Motivation and Its Relationship with Learning Strategy

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Dec, 2012

Conference paper for the 2nd International Conference on Chinese as a Second Language Research, Taipei, Aug, 2012

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Key Words

Motivation, intrinsic motivation, extrinsic motivation, learning strategy, heritage Chinese students, non-heritage Chinese students

Abstract

This study investigates motivation that influences heritage and non-heritage students' learning of Chinese, and its relationship with Chinese language learning strategies (LLS). The study uses Deci and Ryan's typology – "Intrinsic Motivation" and "Extrinsic Motivation", for the investigation, examining issues such as:

1. What are Chinese students' motivations in studying Chinese?
2. What are Chinese students' perceptions of learning strategies in studying Chinese?
3. What is the relationship between students' motivation and their perceptions of LLS use?

The study addresses questions of both theoretical and pedagogical significance, and makes specific proposals regarding pedagogies and teaching Chinese as a Second / Foreign Language.

Motivation and Its Relationship with Learning Strategy

Rationale of the Study

Research on English as a Second Language Acquisition has flourished during the past few decades. However, as a new discipline, Chinese as a Foreign/Second Language (CFL/CSL) can boast only 20 years of history (Wu, 2004; Shi, 2006). Research in this area has not only been limited, but to some degree unbalanced. Most CFL/CSL research has been conducted in the U.S and China. The subject has received scant attention in other countries, including the UK. It is imperative that research in this discipline is conducted in a wider context.

In the US, research has been conducted chiefly in the following areas: (1) the acquisition of Chinese pinyin; (2) the learning of Chinese characters; (3) the teaching of reading and writing; (4) the acquisition of grammar. In addition, there has been significant research on non-cognitive factors, such as classroom environment and motivation, the acquisition of pragmatic Chinese and Chinese language testing and assessment (Ke and Shen, 2003).

In China, most CFL/CSL research has focused on error analysis, and transference of first language. Affective factors such as individual differences and learner strategies have been investigated meagerly (Cui, 2005; Shi, 2006; Xu, 2004; Zhao, 2000), despite a growing body of evidence suggesting that foreign language learners are highly influenced by affective factors (Gardner, 1985, 1992; Gardner and MacIntyre, 1987). Shi (2006) listed nine research areas where little research has been conducted. One of these is the study of Chinese Language Learners' Strategies.

In addition, learning Chinese as a Foreign Language and learning Chinese as a Heritage Language are two different things (Campbell et. al., 2000; Lynch, 2003). Kondo-Brown (2005) for example, stressed the importance of recognizing the distinctive needs of HL Learners and traditional FL students' (p. 564). However, as Kondo-Brown (2008) observed, we know much less about heritage language learners than we do about foreign language learners (p. 17).

This study was undertaken with the above considerations in mind. It investigates motivation that influences heritage and non-heritage students' learning of Chinese, and its relationship with Chinese language learning strategies (LLS). The study uses Deci and Ryan's typology – "Intrinsic Motivation" and "Extrinsic Motivation" (1985), for the investigation, examining issues such as:

1. What are Chinese students' motivations in studying Chinese?
2. What are Chinese students' perceptions of learning strategies in studying Chinese?
3. What is the relationship between students' motivation and their perceptions of LLS use?

Method

Participants

A total of 278 Chinese learners from 18 UK universities, colleges and schools, most of which are based in England and Scotland, were invited to participate in the study. This yielded 259 valid questionnaires. The other 19 were incomplete and so were treated as invalid data. The participants for this study were classified into two groups: 1) heritage Chinese students group, including students 'who have one or more parents speak Chinese – including any dialect of Chinese, as their mother tongue'; 2) non-heritage Chinese

students group, including students 'who have no parents speak Chinese – including any dialect of Chinese, as their mother tongue'. One hundred and seventeen participants (45.2%) were heritage Chinese language learners (CHL) and one hundred and forty two (54.8%) were non-heritage Chinese language learners (NCHL). The CHL students' self-reported Chinese language proficiency levels were higher than those of the NCHL students (p = .001).

Instruments

The instruments include a Background Questionnaire and a Strategies Questionnaire. The background questionnaire consists of 16 questions, asking basic demographic information, reasons for studying Chinese, and their self-perceived Chinese language proficiency level (see Appendix A). The Strategies Questionnaire **'***How do I learn Mandarin Chinese'* was adopted from Oxford's Strategy Inventory for Language Learning, version 7.0 (Oxford, 1990). Minor changes were made, for example, "a new language" was changed to "Chinese" when necessary. The response for "how true of you the statement is" was also changed to "how often you do as the statement says" to make it easier for the participants to answer (see Appendix B).

Sampling and Procedure

The questionnaires were administered and supervised either by the researcher or other instructors, teachers, or lecturers in the Chinese classes. A brief description of the study with a cover letter, including consent form, was provided and signed by the participants.

Results

Students' Motivations in Studying Chinese

In the current study, students' motivations in studying Chinese were divided into two groups: intrinsic and extrinsic motivation. "Intrinsic Motivation" is referred to "internalized values deriving from a student him/herself that motivate him/her to study the Chinese language", for instance, "*interest in Chinese culture*"; while "Extrinsic Motivation" is used to refer to "factors external to a student, that motivate him/her to study the Chinese language", for example, "*studying Chinese is useful when travelling*". Question No. 15 in the Background Questionnaire lists 11 reasons for studying Chinese. According to our working definitions, Item Q151, Q156, Q157, Q158, Q1510, and Q1511 were grouped into Intrinsic Motivation, other five items, Q152, Q153, Q154, Q155 and Q159 were grouped into Extrinsic Motivation (please refer to Appendix A).

Participants were asked to list eight reasons for studying Chinese in order of importance. They were asked to write '1' if the reason was the most important, write '2' if the reason was the second most important, and write '3' if the reason was the third most important, and so on. The participants were also asked to provide other motivational reasons, if such existed, in the order of the importance in Q1512. As the additional reasons provided by the participants all fell into one of the 11 reasons already listed, the statistical analysis on the motivations in studying Chinese therefore was based on the 11 items dealing with reasons. In addition, because lower numbers signified a higher degree of importance, the lower the mean score of an item, the more important it was as a reason for motivating language study.

The descriptive statistical analysis shows that the top four reasons for the heritage Chinese students studying Chinese were: "*Mandarin Chinese is interesting*"; "*interest in*

Chinese culture"; "to get a better job"; and "*useful when travelling*"; whereas the top four reasons for the non-heritage Chinese students studying Chinese were: "*to get a better job*"; "*useful when travelling*"; "*Mandarin Chinese is interesting*"; and "*to communicate better with family/friends*" (see Table 1).

Table 1

Descriptive Statistics on Heritage and Non-Heritage Students' Motivations in Studying Chinese

	Heritage Group			Non-Heritage Group		
	Rank	*M*	*SD*	Rank	*M*	*SD*
Q151. Mandarin Chinese is interesting	1	3.60	2.76	3	5.37	3.01
Q152. Useful when travelling	4	4.54	2.43	2	4.92	2.80
Q153.To get a better job	3	4.52	3.08	1	4.64	3.23
Q154.Parents/friends' suggestion/influence	6	6.88	2.44	5	5.89	2.86
Q155.To communicate better with family/friends	10	8.16	1.81	4	5.69	2.96
Q156. To watch Chinese films and dread Chinese literature	7	7.04	1.95	9	6.92	2.27
Q157. Interest in Chinese culture	2	4.44	2.48	6	6.19	2.57
Q158. To learn about my original culture and language roots	11	8.70	1.02	8	6.59	2.85
Q159. To fulfil a language requirement	8	7.30	2.19	10	7.31	2.47
Q1510.For personal satisfaction	5	4.90	2.48	7	6.33	2.59
Q1511. For a relationship with a Chinese Person	9	8.03	1.99	11	7.83	2.17

NB: Please refer to Item 15 in Appendix A.

The independent t-test shows that heritage students had significantly stronger intrinsic motivations in learning Chinese (CHL students: *M* = 1.39, *SD* = .50; NCHL students: *M* = 1.55, *SD* = .49), whereas non-heritage students had significantly stronger extrinsic motivations (CHL students: *M* = 1.49, *SD* = .50; NCHL students: *M* = 1.28, *SD* = .45). The p-values for the intrinsic and extrinsic motivation between the two groups were .006 and .001, respectively (all *sig.* < .01) (see Table 2).

Table 2

Heritage and Non-Heritage Students' Motivations in Studying Chinese

	Group	*n*	*M*	*SD*	*Sig.* (2-tailed)
Intrinsic Motivation	Non-Heritage	142	1.55	.49	.006
	Heritage	117	1.39	.50	
Extrinsic Motivation	Non-Heritage	142	1.28	.45	.001
	Heritage	117	1.49	.50	

Students' Perceptions of Learning Strategy Use

To answer the research question two, which relates to the profile of heritage and non-heritage students' perceptions of strategy use on the SILL test, preliminary descriptive statistics for mean and standard deviation were computed.

According to Oxford (1990, p. 291), a mean score above 3.5 on a SILL item is considered to reflect high use of a given strategy; 2.5 to 3.4 indicates medium use; and below 2.4 suggests low use of a strategy. Table 3 below shows overall picture of heritage and non-heritage Chinese students' reported strategy use in terms of these three categories. The majority of students reported medium use to high use of strategies: 82%

from heritage students and 76% from non-heritage students. The heritage Chinese students used strategies more often than non-heritage Chinese students.

Table 3

Comparison of Overall Means of Reported Strategy Use

	Heritage		Non-Heritage	
Usage	*N*	%	*N*	%
High (*M* >3.5)	6	12	7	14
Medium (3.4 < *M* > 2.5)	35	70	31	62
Low (*M* < 2.4)	9	18	12	24
Total	50	100	50	100

The heritage and non-heritage students also had different preferences with regard to their perceptions of LLS use: Table 4 shows the strategies that the heritage and non-heritage students reported using the most. For example the heritage students preferred the following strategies the most: memory strategy 1 *"I think of relationships between what I know and new things I learn in Mandarin"* (*M* = 3.83, *SD* = .99), memory strategy 2 *"I use the new Mandarin words in a sentence so I can remember them"* (*M* = 3.96, *SD* = 1.17), cognitive strategy 15 *"I watch Chinese language TV or movies spoken in Mandarin"* (*M* = 3.68, *SD* = .94), metacognitive strategy 30 *"I try to find as many ways as I can to use my Mandarin Chinese"* (*M* = 3.89, *SD* = .88), metacognitive strategy 31 *"I notice my Chinese mistakes and use that information to help me do better*" (*M* = 4.13, *SD* = .63), and metacognitive strategy 32 *"I pay attention when someone is speaking Chinese"* (*M* = 4.09, *SD* = .69). Like the CHL students, NCHL students also preferred the metacognitive strategy 32 the most (*M* = 4.05, *SD* = .78). In addition, they also preferred social strategies the most, such as social strategy 45 *"If I do not understand*

something in Chinese, I ask the other person to slow down or say it again" (*M* = 3.84, *SD* = .92), social strategy 46 "*I ask Chinese speaker to correct me when I talk*" (*M* = 3.76, *SD* = .91), social strategy 47 "*I practice Chinese with other students*" (*M* = 3.72, *SD* = 1.09), social strategy 48 "*I ask for help from Chinese speakers*" (*M* = 3.70, *SD* = 1.03), and social strategy 50 "*I try to learn about the culture of Chinese speakers*" (*M* = 3.99, *SD* = .98). This information suggested that the NCHL students used social strategies in high frequencies.

Table 4

Reported Strategy Use Categorized by High Usage (M >3.5)

	Questionnaire Item	**Rank**	**Mean**	**SD**
H	MEM (1): I think of relationships between what I know and new things I learn in Mandarin.	5	3.83	.99
	MEM (2): I use the new Mandarin words in a sentence so I can remember them.	3	3.96	1.17
	COG (15) I watch Chinese language TV or movies spoken in Mandarin.	6	3.68	0.94
	MET (30): I try to find as many ways as I can to use my Mandarin Chinese.	4	3.89	.88
	MET (31): I notice my Chinese mistakes and use that information to help me do better.	1	4.13	.63
	MET (32): I pay attention when someone is speaking Chinese.	2	4.09	.69
NH	MET (32): I pay attention when someone is speaking Chinese.	1	4.05	.78
	SOC (45): If I do not understand something in Chinese, I ask the other person to slow down or say it again.	3	3.84	.92
	SOC (46): I ask Chinese speaker to correct me when I talk.	4	3.76	.91
	SOC (47): I practice Chinese with other students.	5	3.72	1.09
	SOC (48): I ask for help from Chinese speakers.	6	3.70	1.03
	SOC (50): I try to learn about the culture of Chinese speakers.	2	3.99	.98

Note: H = Heritage Group; NH = Non-Heritage Group; MEM = Memory Strategies; COG = Cognitive Strategies; MET = Metacognitive Strategies; SOC = Social Strategies.

Table 5 shows the strategies that heritage and non-heritage students used the least. For instance, heritage Chinese students least preferred memory strategies 5 and 3, compensation strategy 26, and affective strategies 41, 43 and 44; whereas non-heritage Chinese students least preferred memory strategies 2 and 7, cognitive strategies 15, 16, and 17, metacognitive strategy 36, and affective strategies 43 and 44.

Table 5

Reported Strategy Use Categorized by Low Usage (M < 2.4)

	Questionnaire Item	**Rank**	***M***	***SD***
H	MEM (3): I connect the sound of a new Chinese word and image or picture of the word to help me remember it.	47	2.25	1.19
	MEM (5): I use rhymes to remember new Chinese words.	45	2.34	.99
	COM (26): I make up new words if I do not know the right ones in Chinese.	49	2.17	1.13
	AFF (41): I give myself a reward or treat when I do well in Chinese.	48	2.22	1.08
	AFF (43): I write down my feelings in a language diary.	50	1.80	1.10
	AFF (44): I talk to someone else about how I feel when I am learning Chinese.	46	2.29	1.22
NH	MEM (2): I use the new Mandarin Chinese words in a sentence so I can remember them.	45	2.29	1.20
	MEM (7): I physically act out new Chinese words.	44	2.31	1.45
	COG (15): I watch Chinese language TV shows spoken in Mandarin Chinese or go to movies spoken in Mandarin Chinese.	48	1.99	1.07
	COG (16): I read for pleasure in Mandarin Chinese.	50	1.71	1.04
	COG (17): I write notes, messages, letters, or reports in Mandarin Chinese.	49	1.92	1.14
	MET (36): I look for opportunities to read as much as possible in Chinese.	46	2.27	1.13
	AFF (43): I write down my feelings in a language diary.	43	2.38	1.08
	AFF (44): I talk to someone else about how I feel when I am learning Chinese.	47	2.21	1.16

Note: H = Heritage Group; NH = Non-Heritage Group; MEM = Memory Strategies; COM = Compensation Strategies; AFF = Affective Strategies; COG = Cognitive Strategies; MET = Metacognitive Strategies.

The students' perceptions of LLS use differed between the two groups, although both groups liked using metacognitive strategy 32 "*I pay attention when someone is speaking Chinese*" (*M* = 4.09, *n* = 117, *SD* =.69; *M* = 4.05, *n* = 142, *SD* =.78, respectively) the most (see Table 4), and both heritage and non-heritage Chinese students used affective strategy 43 "*I write down my feelings in a language diary*" (*M* = 1.80, *n* = 117, *SD* = 1.10; *M* = 2.38, *n* = 142, *SD* = 1.08, respectively) and affective strategy 44 "*I talk to someone else about how I feel when I am learning Chinese*" (*M* = 2.29, *n* = 117, *SD* = 1.22; *M* = 2.21, *n* = 142, *SD* = 1.16, respectively) the least (see Table 5).

Further analysis showed significant differences in the use of the six categories of strategies between the two groups (see Table 6). Heritage students used significantly more memory strategies *(M* = 2.95, *n* = 114), cognitive strategies *(M* = 2.93, *n* = 109), and metacognitive strategies *(M* = 3.32, *n* = 112) than their non-heritage counterparts (*M* = 2.65, *n* = 142; *M* = 2.75, *n* = 136; *M* = 3.10, *n* = 140, respectively), with p values of .002; .008; and .003, respectively (all < .01). Non-heritage students used significantly more compensation strategies *(M* = 2.83, *n* = 140), affective strategies *(M* = 2.67, *n* = 141) and social strategies *(M* = 3.51, *n* = 141) than heritage Chinese students (*M* = 2.54, *n* = 117; *M* = 2.49, *n* = 117; *M* = 3.25, *n* = 115, respectively), with p values of .001 (< .01); .024 (<.05); and .007 (< .01), respectively.

Table 6

Differences in Means and Standard Deviations of Overall Strategy Use among the Six Categories of Strategies on the SILL

		n	Mean	SD	Sig. (2-tailed)	Difference
MEM	NH	142	2.65	.88	.002	H>NH
	H	114	2.95	.55		
COG	NH	136	2.75	.51	.008	H>NH
	H	109	2.93	.57		
COM	NH	140	2.83	.65	.001	NH>H
	H	117	2.54	.65		
MET	NH	140	3.10	.63	.003	H>NH
	H	112	3.32	.53		
AFF	NH	141	2.67	.66	.024	NH>H
	H	117	2.49	.58		
SOC	NH	141	3.51	.63	.007	NH>H
	H	115	3.25	.91		

Note: H = Heritage group; NH = Non-Heritage group; MEM = Memory Strategies; COG = Cognitive Strategies; COM = Compensation Strategies; MET = Metacognitive Strategies; AFF = Affective Strategies; SOC = Social Strategies).

In order to explore more with regard to CHL and NCHL students' use of LLS, factor analysis (principle component analyses) of the SILL items was performed. By using this method the internal structure of students' perceived learning strategies use was revealed and statistical meaningful categories of the SILL was produced. Correlation matrix, factor extraction, and varimax rotation procedures were gone through for the 50-items of SILL. Screen test and the eigenvalues of greater than 1.0 were used for extracting the factors.

According to the principal-component analysis, a six-factor solution was the most appropriate. The six factors accounted for 39.48% and 40.73% of the total variance for the non-heritage group and for the heritage group. The reliability of each factor for the

non-heritage Group and for the heritage group was examined using Cronbach's alpha. The Cronbach alpha values (see Table 7) mostly ranged from .65 to .87. The results suggested good internal consistency and the categories of factors were found to be reliable. Table 7 below presents a summary of the results of the factor analysis of the SILL results.

Table 7

Factor Analysis – SILL

	Factor	Eigenvalue	% of Variance	Cumulative %
Non-Heritage Students Group	1 Compensation and affective strategies (*a* = .87)	4.87	9.74	9.74
	2 Social strategies (*a* = .78)	3.47	6.95	16.69
	3 Cognitive strategies (*a* = .71)	3.34	6.69	23.37
	4 Functional practice strategies (*a* = .65)	2.88	5.76	29.13
	5 Metacognitive strategies (*a* =.62)	2.69	5.38	34.51
	6 Memory strategies (*a* = .59)	2.48	4.97	39.48
Heritage Students Group	1 Memory strategies (*a* = .84)	4.01	8.02	8.02
	2 Formal oral practice strategies (*a* = .78)	3.47	6.93	14.95
	3 Cognitive strategies (*a* = .76)	3.38	6.77	21.72
	4 Metacognitive strategies (*a* = .74)	3.27	6.55	28.27
	5 Compensation and affective strategies (*a* = .70)	3.13	6.25	34.52
	6 Social strategies (*a* = .70)	3.11	6.21	40.73

The six factors of LLS use for the heritage Chinese students group include: factor 1 – memory strategies; factor 2 – formal oral practice strategies; factor 3 – cognitive strategies; factor 4 – metacognitive strategies; factor 5 – compensation and affective strategies; and factor 6 – social strategies (see Appendix C). The six factors of LLS use for the non-heritage Chinese students were: factor 1 – compensation and affective strategies; factor 2 – social strategies; factor 3 – cognitive strategies; factor 4 – functional practice strategies; factor 5 – metacognitive strategies; and factor 6 – memory strategies (see Appendix D).

Correlations between Motivation and LLS

A Pearson product-moment correlation coefficient was carried out to examine the relationship between students' motivation and the six major strategy factors measured by the LLS questionnaire. For the heritage Chinese students group, intrinsic motivation was significantly correlated with their fifth factor of learning strategy – compensation and affective strategies ($r = .27$, $n = 117$, $p < .01$) (see Table 8), although the correction was small ($r = .27$). As we used factors derived from factor analyses, which already associated related factor items together for this analysis, we did not expect a large correlation.

Table 8

CHL Students' Motivation and LLS (Using Factors Derived from Factor Analysis)

	1	2	3	4	5	6	7	8
1	1							
2	.08	1						
3	.10	.02	1					
4	.14	.03	.16	1				
5	.07	.02	.15	.02	1			
6	.12	.01	.07	.01	.17	1		
7	.27**	.12	.09	.14	.05	.03	1	
8	.11	.01	.01	.34**	.07	.15	.01	1

***. p < .01 (2-tailed); *. p < .05 (2-tailed)*
1 = Intrinsic motivation; 2 = Extrinsic motivation
3= Factor 1 of LLS, i.e. memory strategies; 4= Factor 2 of LLS, i.e. formal oral practice strategies; 5= Factor 3 of LLS, i.e. cognitive strategies; 6= Factor 4 of LLS, i.e. metacognitive strategies; 7= Factor 5 of LLS, i.e. compensation and affective strategies;8 = Factor 6 of LLS, i.e. social strategies; r = .10 to r = .29 or r = -.10 to r = -.29 small; r = .30 to r = .49 r = -.30 to r = -.49 medium; r = .50 to r = 1.0 or r = -.50 to r = -1.0 large

For the non-heritage Chinese students group, the students' intrinsic motivation was significantly correlated with their sixth factor of learning strategy – memory strategies (r = .17, n = 142, p < .05), and their extrinsic motivation was significantly correlated with their second factor of LLS – social strategies (r = .20, n = 142, p < .05), and their fifth factor of LLS – metacognitive strategies (r = .19, n = 142, p < .05) (see Table 9).

Table 9

Non-Heritage Chinese Students' Motivation and LLS (Using Factors Derived from Factor Analysis)

	1	2	3	4	5	6	7	8
1	1							
2	.26**	1						
3	.03	.01	1					
4	.14	.20*	.00	1				
5	.02	.07	.09	.22**	1			
6	.04	.03	.07	.14	.07	1		
7	.10	.19*	.20*	.01	.09	.05	1	
8	.17*	.09	.13	.13	.06	.26**	.02	1

***. p < .01 (2-tailed); *. p < .05 (2-tailed)*
1. = Intrinsic motivation ; 2 = Extrinsic motivation
3= Factor 1 of LLS, i.e. compensation and affective strategies
4= Factor 2 of LLS, i.e. social strategies; 5= Factor 3 of LLS, i.e. cognitive strategies, 6= Factor 4 of LLS, i.e. functional practice strategies; 7= Factor 5 of LLS, i.e. metacognitive strategies, 8= Factor 6 of LLS, i.e. memory strategies; r = .10 to r = .29 or r = -.10 to r = -.29 small; r = .30 to r = .49 r = -.30 to r = -.49 medium; r = .50 to r = 1.0 or r = -.50 to r = -1.0 large

Discussion

The current study revealed that the top four reasons for CHL students to studying Chinese (in descending order) were: "*Mandarin Chinese is interesting"* (intrinsic motivation); "*interest in Chinese culture*" (intrinsic motivation); "*to get a better job*" (extrinsic motivation); and "*useful when travelling*" (extrinsic motivation). Whereas the top four reasons for non-heritage Chinese students' studying Chinese (in descending order) were: "*to get a better job*" (extrinsic motivation); "*useful when travelling*"

(extrinsic motivation); "*Mandarin Chinese is interesting*" (intrinsic motivation); and "*to communicate better with family/friends*" (extrinsic motivation). However, heritage Chinese students showed significantly stronger intrinsic motivation, and non-heritage Chinese students showed significantly stronger extrinsic motivation in studying Mandarin Chinese language. The reason for this difference could be attributed to CHL students' cultural backgrounds as argued by Lu and Li (2008): "*their* [heritage Chinese students] *cultural backgrounds already enable them to have the intrinsic motivation to learn the language*" (p.101).

With regard to the students learning strategy, the current study detected that the different perceptions of LLS use between the two groups. The differences can be understood in terms of the greater linguistic facility generally available to heritage students (Kagan and Dillon, 2001). For example, to "*use the new Mandarin words in a sentence so I can remember them"* (memory strategy 2), and to *"watch Chinese language TV or movies spoken in Mandarin"* (cognitive strategy 15), require higher level reading, writing, and listening proficiency. As CHL students reported significantly higher levels of proficiency than NCHL students, these two strategies, i.e., memory strategy 2 and cognitive strategy 15, not surprisingly, became two of CHL students' most preferred strategies, and two of NCHL students' least preferred strategies.

The current study also suggested that there were significant differences in the students' perceptions of language learning strategies use between the two groups with regard to the six categories of LLS. Heritage students used significantly more memory strategies, cognitive strategies, and metacognitive strategies than non-heritage students, whereas non-heritage students used significantly more compensation strategies, affective strategies, and social strategies than their heritage counterparts.

Olivares-Cuhat (2002) also reported that heritage (Spanish) students showed a greater preference for memory strategies than their non-heritage counterparts. However the mean score (M = 3.46) of the heritage Spanish students' memory strategies was much higher than that (M = 2.95) in the current study. In addition, different from the current study; she found that heritage Spanish students used significantly more affective strategies (M = 3.37, SD = .64) than their non-heritage counterparts (M = 2.72, SD = .53, t [18] = 2.50, p = .023). She suggested that the reason for this may lie in the previous experience of this group in the acquisition of SLA. She argued that, were heritage Spanish speakers faced with a new language learning situation, they would tend to use acquired language learning patterns to overcome difficulties in the target language.

In terms of cognitive strategies, heritage Chinese students were very likely to use this type of strategies in their learning language. This type of strategies are typically found to be the most popular strategies with language learners and are essential in learning a new language because these strategies not only require, but also allow for direct and immediate manipulation or use of input (Oxford,1990). This result can also be understood as a function of language proficiency as Kagan and Dillon (2001) suggested. Watching Mandarin T.V. programs or conversing with natives requires higher levels of proficiency.

Wu (2007) also reported that European students, such as English, Italian, French, Spanish, and Russian, used significantly more compensation strategies and social strategies than Asian students, such as Korean, Japanese and Indonesian students. He argued that these two types of strategies – social and compensation strategies are closely related: social strategies are mainly to do with cooperative study and empathy, including asking for correction, confirmation, or repetition. In order to complete their study task,

such students will frequently use this type of strategies, whereas compensation strategies are used mainly because a student lacks knowledge and skills in the target language. Wu argued that European students tended to use compensation strategies because they lacked knowledge and skills in the target language. In Wu's point of view, the European students used more compensation strategies due to their lower proficiency levels. Therefore they tried different methods, such as using gestures or synonyms, to fill in the large gaps in their knowledge. At the same time they used social strategies in their cooperative study.

However, in Wu's study (2007), Korean, Japanese and Indonesian students used significantly more affective strategies than their European counterparts, who speak English, Italian, French, Spanish, and Russian. Wu's finding differs to that in the current study. Our data suggested that NCHL students used more affective strategies than CHL students, and CHL students used more memory strategies than NCHL students. In fact, both CHL and NCHL students in the current study reported these two types of strategies as their least preferred strategies. The mean scores for NCHL and CHL students' affective strategies were: 2.67, 2.49, respectively (*SDs* = .66; .58, respectively); and the mean scores for NCHL and CHL students' memory strategies were: 2.65, 2.95, respectively (*SDs* = .88, .55, respectively).

Jiang (2000) on the other hand, found that the least used strategies for both European students whose mother tongue was English, Italian, German or French and Asian students whose mother tongue was Japanese, Korean, Indonesian, or Thai were affective (*Ms* = 2.53; 3.03, respectively) and memory strategies (*Ms* = 2.80; and 2.75, respectively). However, in Jiang's study (ibid.) Asian students used affective strategies much more frequently than the CHL students in the current study (*Ms* = 3.03; and 2.49, respectively). Jiang reasoned that it was to do with students' culturally influenced

personality: students from Asia are thought to be introverted, lack confidence, and to be especially sensitive to their emotions. She inferred from this that this group's students would need to use affective strategies, such as encouragement, to boost their self-confidence. In our point of view, environment may be a factor to make people do things differently. Living in the UK – a very different environment to that of the Asian countries environment, for at least some period of time, we were not surprised to see that the CHL students used affective strategies the least like their non-heritage Chinese students counterparts. And if Jiang's culturally influenced personality explanation was true, then it would also explain why the CHL students in the current study used affective strategies much less frequently than Asian students in China whose mother tongue was Japanese, Korean, Indonesian, or Thai.

Factor analysis revealed the different internal structures of CHL and NCHL students' perceptions of LLS use. The different internal structure of CHL and NCHL students' perceptions of LLS further remind us the different characteristics of the two distinctive group students, and therefore we should not treat them – teach them in the same way.

The correlation analyses suggested that the relationship between CHL students' motivation in learning Chinese and their perceptions of LLS use were different from that of NCHL students (see Table 8 and 9). Heritage Chinese students' intrinsic motivation was significantly correlated with their compensation and affective strategies. Presumably fascination about the Chinese language (CHL students' top reason to study Chinese) and Chinese culture (CHL students' second top reason to study Chinese), increased their courage to make them *"try to relax whenever they feel afraid of using Chinese"* (affective strategies), and to make guesses and use gestures, or make up a word

(compensation strategies) in order to converse in Chinese when they came across a word they did not know. In another word, if they believed they could learn more about the Chinese language and understand more about the Chinese culture through the use of Chinese language, they might lower their anxiety levels in their Chinese language study and tried to use the language. Vis -a- vis might also be possible.

As to the non-heritage Chinese students, their intrinsic motivation for example, *"Mandarin Chinese is interesting"*, which was the third top reason for them to study Chinese, might drive them to use social strategy 45 *"If I do not understand something in Chinese, I ask the other person to slow down or say it again"*, social strategy 46 "*I ask Chinese speaker to correct me when I talk*" , social strategy 47 "*I practice Chinese with other students*", social strategy 48 "*I ask for help from Chinese speakers*", and social strategy 50 "*I try to learn about the culture of Chinese speakers*". The NCHL students reported that these strategies were their most preferred strategies with all the mean scores larger than 3.70. Again, the reverse might also be possible, as the correlation analysis does not suggest the cause and effect.

Likewise, non-heritage students' extrinsic motivation for instance, "*to get a job in China*" (NCHL students' top reason to study Chinese), "*to travel in China*" (NCHL students' second top reason to study Chinese), and "*to communicate better with friends*" (NCHL students' fourth top reason to study Chinese), made them to *"have clear goals for improving my Chinese skills"*, and to *"think about my progress in learning Chinese"*, and encouraged them *"to find as many ways as I can to use my Mandarin Chinese "*, and *"to look for people I can talk to in Chinese"*, and *"to look for opportunities to read as much as possible in Chinese"*. Vis-à-vis might also be possible, as no cause and effect relationship can be detected by correlational analysis (Larson-Hall, 2010, p. 149).

Implications

In the UK, higher education sectors and secondary schools usually treat heritage Chinese students as foreign language students and place them with non-heritage students in the same class. This practice has posed challenges and difficulties to both teachers and students (Kondo-Brown, 2001; Chen and Che, 2009). Kondo-Brown (2001) pointed out: "Many heritage Chinese learners who wish to study their home language in formal school settings have no choice but to take traditional foreign language classes which may be wasting many hours for heritage language learners attending classes which are not tailored to meet their special needs" (p. 157 – 158). Evidence obtained through the current study reveals that CHL and NCHL students have very different constructs and characteristics with regard to their motivation and learning strategies, therefore the students should be taught differently using effective learning materials suitable for them. In line with the implications of the current study, we offer the following suggestions:

- Provide a separate track for the needs of most heritage language students, using proficiency as an additional criterion when necessary;
- Instead of teaching heritage and non-heritage Chinese students in the same way, teach them according to their attributes – their different learning motivations and their different learning strategies;
- Develop effective Chinese language teaching materials according to the CHL and NCHL students' different characteristics.

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Appendix A: Background Questionnaire

1. Name_____ 2. Date _____

3. Age _____ 4. Sex _____5. Mother Tongue _____

6. Nationality_____7. Ethnicity _____

8. Is there anyone from your family a Chinese Ethnicity?
No_____ Yes_____ (please specify)

9. Does anyone from your family speak Chinese, such as Mandarin or Cantonese?
No_____Yes____ (please specify): who: _____speaks: ____

10. What language do you speak? At home: _____, other time: _____

11. Where are you studying Mandarin Chinese? _____

12. What is the name of your Mandarin course (if you are taking one)?_____

13. How long have you studied Mandarin Chinese? _____year/s

14. How many hours do you study Mandarin Chinese per week?
In class: _____hours; outside of class: _____hours

15. Why did you choose to study Mandarin Chinese? Name 8 reasons in the order of importance.
1) Mandarin Chinese is interesting_____
2) Useful when travelling _____
3) To get a better job _____
4) Parents or friends' suggestion or influence_____
5) To communicate better with family and friends _____
6) To watch Chinese films and read Chinese literature_____
7) Interest in Chinese culture _____
8) To learn about my original culture and language roots _____

9) To fulfill a language requirement _____

10) For personal satisfaction _____

11) To have a relationship with a Chinese person_____

12) Other (specify) _____

16. How do you rate your overall proficiency in Chinese language as compared with the proficiency of native speakers of Chinese?

Reading	none	0	1	2	3	4	near-native
Writing	none	0	1	2	3	4	near-native
Speaking	none	0	1	2	3	4	near-native
Listening	none	0	1	2	3	4	near-native

Appendix B: How do I learn Mandarin Chinese?

Please read the following statements, and tick the response (1, 2, 3, 4, or 5) to indicate how often you actually do when you are learning Mandarin Chinese.

1. Never or almost never do this 2. Generally not do this

3. Somewhat do this 4. Generally do this 5. Always do this

	1	2	3	4	5
1. I think of relationships between what I already know and new things I learn in Mandarin Chinese.					
2. I use the new Mandarin Chinese words in a sentence so I can remember them.	1	2	3	4	5
3. I connect the sound of a new Chinese word and image or picture of the word to help me remember it.	1	2	3	4	5
4. I remember a new Chinese word by making a mental picture of a situation in which the word might be used.	1	2	3	4	5
5. I use rhymes to remember new Chinese words.	1	2	3	4	5
6. I use flashcards to remember new Chinese words.	1	2	3	4	5
7. I physically act out new Chinese words.	1	2	3	4	5
8. I review Chinese lessons often.	1	2	3	4	5
9. I remember new Chinese words or phrases by remembering their location on the page, on the board, or on a street sign.	1	2	3	4	5
10. I say or write new Chinese words several times.	1	2	3	4	5
11. I try to talk like native Mandarin Chinese speaker.	1	2	3	4	5
12. I practice the sounds of Mandarin Chinese.	1	2	3	4	5
13. I use the Chinese words I know in different ways.	1	2	3	4	5
14. I start conversations in Mandarin Chinese.	1	2	3	4	5

15. I watch Chinese language TV shows spoken in Mandarin Chinese or go to movies spoken in Mandarin Chinese.	1	2	3	4	5
16. I read for pleasure in Mandarin Chinese.	1	2	3	4	5
17. I write notes, messages, letters, or reports in Mandarin Chinese.	1	2	3	4	5
18. I first skim a Chinese passage then go back and read carefully.	1	2	3	4	5
19. I look for words in my own language that are similar to new words in Chinese.	1	2	3	4	5
20. I try to find patterns in Mandarin Chinese.	1	2	3	4	5
21. I find the meaning of a Mandarin Chinese word by dividing it into parts that I understand.	1	2	3	4	5
22. I try not to translate word-for-word.	1	2	3	4	5
23. I make summaries of information that I hear or read in Chinese.	1	2	3	4	5
24. To understand unfamiliar Chinese words, I make guesses.	1	2	3	4	5
25. When I cannot think of a word during a conversation in Chinese, I use gestures.	1	2	3	4	5
26. I make up new words if I do not know the right ones in Chinese.	1	2	3	4	5
27. I read Chinese without looking up every new word.	1	2	3	4	5
28. I try to guess what the other person will say next in Chinese.	1	2	3	4	5
29. If I cannot think of a Chinese word, I use a word or phrase that means the same thing.	1	2	3	4	5
30. I try to find as many ways as I can to use my Mandarin Chinese.	1	2	3	4	5
31. I notice my Chinese mistakes and use that information to help me do better.	1	2	3	4	5

32. I pay attention when someone is speaking Chinese.	1	2	3	4	5
33. I try to find out how to be a better learner of Chinese.	1	2	3	4	5
34. I plan my schedule so I will have enough time to study Chinese.	1	2	3	4	5
35. I look for people I can talk to in Chinese.	1	2	3	4	5
36. I look for opportunities to read as much as possible in Chinese.	1	2	3	4	5
37. I have clear goals for improving my Chinese skills.	1	2	3	4	5
38. I think about my progress in learning Chinese.	1	2	3	4	5
39. I try to relax whenever I feel afraid of using Chinese.	1	2	3	4	5
40. I encourage myself to speak Chinese even when I am afraid of making a mistake.	1	2	3	4	5
41. I give myself a reward or treat when I do well in Chinese.	1	2	3	4	5
42. I notice if I am tense or nervous when I am studying or using Chinese.	1	2	3	4	5
43. I write down my feelings in a language learning diary.	1	2	3	4	5
44. I talk to someone else about how I feel when I am learning Chinese.	1	2	3	4	5
45. If I do not understand something in Chinese, I ask the other person to slow down or say it again.	1	2	3	4	5
46. I ask Chinese speaker to correct me when I talk.	1	2	3	4	5
47. I practice Chinese with other students.	1	2	3	4	5
48. I ask for help from Chinese speakers.	1	2	3	4	5
49. I ask questions in Chinese.	1	2	3	4	5
50. I try to learn about the culture of Chinese speakers.	1	2	3	4	5

Appendix C: Factor Analysis – SILL for the Heritage Chinese Students Group

Questionnaire Items	F1	F2	F3	F4	F5	F6
Q6, I use flashcards to remember new Chinese words.	.786					
Q7, I physically act out new Chinese words.	.752					
Q5, I use rhymes to remember new Chinese words.	.734					
Q9, I remember new Chinese words or phrases by remembering their location.	.713					
Q8, I review Chinese words often.	.696					
Q4, I remember a new word by making a mental picture of a situation in which the word might be used.	.642					
Q11, I try to talk like native Mandarin speakers.		.747				
Q12, I practice the sounds of Mandarin Chinese.		.708				
Q14, I start conversation in Mandarin Chinese.		.624				
Q13, I use the Chinese words I know in different ways.		.594				
Q2, I use the new Mandarin words in a sentence so I can remember them.		.561				
Q3, I connect the sound of a new word and image or picture of the word to help me remember it.		.502				
Q1, I think of relationships between what I know and new things I learn in Mandarin.		.376				
Q21, I find the meaning of a Mandarin word by dividing it into parts that I understand.			.692			
Q18, I first skim a Chinese passage then go back and read carefully.			.668			
Q17, I write notes, messages, letters, or reports in Mandarin Chinese.			.637			
Q19, I look for words in my own language that are similar to new words in Chinese.			.620			
Q20, I try to find patterns in Mandarin Chinese.			.599			
Q22, I try not to translate word for world.			.570			
Q10, I say or write new Chinese words several times.			.561			
Q16, I read for pleasure in Mandarin Chinese.			.502			
Q23, I make summaries of information that I hear or read in Chinese.			497			
Q15, I watch Chinese language TV or movies spoken in Mandarin.			.376			
Q35, I look for people I can talk to in Chinese.				.665		
Q33, I try to find out how to be a better learner of Chinese.				.660		

Q31, I notice my Chinese mistakes and use that information to help me do better.				.654		
Q36, I look for opportunities to read as much as possible in Chinese.				.635		
Q34, I plan my schedule so I will have enough time to study Chinese.				.511		
Q30, I try to find as many as I can to use my Mandarin Chinese.				.474		
Q38, I think about my progress in learning Chinese.				.432		
Q32, I pay attention when someone is speaking Chinese.				.409		
Q37, I have clear goals for improving my Chinese skills.				.389		
Q41, I give myself a reward or treat when I do well in Chinese.					.620	
Q26, I make up new words if I do not know the right ones in Chinese.					.601	
Q42, I notice if I am tense or nervous when I am studying or using Chinese.					.538	
Q43, I write down my feelings in a language learning diary.					.535	
Q28, I try to guess what the other person will say next in Chinese.					.475	
Q39, I try to relax whenever I feel afraid of using Chinese.					.473	
Q48, I ask for help from Chinese speakers.						.619
Q47, I practice Chinese with other students.						.595
Q49, I ask questions in Chinese.						.591
Q45, If I do not understand something in Chinese, I ask the other person to slow down or say it again.						.583
Q46, I ask Chinese speaker to correct me when I talk.						.556
Q50, I try to learn about the culture of Chinese speakers.						.495
Q44, I talk to someone else about how I feel when I am learning Chinese.						.475
Q40, I encourage myself to speak Chinese when I am afraid of making mistake.						.338
% of variance explained	8.02	6.93	6.77	6.55	6.25	6.21
Internal consistency (alpha)	.84	.78	.76	.74	.70	.70

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Appendix D: Factor Analysis – SILL for the Non-Heritage Chinese Students Group

Questionnaire Items	F1	F2	F3	F4	F5	F6
Q25, When I cannot think of a word during a conversation in Chinese, I use gestures.	.754					
Q27, I read Chinese without looking up every new word.	.724					
Q24, To understand unfamiliar Chinese words, I make guesses.	.722					
Q26, I make up new words if I do not know the right ones in Chinese.	.708					
Q29, If I cannot think of a Chinese word, I use a word or phrase that means the same thing.	.687					
Q44, I talk to someone else about how I feel when I am learning Chinese.	.510					
Q39, I try to relax whenever I feel afraid of using Chinese.	.623					
Q41, I give myself a reward or treat when I do well in Chinese.	.558					
Q40, I encourage myself to speak Chinese when I am afraid of making mistake.	.541					
Q43, I write down my feelings in a language learning diary.	.449					
Q47, I practice Chinese with other students.		.714				
Q48, I ask for help from Chinese speakers.		.707				
Q46, I ask Chinese speaker to correct me when I talk.		.698				
Q50, I try to learn about the culture of Chinese speakers.		.665				
Q49, I ask questions in Chinese.		.590				
Q45, If I do not understand something in Chinese, I ask the other person to slow down or say it again.		.580				
Q12, I practice the sounds of Mandarin Chinese.			.697			
Q23, I make summaries of information that I hear or read in Chinese.			.652			
Q20, I try to find patterns in Mandarin Chinese.			.618			
Q11, I try to talk like native Mandarin speakers.			.595			
Q13, I use the Chinese words I know in different ways.			.591			
Q10, I say or write new Chinese words several times.			.498			
Q21, I find the meaning of a Mandarin word by dividing it into parts that I understand.			.454			
Q18, I first skim a Chinese passage then go back and read carefully.			.430			
Q14, I start conversation in Mandarin Chinese.			.414			
Q19, I look for words in my own language that are similar to new words in Chinese.			.399			

Q22, I try not to translate word for world.			.360			
Q16, I read for pleasure in Mandarin Chinese.				.640		
Q17, I write notes, messages, letters, or reports in Mandarin Chinese.				.619		
Q15, I watch Chinese language TV or movies spoken in Mandarin.				.602		
Q33, I try to find out how to be a better learner of Chinese.				.571		
Q32, I pay attention when someone is speaking Chinese.				.545		
Q34, I plan my schedule so I will have enough time to study Chinese.				.512		
Q31, I notice my Chinese mistakes and use that information to help me do better.				.440		
Q38, I think about my progress in learning Chinese.					.629	
Q37, I have clear goals for improving my Chinese skills.					.510	
Q36, I look for opportunities to read as much as possible in Chinese.					.487	
Q30, I try to find as many as I can to use my Mandarin Chinese.					.410	
Q35, I look for people I can talk to in Chinese.					.362	
Q3, I connect the sound of a new word and image or picture of the word to help me remember it.						.558
Q7, I physically act out new Chinese words.						.539
Q5, I use rhymes to remember new Chinese words.						.494
Q8, I review Chinese words often.						.466
Q9, I remember new Chinese words or phrases by remembering their location.						.449
Q4, I remember a new word by making a mental picture of a situation in which the word might be used.						.430
Q1, I think of relationships between what I know and new things I learn in Mandarin.						.401
Q6, I use flashcards to remember new Chinese words.						.387
Q2, I use the new Mandarin words in a sentence so I can remember them.						.382
% of variance explained	9.74	6.95	6.69	5.76	5.38	4.97
Internal consistency (alpha)	.87	.78	.71	.65	.62	.59

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.