and students should attach more importance to the training and cultivation of Li students' autonomous learning ability [14, 15], and students should practice metacognitive strategy persistently. Thirdly, teachers should provide more encouragement and support for Li students, and bring affective/social strategy into full play. Li students are kind and optimistic, and they are keen on questioning and communicating with their classmates and teachers [16, 17], so teachers should make full use of this advantage, thus to

improve their frequency of using affective/social strategy as well as their oral English ability. Last but not least, colleges should create a good information environment for students, and provide necessary courses for Li students to improve their ability in using network resources, as in the future English learning, information technology and network resource will bring great convenience for English learners [18].

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