THE ROLE OF MOTIVATION, STRATEGY USE AND SECOND LANGUAGE APTITUDE IN THE DEVELOPMENT OF LISTENING SKILLS BY ADULT CHINESE LEARNERS

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Abstract:

This research has investigated the associations among strategy use, language learning aptitude and motivation and their impact on predicting the development of listening skills of Spanish-Catalan bilingual beginner learners studying Chinese. The participants were 13 Spanish-Catalan bilingual students majoring in International Business and Tourism in a school in Barcelona, taking Chinese as an optional language course for their first year of study. All of them were raised in Catalonia speaking Catalan and Spanish, except for one student originally from Morocco. In addition, all of them had an intermediate level of English (CEFR: B1-B2). The experiment consisted of a motivation questionnaire, Strategy Inventory for Language Learning (SILL), LLAMA_D, a pre-test and three post-tests (i.e. listening tests) in each month during the 3 month research period. The collected data was analysed through the Spearman correlation coefficient and the results of the effects on Chinese listening gains display that motivation was found to be a strong predictor of the development of Chinese listening gains. Strategy use has a significant positive effect, but the very strong correlation was only found in the first stages, the effect decreased later on. Instead, language learning aptitude had a non-significant effect as measured by LLAMA_D.

Keywords: individual difference, aptitude, motivation, strategy use, SILL, LLAMA_D

1. Introduction

Over the last few decades, multiple areas on individual differences (ID) have been explored, such as age, personality, anxiety, motivation, language learning aptitude, and strategy use (Artieda & Muñoz, 2016; Carroll, 1959, 1981, 1990; Deci & Ryan, 2002; Dörnyei, 2000, 2001, 2009; Granena, 2016; Ortega, 2009; Oxford & Shearin, 1994; Skehan, 1989, 2002, 2012; Wen, 2016; etc.).

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In earlier studies, the emphasis was mainly determined by the characteristics common in successful language learners in order to predict which kind of learner was most likely to succeed. Later, the interest has switched to explaining why some learners succeed more than others for learner training and L2 development, and moreover to group learners on the basis of aptitude and different types of instruction, with the aim of maximizing learning (Artieda, G., & Muñoz, C., 2016; Kormos, J., 2013; etc.).

There is still a gap in the studies conducted in the sense that there is not enough focus on beginner learners of non-English foreign languages. Since most of the research work pays particular attention mostly to intermediate and advanced learners learning English as a second language (Saito & Samimy, 1996; Huang & Eskey, 1999; Hyltenstam & Abrahamsson, 2003; etc.). Besides, as one of the most important language skills, the development of listening skills has not been commonly investigated, this lack of attention on the development of listening skills also calls for further research.

Overall, this study explores three factors which might predict learning outcomes in Chinese listening gains, focused on both cognitive (the ability to recognise repetitive sound segments in spoken language measured by LLAMA_D) and non-cognitive factors (language learning strategy use and motivation).

2. Background

2.1 Individual difference and SLA
Individual differences play a key role in Second Language Acquisition (SLA). It has been observed that adult learners usually demonstrate some variances in terms of their foreign language learning outcomes despite the fact they belong to the same classroom setting and are exposed to the same instructional materials and methods (Johnson & Newport, 1989). Skehan (1991) claimed that individual differences can be attributed to many of these variances in L2 performance. Not surprisingly, in recent years, there has been a considerable amount of research conducted in the area of individual differences and its relation to L2 development and acquisition.

"Individual differences are a prominent feature of SLA because a great deal of the variation in language learning outcomes is attributable, either directly or indirectly, to various learner characteristics." (Dörnyei, 2006).

In the pursuit of explaining why learners attain different levels of success in L2 development, research has addressed questions related to a number of factors. Dörnyei (2006) claimed that personality, aptitude, motivation, learning style and learning strategies are the 5 most important ID variables that have been studied. These variables can be divided into cognitive and non-cognitive factors. Furthermore, Sparks' longitudinal study shows that the combination of cognitive and non-cognitive factors gave a reason for the fundamental proportion (66%) of the variation in L2 proficiency (Sparks et al., 2009).

2.2 Language Learning Aptitude and SLA

Aptitude and SLA has been broadly studied by various researchers. In the late 20th century, Carroll (1981) analyzed the characteristics of a variety of individual learners. Based on the analysis, he introduced his 4-factor construction of language-learning aptitude:

- *associative memory* (The ability to bridge the relationship between learners' foreign language and their L1).
- *phonemic coding ability* (The ability to identify and store in long-term memory, new language sounds or strings of sounds).
- *grammatical sensitivity* ("The individual's ability to demonstrate an awareness of the syntactic patterning of sentences of a language").
- *inductive language analytic ability* (The ability to infer grammatical rules from language examples).

The 4 sub-components of language aptitude were embodied in the Modern Languages Aptitude Test (MLAT) (Carroll & Sapon, 1959).

In 1998, Skehan (1998:203) proposed that there was a need for the reconsidering of aptitude and aptitude tests in light of better comprehension and changing perspective in SLA. He initiated the revision of the notion and introduced a new structure with three components: Phonemic coding ability (the same as Carroll's), Language analytic ability (which encompassed Carroll's "*grammatical sensitivity*" and "*inductive language learning analytic ability*") and Memory (which is in close proximity to the current apprehension of working memory).

Throughout the early 2000's, language-learning aptitude was cited as the most influential cognitive factor in individual differences affecting L2 acquisition (Dörnyei & Skehan, 2003). Dörnyei also claimed that language-learning aptitude is "*one of the most promising areas of SLA research*" (Dörnyei, 2005, p. 63). Other researchers also emphasized the particular importance of language-learning aptitude which predicts language learning success (e.g., Carroll, 1962, 1981, 1990; Corno et al, 2002; Robinson, 2005; Skehan, 2002). In recent years, aptitude has been described as the strongest influence on L2 learner achievement (Skehan, 2012; Sparks et al. 2009) and some researchers even found that the influence of aptitude on L2 development was very high (Kiss & Nikolov, 2005; Rosa & Muñoz, 2013).

More recently, new thoughts and re-thinkings on language aptitude have been brought up, with regards to its stability over time (Kormos, 2013), different levels of proficiency (Artieda & Muñoz, 2016) and the conceptualisation of memory (Wen, 2016). Particularly, some studies supported a multi-component approach to aptitude and working memory. Granena (2016), for instance, proposed that cognitive styles are related to different types of attitude. This proposal was also confirmed by Wen (2016) who presented the "*Integrated Approach*" regarding different working memory components[ii]. In the same year, it was concluded by Li (2016) that aptitude was unattached to other

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[ii] "Integrated Approach" connects different types of working memory to different types of aptitude.

individual distinctions like motivation (in position to Pimsleur, 1966) and classroom anxiety (Sparks & Patton, 2013). Li (2016) deduced that aptitude was a powerful forecaster of overall proficiency but excluding vocabulary learning and L2 writing, yet different test sub-components predicted different aspects of learning which heavily substantiates a multi-component outlook on aptitude.

When it comes to language learning aptitude and Chinese language acquisition, few studies have been conducted so far. In 2013, Winke applied the structural equation model (SEM) to investigate the construct of aptitude with regards to Chinese as a second language (CSL) advanced learners. Her discoveries put into evidence that L2 aptitude, (including rote memory, phonetic coding ability, grammatical sensitivity, and phonological working memory) is limited to a medium usefulness in this situation. Furthermore, the repercussions of L2 aptitude on learning at an advanced level are moderated by affective variables of motivation and strategy use.

2.3 Motivation and SLA

Besides language learning aptitude, motivation is also a commonly investigated factor in second language acquisition (Williams & Burden, 1997; Dörnyei, 2000, 2001, 2003, 2009; Ushioda, 1996, 2001; etc.). In general, evidence has been presented by a great number of studies through either quantitative or qualitative methods supporting that motivation is a significant predictor in the success of language learning. Learning expectations, the choice of learning strategies and learning results were found to be correlated with motivation (Dörnyei, 1994, 2003; Gardner 1985; Tachibana, Matsukawa, & Zhong, 1996; Wen 1997; Noels, 2003).

With regards to motivation and Chinese language acquisition, several studies have been conducted. Baohua Yu (2010) investigated the role of language attitudes and motivation in the adaptation of international students in China learning Chinese. He found out that integrative motivation represents a major positive role and language anxiety represents a major negative role in both sociocultural adaptation and academic adaptation. Researchers at Aalborg University (Ruan, Duan, & Du, 2015) discovered that integrative motivation played a more significant role than instrumental motivation in the learning process.

2.4 Strategy use and SLA

Another notable contribution to L2 acquisition in SLA was found to be strategy. There is plentiful research showing that using various strategies on a regular basis can help learners perform better in an instructed L2 learning context (Cohen, 1998; Green & Oxford, 1995; Griffiths, 2003). However, Ehrman and Oxford (1995) discovered that a large diversity of strategies is not helpful if they are arbitrary. Only structured and organised learning strategies can lead to success in L2 acquisition. As a result, they noted that good language learners can systematize their language learning strategies and apply certain ones to certain tasks (Ehrman & Oxford, 1995).

Recently, Sha Huang (2018) explored the strategies Chinese as a Second Language (CSL) learners use to deduce the definitions of unknown Chinese words in a case study. The participants were asked to read a message and then interviewed about the strategies they used and their perception of the usefulness of these strategies. The author identified seven strategies (in the order of frequency of reported use): using character meaning, sentence context, world knowledge, known words/phrases, syntax cues, radical knowledge, and pronunciation/pinyin. The participants also considered sentence context and world knowledge as the most useful strategies. A close look at the data from the two most successful participants in inference suggested that they were able to use multiple strategies.

2.5 The development of listening kills

SLA studies are for the most part mainly focused on general language development, different language skills also needed to be further investigated. Listening has a vital role in language acquisition and learning due to forming part of one of the four essential language skills. Notwithstanding, it has not received much research and classroom consideration when compared to other language skills, this is because listening has usually been accepted as a passive skill that would naturally evolve through speaking and reading (Richards, 2005; Rost, 2011).

Lately, there is an increased interest in listening research. One main way to research listening skills is looking into the cognitive differences that occur in the course of the listening process among learners of different listening ability levels. By determining the functional listening strategies that successful language learner listeners use and eliminating problems that poor language learner listeners have (Goh, 2002; Graham & Macaro, 2008).

2.6 Significance of the study and research questions

There is a growing number of people around the world learning Chinese as a foreign or second language (CFL/CSL) (Wang, 2014), this leads to more demand on Chinese as second language acquisition studies.

The purpose for doing this study is threefold. First of all, as it has been shown in the literature review section, that most of the research on SLA focuses on English as a Second Language (ESL) acquisition, CFL/CSL still needs to be further investigated. There is a need calling for more studies on CFL/CSL acquisition.

What is more, there has been an increasing number of research studies in language aptitude, motivation and strategy use respectively (Dörnyei, 1994; 2009; Ushioda, 2003; Wen, 1997; Winke, 2013; Yu, 2010; Su, 2015). Most of them investigated general language gains instead of listening gains specifically. Studies focusing on listening gains are underdeveloped.

Last but not least, Chinese is always perceived as an intricate language especially for beginners who struggle with Chinese listening and writing. However, most research has analysed aptitude, motivation, strategy use and Chinese learning focusing on

intermediate and advanced learners rather than beginners (e.g., Li, 2009, 2010; Winke, 2013), more research on beginners is needed.

The present study was guided by the following research questions:

1) Are there any relations among motivation, strategy use and LLAMA_D scores?
2) Does the use of strategies help developing Chinese listening skills by bilingual Spanish/Catalan adult learners?
3) Does motivation play a role in Chinese listening skills development by bilingual Spanish/Catalan adult learners?
4) How does the ability to recognise repeated sounds in oral language as measured by Llama-D affect the development of listening skills in Chinese by bilingual Spanish and Catalan adult learners?

3. Methodology

3.1 Participants
The participants in this study were 13 students in a tertiary school in Barcelona, learning Chinese as an optional language course. Most of the participants are Catalan-Spanish bilinguals raised in Catalonia, consequently, all of them speak Catalan, Spanish and English (B1-B2), yet none of them speaks any other Asian languages and has no experience in learning Chinese.

Table 1: Background information on the participants

Participant	Gender	Nationality	Age	Language Use (more than CEFR B2 proficiency)
1	M	Spain	18	Spanish Catalan bilingual, English B2
2	M	Spain	18	Spanish Catalan bilingual, English B2
3	M	Spain	19	Spanish Catalan bilingual, English B2
4	M	Spain	18	Spanish Catalan bilingual, English B1
5	M	Spain/USA	19	Spanish Catalan English trilingual
6	M	Spain	21	Spanish Catalan bilingual, English B1
7	M	Spain	18	Spanish Catalan bilingual, English B2
8	M	Colombia	19	Spanish Native, Catalan B2, English B1
9	F	Spain	19	Spanish Catalan bilingual, English B2
10	F	Spain	20	Spanish Catalan bilingual, English B2
11	F	Spain	19	Spanish Catalan bilingual, English B1
12	F	Spain	20	Spanish Catalan bilingual, English B2
13[iii]	M	Morocco	48	Arabic (Native), French (Native), Spanish (C1), Russian (C1), English (B2), Catalan (B2)

The participants all volunteered and were given a traditional Chinese craft as a gift for their effort. Thirteen participants were analysed, but the data from one participant had to be discarded on account of problems with low attendance to sessions and non-completion of various tests. Out of the remaining participants, twelve were 18-21 years old, and one of them was aged 48. To control the age factor, the 48-year-old participant was not analysed during the quantitative analysis. Moreover, in order to make sure that

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[iii] Participant number 13 is the student who was not analysed quantitatively with the other participants.

additional learning would not influence the result the participants were asked not to learn additional information after class except for what was related to the compulsory assignment. The background information of the participants is listed in Table 1.

3.2 Materials
3.2.1 Linguistic background questionnaire
As learnt from Rogers et al. (2016), the language learning experience was controlled in this study. This is due to her findings on the idea that previous L2 instruction anticipates more of the variance (6%) of LLAMA test results than any other factor of the five factors (L1 script, language neutrality, highest formal education qualification, gender and logic puzzles) when examining the LLAMA aptitude tests.

In order to control the language background and language learning experience, the participants were requested to fill in a language background questionnaire. The questionnaire included 8 questions on their proficiency in Chinese, their study experience with it and other languages they speak.

3.2.2 LLAMA_D test
The LLAMA_D test was chosen in order to measure the participants' ability to detect and memorize novel and unfamiliar sound sequences and abstract phonetic regularities in a language without any awareness. It was suggested by Granena (2013) that LLAMA_D was an implicit measure of language aptitude.

The LLAMA_D test contains two parts: firstly, the participants were auditorily presented with 10 pseudowords to memorize. Secondly, a series of pseudowords were played one by one, some of these were new, but some were repeated from part 1. The participants were expected to identify whether they had heard before. In the end, the result of the percentage of correct answers was generated automatically and test-takers are penalised for guessing.

3.2.3 Strategy Inventory for Language Learning (SILL)
Strategy Inventory for Language Learning (SILL) Version 7.0 developed by Oxford (1989, 1990) was adapted to measure the strategy use of the participants. There are 6 sections in the SILL, including A-memory strategies, B-cognitive strategies, C-compensation strategies, D-metacognitive strategies, E-affective strategies and F-social strategies (Hsiao & Oxford, 2002). The SILL consisting of 50 five-point Likert-scale questions was initially used by non-English speakers who are learning English (ESL or EFL students) and has been applied in several studies (e.g., Griffiths, 2003; Hong–Nam & Leavella, 2006; Hwu, 2007; Tseng & Schmitt, 2008). SILL version 7.0 was designed for non-native English students who are learning English initially, but nowadays it has not only been used in ESL/EFL studies, but it also has been adapted and applied in the extent body of research. For example, an adaptation protocol was developed in Greek (Gavriilidou & Mitits, 2016) and also in Chinese (Winke, 2013). In this study, the SILL was adapted to Chinese learning.

3.2.4 Motivation Questionnaire

The motivation questionnaire was extracted from Winke (2013), who adapted the questionnaire from Kormos and Dörnyei (2004) and examined the motivation for advanced Chinese learners. The adapted motivation questionnaire is made up of 38 five-point, Likert-scale questions investigating learners' "*integrativeness, incentive values, attitudes towards learning the L2, linguistic self-confidence, language use anxiety, task attitudes and willingness to communicate*" (Dörnyei 2002). Numerous studies have conducted the questionnaire to investigate L2 learning motivation. (e.g., Dörnyei, 2002; Dörnyei & Kormos, 2000; Kormos & Dörnyei, 2004; Winke, 2013).

3.2.5 The Listening Test

The listening tests, 20 points in total, had 4 main parts. They were taken from the official HSK (Hanyu Shuiping Kaoshi) tests (Level I) which is a standardized test of Chinese language proficiency for non-native speakers, administered by the Hanban, an agency of the Ministry of Education of the People's Republic of China. The HSK (Level I) assesses test takers' abilities in the application of everyday Chinese. It is approximately equivalent to the A1 Level of the Common European Framework of Reference (CEFR)[iv].

3.3 Procedure

3.3.1 Data collection

The data was collected at the school where the participants were studying in Barcelona. The duration of the study was 3 months (4 hours per week instruction). All participants took the same Chinese class taught by the same teacher. Most of the tests and tasks (including the SILL and Motivation Questionnaire) were conducted after class during the break, the LLAMA_D test was carried out at the computer room during the second week of the second month.

The listening tests were conducted four times in total: pre test, test 1, test 2 and test 3. Different test papers were used, but all corresponding to the same level. The pretest was set before the Chinese class, test 1, test 2 and test 3 were run on the last Tuesday of each month. To avoid guessing by the volunteers and ensure honesty with the listening tests, all of the participants were told that the scores from the tests would not appear on their transcripts and have no influence on their academic performance.

3.3.2 Scoring

The scores of the LLAMA_D were generated when the tests were completed. Regarding the motivation questionnaire and the SILL, the scoring was conducted by adding the scores from both questionnaires in order to create composite scores to indicate what would normally be considered a latent variable.

The listening comprehension was scored according to the official HSK1 listening examination materials. The gains 1, 2 and 3 were calculated by using each month's

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[iv] http://www.chinesetest.cn/gosign.do?id=1&lid=0#

listening score minus the previous month's score (The first month's gains were the first month's listening score minus the pre test score). The gains in total during the three months was computed by subtracting the pretest score from the final listening score (score from Test 3).

3.3.3 Data analysis

The data was analyzed via SPSS 20. Statistical analyses were conducted on the collected SILL, motivation, LLAMA_D scores and listening gains of the first three months. Non-parametric correlational analyses (Spearman) were conducted to examine the correlations between the measured variable and the students' performance in Chinese listening.

4. Results

4.1 The correlations among the independent variables

First of all, in order to investigate the relations of motivation, strategy use and LLAMA_D, the Spearman Correlation was run among these variables (see Table 2).

Table 2 displays the degree of correlation between the assessed variables according to the Spearman's correlation coefficient. As indicated in Table 2, a significant correlation between LLAMA_D and Motivation was not found (Rs= .109) , the correlation between Strategy use and LLAMA_D was not notable either (Rs= .228) and the correlation between Strategy Use and Motivation was found to be weak (Rs= .427).

Table 2: The correlation among the independent variables

		Motivation	Strategy Use	LLAMA_D
Spearman's rho Motivation	Correlation Coefficient Sig. (2-tailed) N	1.000 . 12	.427 .167 12	.109 .736 12
Strategy Use	Correlation Coefficient Sig. (2-tailed) N	.427 .167 12	1.000 . 12	.228 .476 12
LLAMA_D	Correlation Coefficient Sig. (2-tailed) N	.109 .736 12	.228 .476 12	1.000 . 12

4.2. Strategy Use and Listening Gains

Secondly, with the purpose of looking into the role of strategy use and Chinese listening gains (RQ1). Strategy use scores and the gains in each month were computed and correlated by using the Spearman correlation (see Table 3).

Table 3 shows that strategy use and gains 1 (the first month's listening gains) were very strongly correlated (Rs= .854**), the correlation between strategy use and gains 2 (the second month's listening gains) was also strong (Rs= .666*). However, gains 3 (the third month's listening gains) was discovered to be negative and non-significantly

correlated with strategy use (Rs= -.095). As for the total gains in the three months, a moderate correlation was found (Rs= .589*)

Table 3: Strategy Use and Listening Gains

		Gains1	Gains2	Gains3	Gains Total
Spearman's rho **Strategy Use**	Correlation Coefficient	.854**	.666*	-.095	.589*
	Sig. (2-tailed)	.000	.018	.768	.044
	N	12	12	12	12

4.3 Motivation and Listening Gains

Next, to analyse the role of motivation in the development of Chinese listening skills during the three months (RQ2), the Spearman correlation was run again (see Table 4)

Table 4 displays the correlation between Motivation and gains 1, 2 and 3. A moderate correlation was found both between Motivation and gains 1, as well as Motivation and gains 2 (Rs= .579/ .598). The correlation between Motivation and gains 3 resulted in a medium correlation (Rs= .674*). Moreover, the total gains resulted to be strongly correlated (Rs= .833**).

Table 4: Motivation and Listening Gains

		Gains1	Gains2	Gains3	Gains Total
Spearman's rho **Motivation**	Correlation Coefficient	.579*	.598*	.674*	.833**
	Sig. (2-tailed)	.049	.040	.016	.001
	N	12	12	12	12

4.4. LLAMA_D and Listening Gains

In the end, Spearman correlation analyses were run to answer the third research question on the effects of the ability to distinguish repetitive sounds in oral language as measured by LLAMA_D on listening development (see Table 5).

Table 5 illustrates that the collected LLAMA_D data was non-significantly correlated with gains 1 (Rs= .299), the correlation was even weaker with gains 2 (Rs= .132) and gains 3 (.118). In terms of LLAMA_D scores and the overall gains during the three months, a non-significant correlation was also found (Rs= .294).

Table 5: LLAMA_D and Listening Gains

		Gains1	Gains2	Gains3	Gains Total
Spearman's rho **LLAMA_D**	Correlation Coefficient	.299	.132	.118	.294
	Sig. (2-tailed)	.345	.682	.714	.354
	N	12	12	12	12

4.5 Case analysis of one participant

As mentioned in the participants' description, there was one participant who was excluded from the statistical analysis because of the age factor (i.e. 20 years older than the average) and his language learning background (i.e. as he speaks 6 different languages). Nevertheless, he took the same lessons and tests as the rest of the groups and

interestingly, highly outperformed other learners in these listening tests. As seen in table 6, the participant consistently obtained highly above average results among all the tests[v].

From Table 6, we can notice his score on strategy use was much higher than the average and motivation as well, but the LLAMA_D score was comparably low.

Table 6: The participant and the average

	LLAMA_D	Strategy use	Motivation	Gains 1	Gains 2	Gains 3	Gains Total
The case study participant	47	207	172	11	8	1	20
Mean Score	52.2	158	140	5.4	5.5	4.7	14.75

5. Discussion

5.1 The correlations among the independent variables

The first research question aims at checking the associations among the independent variables in the study, namely, strategy use, motivation and LLAMA_D. In previous studies some research correlated learning strategies and motivation, holding the view that motivated learners usually apply more learning strategies thus makes them better learners (Schmidt & Watanabe, 2001; Gardner et al., 1997; MacIntyre & Noels, 1996). More recently, Winke (2013) found that aptitude negatively affected motivation (r =- .27, p= .58), and Vandergrift (2004) discovered that motivation was positively correlated with strategy use (r = .40, p = .00).

However, contrary to what other researchers found out, the results of the current study did not reveal statistically significant relationships among Motivation, Strategy use and LLAMA_D: there were no correlations was found not only between LLAMA_D and Motivation (Rs= .109), but also between Strategy use and LLAMA_D (Rs= .228), what is more, a weak correlation was discovered between Strategy Use and Motivation (Rs= .427).

The results indicate that the correlations among motivation, strategy use and LLAMA_D were not significant. Statistically significant relationships between Motivation, Strategy use and LLAMA_D were not found. In this study, this suggests that these three independent variables did not affect each other.

5.2 The Effects of Strategy Use

The second research question examined whether strategy use predicts the development of Chinese listening skills for bilingual Spanish/Catalan adult beginner learners. Some studies provide evidence that strategy use may affect various skills differently. Researchers have suggested that strategies have a more significant impact on reading than listening and speaking (Chamot, 2005; Farrell & Mallard, 2006), mainly because in

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[v] The full mark of the listening test was 20, the participant already obtained a score of 19 in the second test, hence the reason for the score being only 1 in 'Gains 3'.

listening and speaking the strength of social and interactive skills overrides the effect of strategy use (Nakatani & Goh, 2007). Researcher Winke (2013) also found that strategy use has a minimal effect on listening (r = - .11, p = .35) for advanced Chinese learners.

Surprisingly, in this study, the Spearman correlation analysis indicates that strategy use has a very strong effect on listening gains 1(Rs= .854**) and a moderately strong effect on listening gains 2 (Rs= .666*). In other words, the strategy use was significantly correlated with the development of listening skills during the first two months. This indicates that strategy plays a significant role in the development of Chinese listening for beginners at the beginning of the Chinese learning course.

Gains 3 however, did not maintain that positive correlation, instead negative and non-notable correlations were found (Rs= -.095). The probability of the non-significant correlation could be explained by the fact that the participants were more proficient after a certain period of time and did not rely on strategies that much. At the beginning strategy use is fundamental, however as the students get more familiar with the language, they gradually accustom themselves and become less reliant on the strategies.

Taking the gains during the three months as a whole, a moderate correlation was discovered (Rs= .589*) . This suggests that strategy use contributes to the participants' listening development in general during the three months.

5.3 The Effects of Motivation

The Third research question focused on the role of motivation on Chinese listening gains for bilingual Spanish/Catalan adult beginner learners.

According to Winke, motivation did not reveal to have as important an effect in listening and speaking as in reading (Winke 2013). However, in another study that investigated the relationship among metacognitive strategy use, motivation and listening test performance of EFL university students in Iran, a statistically significant correlation was discovered between listening performance and intrinsic motivation (Baleghizadeh & Hossein Rahimi, 2011).

In the current study, motivation was found to be moderately correlated with both gains 1, gains 2 and gains 3 (Rs= .579*/ .598*/ .674*). Besides, motivation was strongly correlated with the overall three months' listening gains (Rs=.833**). This hints that motivation plays an important role in L2 Chinese listening skills development.

5.4 The Effects of Language Learning Aptitude

The fourth research question explored whether the development of listening skills in Chinese is influenced by the ability to differentiate repetitive sounds in oral language in bilingual Spanish and Catalan adult learners, as measured through Llama D.
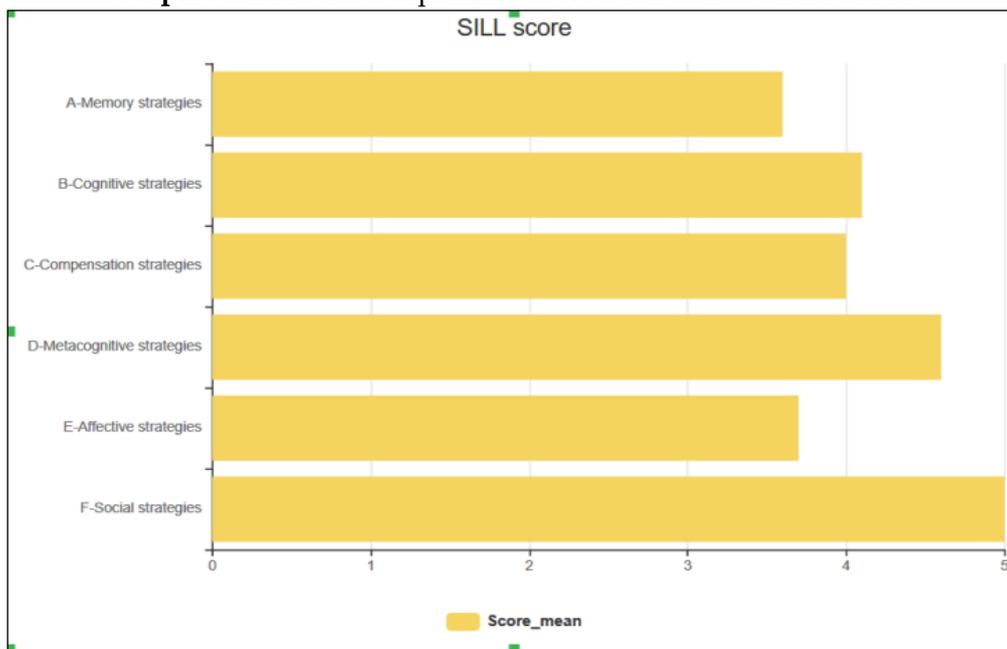
In the LLAMA test battery, the LLAMA D subtest is aimed at identifying how well learners recognise and remember patterns in oral language. Artieda and Muñoz (2016) discovered a moderate effect on the rate of learning and in repetitive oral sound recognition (measured by LLAMA_D). The correlations were reported as: r = 0.40, n = 52, p<0.01, R2 = 0.16 (16%). Artieda proposed that implicit learning mechanisms have a

noteworthy contribution in adult foreign language learning in formal environments, given the prominent role played by LLAMA D in adult beginners. Contrasting with Artieda and Muñoz's study, the ability to recognize different repetitive oral language sounds (measured by LLAMA_D) did not show significantly positive correlations with the Chinese listening gains in each month. (gains 1: Rs= .299; gains 2:Rs= .132; gains 3: Rs= .118) Moreover, the overall three months' Chinese listening gains were not found significantly correlated with the LLAMA_D score either (Rs= .294). The reason for the divergent results of the studies might originate from the fact that two studies employed different target languages and the smaller sample size of the present study.

5.5 A case study of one learner

As mentioned above, there was a successful learner who considerably outperformed the other students in Chinese listening gains under the same instructions. It is noticeable that his computed scores in the motivation questionnaire and SILL were much higher than the average, yet the LLAMA_D score was relatively low. We can deduce that his Chinese learning motivation and strategy use predicted his learning success rather than his ability to distinguish repeated oral language sounds as measured by LLAMA_D, therefore hinting at the idea that motivation and strategy use might be the strong predictors of his Chinese learning success. This also corroborated what was found from the other participants: Strategy use and Motivation were stronger predictors of Chinese listening outcome than LLAMA_D. It is notable that his success in the 3 months of Chinese learning might have also been influenced by his language learning experience. He is a successful language learner generally speaking 6 different languages fluently (Arabic, French, Russian, Spanish, Catalan, English).

Graph 1: SILL Sub-components score of the successful learner

The participant himself admitted that he applied various strategies to learn Chinese. In order to tap into his strategy use in Chinese learning, the sub-components of SILL were analysed and an add-on interview was applied. Graph 1 exhibits the scores of the successful learner of the 6 sections that SILL included.

As represented in the graph, F-social strategies has the strongest impact as evidenced by the highest mean score out of all of the strategies (score 5), D-Metacognitive strategies followed up closely behind with a mean score of 4.6, also proving a significant influence. The remaining strategies all obtained similar mean scores within a small range (3.7 to 4.1), thus illustrating their similar impact.

Thus, we can conclude that this learner uses the highest number of social strategies to learn Chinese and improve his listening. He also uses metacognitive strategies to organize his learning and evaluate himself; other strategies were also frequently applied (e.g. memory strategies, cognitive strategies, compensation strategies, affective strategies).

The following are extracts from the interview transcripts which details the language learning strategies that the participant used:

Part A: Memory strategies

"I prepare lessons before class and review lessons frequently and I try to use different ways to remember more effectively, for example, writing, drawing and thinking of relations with what I know. These ways help me a lot to understand Chinese."

The student employs a variety of traditional and creative methods as well as forming mental 'hooks' to facilitate the job of memorization. The student also employs repetition to consolidate older learnt content and maintain recently learnt content.

Part B: Cognitive strategies

"I know I won't be 100% native Chinese speaker but I try to talk like a native speaker or at least pretend to. Practising sound, imitating native speakers are really helpful in my pronunciation and listening."

"I write notes a lot when I learn Chinese, I read and try to listen to basically everything sometimes maybe not even fully understanding. TV shows and movies are also helpful but now I can't understand Chinese TV shows or movies. They speak so fast. Maybe in the near future. I started with some Chinese children's songs. "

The student applied various cognitive strategies and has an open-minded approach, accepting his current language level but nevertheless striving for competence. The use of shadowing and watching TV is also used to grasp native speaker's natural flow of speech.

Part C: Compensation strategies

"I make a lot of guesses when I don't understand, especially when I listen to the Chinese conversations. Listening and reading is my favorite part when I learn a new language. I try to capture some key words but I don't like to keep using a dictionary which makes me read slowly."

The student does not automatically reveal or look for the definition of new unknown words, instead he applies a compensation strategy by focusing on the general context.

Part D: Meta-cognitive strategies

"I try to find out how to learn a language more efficiently and I pay attention to my mistakes to improve. I have plans to learn Chinese and I think about my progress. "

The meta-cognitive strategies applied are used for organization and self-evaluation, goal setting helps his quantifying progress.

Part E: Affective strategies

"I talk to my friends and teacher about how I feel learning Chinese. Not that much but I do that sometimes."

It seems that he does not apply affective strategies very frequently but his affective discussions with others help him manage emotions to maintain motivation learning the language.

Part F: Social strategies

"I look for people to talk with, pay attention to their speaking and try to understand. I also asked people to correct my mistakes when I speak. For example, though my Chinese is very basic, I go to Chinese shops or bars to talk to them, ordering things."

"I always learn about the culture behind the language, because I think learning a language without the culture is useless. For example, Chinese people usually use "吃了吗"(have you eaten) to say hello to close friends."

He confidently applies content learned in the classroom to the "real world' and requests for his mistakes to be pointed out. So, language study is complemented and enhanced through familiarizing oneself with a language's cultural background.

6. Conclusion

The present study investigated the role of motivation, strategy use and repetitive oral sound recognition measured by LLAMA_D in Chinese listening skills development by bilingual Spanish/Catalan adult beginner learners. An additional learner was analysed separately in terms of his individual differences (strategy use) and language background.
It revealed the following findings:

1) Motivation was a strong predictor of Chinese learning gains for the bilingual Spanish/Catalan adult beginner learners.
2) Strategy use had a very significant effect on Chinese listening gains, but the effect was found to have decreased in later times. Overall, it had a visible effect on the development of Chinese listening gains for the bilingual Spanish/Catalan adult beginner learners.
3) The repetitive speech recognition measured by LLAMA_D did not influence the improvement of Chinese listening skills for the bilingual Spanish/Catalan adult beginner learners.
4) The successful learner's motivation and strategy use predicted his Chinese learning success on listening gains. He applied various learning strategies to improve his Chinese, social strategies and metacognitive strategies were found to be the most used strategies.

It is enlightening that Chinese teachers and educators need to pay attention to early learners' motivation and strategy use. Different teaching methods could be applied to increase learners' motivation (extrinsic motivation), good language learning strategies should also be introduced to beginners to make them start learning Chinese in a better way from the beginning.

Conflict of Interest Statement
The author declares that there is no conflict of interest.

About the Author
The author Peng Zhang previously served as an English and Chinese language educator and lecturer for 4 years, he obtained his Master degree in Applied Linguistics and Language Acquisition and Multilingual Contexts in the University of Barcelona. Currently, he is working as a research associate in Hong Kong in language acquisition and social integration of ethnic minority groups. His research interests include teaching English/Chinese as a second/foreign language, second language acquisition, vocabulary acquisition, and computer assisted language learning.

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