# An experiment in combining cognition with cultural input in the teaching and learning of Chinese number-related metaphors

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This is an accepted manuscript of a book chapter published by Routledge in: Yang Lu (ed.) Teaching and Learning Chinese in Higher Education: Theoretical and Practical Issues (Routledge Chinese Language Pedagogy), London and New York, Routledge. pp. 109-128 in 2017, available online:

https://www.routledge.com/Teaching-and-Learning-Chinese-in-Higher-Ed...

# An Experimental Study on Teaching Number-Related Chinese Metaphors with Deep-Rooted Cultural Input

Huang Dian

## I. Introduction

It has been common practice in many textbooks for learning Chinese as a foreign language (CFL) to include a "Culture Corner" at the end of a text, usually in the students' first language, which provides cultural information related to the new input of the target language. Such sections are designed and written for the purpose of enhancing students' learning of the Chinese language or simply giving students a "taster" of Chinese culture to maintain their interest. The general information provided by such sections in textbooks mostly consists of facts about China's history, geography, demographics, festivals, customs and food. The classic "complex whole" of culture as proposed by Tylor (1874) and still insightful to foreign language education, which 'includes knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society', is not often observed. In other words, the problem of such sections is that they operate only at a surface level of knowledge about Chinese culture or facts related to China or the Chinese people. With the unlimited resources nowadays provided by the internet, such cultural input or the general knowledge sections in CFL textbooks have not been used by teachers in classrooms as useful teaching resources and the learners, consequently, have not paid much attention to them. As a result, they have not been regarded as instrumental in the teaching and learning of either the form or meaning of linguistic items in the Chinese language. Neither do such sections help the students to understand the essence of the Chinese culture and achieve the intercultural competence necessary for communication and interaction in the target language with native speakers of Chinese.

This chapter, therefore, is concerned with (1) the unsatisfactory cultural input in existing CFL textbooks and pedagogy; (2) whether an in-depth understanding of Chinese culture, in this case, the perceptions of numbers in Chinese, can act as enhanced cultural input; (3) the effects of both the conventional cultural input (CCI), as described above, and the deep-rooted cultural input (DrCI). The experiment reported tackles the teaching and learning of Chinese numbers through combining deep-level cultural input with learners' cognitive processes,

which is based on Kövecses' (2006) proposal that effective second language learning is greatly motivated by cultural awareness, which in turn plays a significant role in the learners' cognitive processes. During the process, they are encouraged to explore the in-depth meanings of linguistic items closely related to their individual experiences and the collective attitudes, customs and beliefs embedded in the language they are learning.

The approach proposed in this study draws on deep-rooted cultural input and has not been attempted before. The specific content for the input selected for this research arose from the many questions asked by the author's students about number-related Chinese culture. For example, many students are mystified by and are not able to understand why the Chinese are so preoccupied with numbers. They not only associate numbers with auspicious or inauspicious implications, but also frequently use phrases such as 心中有数 (*xīnzhōng yǒushù /having a good idea of how things stand*) and 心中没数 (*xīnzhōng méishù/having no idea of how things stand*). The CFL learners, as a result, ask why the Chinese word for "number" or "figure" is used to express meanings which have nothing to do numbers. In addition, particular numbers also serve as signifiers of broader ideas in specific linguistic contexts. For example, the number 8 is generally considered a lucky number by the Chinese, but, confusingly for the learners, a metaphor which incorporates the number 8 such as 乱七八糟(*luànqībāzāo*) actually means "*very messy*" (the literal translation is '*chaotic 7 and 8 messy*'). Therefore, another question asked by students is why the meaning of this metaphor is disassociated from the signifier of luckiness commonly represented by the number 8.

These are the questions that have motivated the experiment presented in this chapter on Chinese number-related metaphors. Also important for this research is an exploration of whether the original essence of the Chinese culture can be applied to the number-related metaphors in order to enhance the cultural input as deep-rooted. This is because the deep-rooted cultural input designed for the experiment is inspired by Zeng Shiqiang's book entitled "Insight into Mysteries of Yi Jing 易经" (Zeng, 2010). Of particular interest to the research is his statement that "yin yang" is "the basic element that make everything in the universe" (ibid.: 1). Specifically, the fundamental concept of "yin yang" represents the two polar opposite forces complementary in the natural world. Everything comprises the two aspects of "yin yang" with the balance point being "harmony" at the centre. Thus, incorporating nature

as being at the root of Chinese philosophy into the classroom experiment is the main element of the present research.

Following the concept of nature in classical Chinese philosophy, three aspects are further explored and interlinked to enable better comprehension, inference and interpretation of Chinese conceptual metaphors: (1) language (number-related metaphors), (2) cognition (Conceptual Metaphor Theory and Image Schema) and (3) culture ("yin yang" in nature). As it will reveal, the deep-rooted cultural input (DrCI), although initially thought to be too complicated and difficult for students to understand, can in fact not only overcome cross-cultural differences but also create greater transparency for learners at different levels leading to a better understanding of number-related metaphors. In contrast, CCI, as seen in many textbooks, may help learners to accept metaphors in the target culture, but as a form of cultural input it is limited in terms of accuracy of understanding and effectiveness because it does not engage learners' cognitive processes, such as reasoning and analogy, due to cross-cultural differences.

## *II.* Theoretical Background

### *II.1. A Cognitive Linguistic View on Metaphor*

Metaphor in cognitive linguistics is viewed as a movement between language and thought. However, due to cross-cultural differences, learners may not be able to break through the surface-level meanings to access the deeper, more embedded meanings at word-level. In other words, explaining and understanding metaphors becomes a dynamic process, involving identifying the metaphoric connections, and comprehending extended meanings by applying linguistic, social and cultural input throughout the teaching and learning process. Two important theoretical models of metaphor related to the present study are Conceptual Metaphor Theory (CMT) (Lakoff and Johnson, 1980) and Image Schema Idealised Cognitive Models (ICMs) (Lakoff, 1987).

Lakoff and Johnson proposed CMT in their book "Metaphors We Live By". They claim that 'metaphors … are conceptual in nature. They are among our principal vehicles for understanding' (Lakoff and Johnson, 1980: 133). According to Littlemore (2009), CMT is understood as the ability to engage in higher-order reasoning and deal with abstract concepts

related to people's physical interactions with the world assisted by a number of conceptual metaphors. Studies by Gibbs (1994), Kövecses (2002, 2005), Deignan (2005), Evans and Green (2006) and Littlemore (2009, 2012) have further applied Lakoff and Johnson's concept of CMT and established the fundamental role of metaphor in language use and its effects on the human mind. To them, conceptual metaphor comprises structured systems of expressing an abstract thought by putting together incongruous source and target domains. According to Kövecses (2005: 5), the source domain is more physical, while the target domain is more abstract, which can be illustrated by the Chinese metaphor 张三李四 (*zhāngsānlǐsì)*. It draws together two common Chinese surnames as the source domain, with two numbers as the target domain. The integration of the two source domains of "*Zhang and Li*" and the two target domains of "*three and four*" thus expresses the abstract idea of "*anybody*". Lakoff and Johnson (1993) point out that conceptual metaphors structure how people perceive, think and do. Again, this structuring can be observed in the conceptual metaphor 张三李四, in the ways that Chinese people perceive the number "*three*" and "*four*" as the abstract concept of "*somebody*" or not specified persons. This shows that other numbers in Chinese could have other different connotations and meanings not easily recognisable at a deep level to CFL learners.

Furthermore, Deignan (2005) suggests that CMT interprets aspects of the target domain as either hidden or highlighted, and proposes that a close examination of metaphors can reveal the way people mentally construct abstract domains. This may be why word-for-word translations often make little sense and can hinder comprehension. For instance, the Chinese metaphor 七七八八 (*qīqībābā*/literal meaning: *seven seven eight eight*) would be extremely hard for a student to associate with the extended meaning of "*bits and pieces*" without understanding the Chinese mindset and perception of numbers. Such examples demonstrate that possessing only a surface level understanding of Chinese culture or Chinese perceptions of numbers or figures does not help the learner to comprehend the extended meaning hidden in the target domain. The cognitive processes of thinking and reasoning need to combine with an understanding of the deep-rooted cultural input in order to penetrate such hidden meanings. Lakoff (1987) also proposes the theory of Idealised Cognitive Models (ICMs), which are devices for structuring essential data, mechanisms that 'structure thought and are used in forming categories' (ibid.: 13). As Littlemore explains (2009), those abstract concepts are usually represented in our minds in the forms, or metaphorical forms, of our daily

contacts with the world, i.e. one's sensory and perceptual experience. Therefore, according to Lakoff (ibid.), image schema is shown to lie at the root of conceptual metaphor. It is therefore illustrated by image schema in terms of space, time, movement and other core elements of our bodily experience in nature. Thus, when an image schema is involved in a metaphoric expression, the schema itself provides a clue to the explanation. Following on from this theory, then, the present study attempts to make the links between the target domain and Chinese culture apparent by depicting the "yin yang" aspects of nature through Image Schema ICMs. With this approach, the hidden meanings in target domains can then be visualized for the source domain, thus leading to effective teaching and enhancing students' retention of the cultural input for learning the Chinese language.

### *II.2 Metaphor, Culture, Thought and Nature*

The review of the relevant theoretical backgrounds in the last section suggests that the conceptual metaphors represented by image schema of the physical world could express abstract thoughts by putting together incongruous source and target domains. In this section, the relationship between metaphors and culture, thought and nature is explored in order to consider how the deep-rooted cultural input can be delivered in a language classroom.

Gannon and Pillai (2012) point out that metaphor should not be considered as stereotyping, but as illustrating the specific features of a culture and, as such, providing insights into the cultural mindset of the people in a community. Similarly, Lakoff and Johnson (1980: 1) regard conceptual metaphor as 'structured, analysable and bound up with culture and everyday reasoning'. Thus, understanding metaphor is a process of interpreting culture by identifying the description of another object with which the literal words make a comparison. The close connection between metaphor and culture as conceptualised by the above scholars indicates that teaching methodologies can be designed to relate conceptual metaphors to ideas, behaviors and customs in everyday life that are expressed by the language the people speak. For the CFL learners, such an approach can be applied to answer their many questions concerning Chinese numbered-related metaphors.

On the other hand, the relationship between culture and thought has been extensively debated in reference to the Sapir–Whorf hypotheses (Sapir, 1949; Whorf, 1956) which refer to the influence of language upon thought. The hypotheses have been developed and expanded in

many studies focusing on the relationship between language and culture (Byram, 1989; 1994, 1997; Kramsch 1988, 1993, 1996, 2001). Recently, some have proposed 'language ecology' as a metaphor for this complexity approach to the study of language as cultural context (van Lier 2004; Kramsch 2002a; Kramsch and Whiteside 2008). These discussions and studies propose that thought can be influenced by native language when cultural meanings embedded in one culture are found in that language but not in another, which is observed often in L2 teaching and learning It explains why even advanced L2 learners' do not always understand the target culture fully or thoroughly because it is difficult for them to detach themselves from their own culture as discussed by Kramsch (2009). In the case of this research, it could also be possible that the advanced level students might not perform as well as the lower level students in interpreting the Chinese number-related metaphors, due to the mindsets of their own cultures.

On the subject of culture in nature, Kramsch points out that 'one way of thinking about culture is to contrast it with nature. Nature nourishes culture and culture reflects people's beliefs of nature and their experience in interacting with nature' (1998: 4). This suggests that nature itself serves as the source that shapes culture, which is expressed through language as a mode of exchange between communities. Living in different surroundings in which people think and behave in certain ways, individuals can collectively form or create a culture which is different from that of others. According to classic Chinese philosophy, nature is more than a source that shapes culture. Nature has the core elements of "yin yang" as the two polar opposite, yet complementary, forces in the natural world. Everything comprises these two aspects of "yin yang" with the balance point being "harmony" at the centre. For example, "yin yang" can be illustrated by the interpretation of the structure of the living world as two opposites of "earth and sky", with people living in "harmony" at the centre. For this study, this important philosophical ideology is at the core of many Chinese cultural phenomena that can be applied in the DrCI as a guideline for explaining Chinese culture in this experiment.

Clearly, culture varies enormously from one community to another across the world. CFL students do not normally belong to communities that have direct philosophical links with Chinese culture. This situation thus makes it difficult for them to understand the lexical and syntactic constructions of the Chinese language, especially in the early stages of study. A focus on nature as a starting point for introducing deep-rooted cultural input may therefore establish the links between nature, culture and the extended meanings of number-related

conceptual metaphors in Chinese. Such links could be shared by people across cultural boundaries, even though their actual experiences may differ in many ways. Such an approach for learning could stimulate students' interest in the social and cultural background of the language they are learning in order to comprehend, interpret and use conceptual metaphors in Chinese.

## III. The Experiment

### *III.1 Research Questions:*

As the literature review shows, the core of the experiment was to test whether the content complexities of nature, as interpreted by the concept of "yin yang", would enable students to more successfully infer and interpret the hidden significance of number-related metaphors in Chinese. Furthermore, this experiment aimed to examine the effectiveness of the deep-rooted cultural input (DrCI) and conventional cultural input (CCI) as means of integrating cultural input in CFL pedagogy, to find out if DrCI can make students more aware of the relationship between the target domain and the source domain in number-related metaphors in order to more fully understand the target language and culture. The experiment also aimed to find out whether the students' bodily experiences in nature thorough Image Schema ICMs can be associated with Chinese culture to help them to move beyond their level of proficiency in Chinese and fully comprehend the embedded meanings of number-related metaphors. This experiment was unprecedented, as the cultural input was very different from the CCI which provid comparatively superficial information about Chinese perceptions of numbers. There were also concerns as to whether the experiment was too ambitious due to the difficult concepts of "yin yang" combined with nature and life experiences in metaphors. However, as the 'Culture Corner' in CFL textbooks has failed to provide effective cultural input for CFL pedagogy, new approaches need to be attempted and explored to integrate cultural awareness for teaching the Chinese language. As a result, two research questions were proposed:

1. How effective is the deep-rooted cultural input (DrCI) in relation to the conventional cultural input (CCI) in helping students to understand the number-related conceptual Chinese metaphors?
2. How does understanding of the number-related conceptual metaphors with DrCI relate to the students' language proficiency levels?

*III.2 The Participants*

The participants were full-time students in a UK university who were studying Chinese as their elective module at beginner (CEFR A1), intermediate (CEFR A2) and advanced (CEFR B1) levels. The experiment was conducted in Week 6 and Week 8 of an 11-week term in an academic year. In total, 49 students were invited to take part in the experiment, which took place during their scheduled Chinese lessons. The participants were divided into four groups.

Group 1 (G1) consisted of 12 beginner learners and was the control group. They had learned Chinese for 15 hours over the five weeks prior to participating in the research. They had one three-hour lecture each week. Group 2 (G2), the experimental group, also consisted of 12 beginner learners who had the same number of hours of lectures as G1 and participated in the experiment during the same weeks. Group 3 (G3) consisted of 13 students at intermediate level. They also had three hours of lectures weekly and had learned numbers in Chinese with CCI. Group 4 (G4) consisted of 14 students at advanced level who had a two-hour lecture each week and had also learned numbers in Chinese with CCI.

*III.3. The Procedure:*

The experiment was conducted separately to with the beginner learners in both the control and experimental groups and the intermediate and advanced learners, as shown in Table 1.

[Insert Table 1 here]

As shown in Table 1, in Week 6, after the students at beginner level had learned the language in 15 hours of lessons, G1 was given CCI cultural information about the Chinese perceptions on of numbers. They were then given Test 1 to see the effect of the CCI on their understanding and interpretation of the metaphors listed in Test 1, one of the four tests designed for the experiment (refer to the next section for details of the four tests). G2, the experimental group was provided with DrCI and given Test 2 in the same week to assess the effect of DrCI. In Week 7, G1 and G2 did not learned number-related metaphors as the main learning objectives, though the teacher answered questions from students related to them. Test 3 was given in Week 8 to the beginner learners to compare the effect of the different forms of input on the information retention of the two groups to see the effect of the two kinds of input.

The participants at intermediate (G3) and advanced (G4) levels had previously learned numbers in Chinese with information provided by CCI. In Week 6 they were asked to do Test 1 designed with in line with CCI, after a brief review of the cultural information provided in the relevant 'Culture Corner' in their textbooks. Test 3 was also given to see their performance. They were then provided with the DrCI input by using the number-related metaphors in Test 2 and Test 3 was given to see the difference of their performance before and after input of DrCI. In Week 8, G3 and G4 were asked to do Test 4 designed with a higher level of difficulty to check the students' ability to decipher complexities by asking them to paraphrase in English another set of number-related metaphors.

After all competed test papers were collected, their correct answers for each number-related metaphor were counted for each group on the tests they did. The percentages of accurate responses were calculated and recorded for all the four groups per number-related metaphors included in the four tests. Based on the research questions, four comparisons of differences between the students' performance were made, which are:

1) performance by G1 and G2 on Tests 1, 2 and 3;
2) performance by G3 and G4 on Test 3 before and after DrCI;
3) performance by G2, G3 and G4 on all number-related metaphors that dealt with in Test 3.
4) performance by G3 and G4 on Test 4;

*III.4 The Tests:*

Four tests were designed and given in class to investigate the differences between the students' comprehension of the extended meanings of the number-related metaphors following CCI or DrCI. They were used to test the relationships between the independent variable, i.e. the effect of CCI and DrCI on the participants' understanding of the number-related metaphors in Chinese, and the dependent variables for the experiment, i.e. the different kinds of cultural input, CCI or DrCI, and the participants' level of proficiency in Chinese. The tests, therefore, were given to the students in the four groups who had learned numbers in Chinese with CCI or DrCI in order to elicit the participants' understanding and interpretation of the number-related metaphors and assess how well they retained the cultural input.

The cultural input for either CCI or DrCI was thoroughly researched and carefully designed in the four tests. Test 1 (see Table 2) contains the CCI taught to the control group (G1) that provides the Extended Meanings based on the cultural notes related to numbers in Chinese commonly provided in most CFL textbooks. The numbers involved in the metaphors range from one to nine. They mostly go in pairs, except the last, which is a common idiomatic expression in Chinese. In the penultimate column, students were asked to indicate whether the expressions in the Metaphor Test List had positive or negative meanings. They were instructed to choose either P or N. The literal meanings and translations of the metaphors in the last column are only provided here for information of the readers of this chapter and were not given to the students.

[Insert Table 2 here]

Table 3 presents Test 2, which addressed the same number-related metaphors as in Test 1, but combined and illustrated the cultural references with the theory of Image Schema ICMs to depict the structure of the living world in three layers: "sky, people and earth". Therefore, "5 and 6", which represent the "yin yang" concept of "*day and night*" (*sky*), form the top layer, while "3 and 4" represent "*man and woman*" (people) in the middle layer. Under this layer, "1 and 2" represent "*land and sea*" (earth). Within these structures, "7, 8 and 9" indicate social relations and human status within these relations. To illustrate these relations, "*A woman gets married*" is signified as "7 *qī*", the same pronunciation as 'seven' in Chinese. Similarly, 丈夫 (*zhàngfū*), the literal meaning being "*a man carries responsibility for the land*", is signified as "8 *bā*", also the same pronunciation as 'eight' in Chinese. The first part of this phrase, 丈 (*zhàng*) is a measurement of length or dimensions of land, while the second part relates to "8" as the number signifier, which rhymes with 发 (*fā /prosperous*). The initial "f" in turn is associated with 夫 (*fū*), the Chinese word meaning "*a man of obligation and responsibility*". Social roles and relationships related to numbers are also presented in the test.

[Insert Table 3 here]

Test 3 in Table 4 was used as a follow-up test for all groups of beginner, intermediate and advanced CFL learners to see the effects of the CCI and DrCI in terms of information retention. It was also given to find out if the DrCI had the same effect for students at different proficiency levels. The number-related metaphors are different from those in Tests 1 and 2, so that the test could be used a post-test to check the students' interpretation and retention of information. Reasons for choices of P or N were requested to examine why the students were able or unable to reach the correct answers.

[Insert Table 4 Here]

Table 5 presents Test 4, which was given to G3 and G4, the intermediate and advanced groups in Week 8. The requirement was to paraphrase in English the underlined number-related metaphors. The first part contains three metaphors in sentences designed to test students' inference and interpretation of metaphors in context. The second part has three individual and difficult metaphors chosen to test the students' understanding of embedded cultural inference. G3 was not asked to answer the last three questions. This test was designed to see whether the DrCI helped the intermediate and advanced learners to retain cultural information successfully.

[Insert Table 5 Here]

## IV. Results and Discussions

### *IV.1. Effect of DrCI in Comparison with CCI for Beginner CFL Learners*

The number of correct answers to the number-related metaphors in the tests given to the students in different groups was examined to see the effect of the CCI and DrCI on their understanding of cultural references. Comparisons of the students' performance at different proficiency levels after the DrCI input are also presented in this section to answer the second research question concerning the relationship between proficiency levels and the effectiveness of DrCI. Analysis and discussion are provided to draw tentative conclusions for the experiment.

In total, all of the students in G1 and G2, the beginner learners in the control or experiment group, answered questions (positive or negative) about twelve number-related metaphors in Chinese in Test 1 (for G1, the control group), Test 2 (for G2, the experiment group) and Test 3 (for both G1 and G2). Table 6 presents the number of correct answers and the accuracy rates of the two groups based on the two tests given in Weeks 6 and 8. A T-test shows that there was no significant difference between the performance of the two groups on Test 1 and 2, where the number-related metaphors were the same, though the cultural input was different.

[Insert Table 6 here]

The results show that the students in both groups could infer the "positive" or "negative" implications of the metaphors when the cultural input was different. The use of the CCI input, based on superficial information about the Chinese perceptions of numbers, or the DrCI in-depth information, designed with conceptual metaphors interacting with nature and the students' life experiences, did not make much difference to the students' performance. However, though the overall performance was not significantly different, G1 did make more mistakes on 七七八八 and 七上八下 and had much lower accuracy rates than G2, which had a 100% accuracy rate for 七上八下. This indicates that DrCI helped G2, to some extent, to interpret the metaphors more effectively. In particular, these two metaphors both contain the number 'eight' that according to CCI is a lucky number, and according to DrCI refers to a married man working on the land, which in turn leads to prosperity. As a result, the much lower accuracy rates by G1 suggest that the conventional and superficial cultural input did not enable them to comprehend the cultural references in the two metaphors and they therefore decided that they had positive implications due to the presence of the lucky number, 'eight'. G2, the experimental group, on the other hand, inferred the in-depth meaning of the two metaphors with much higher accuracy rates, as the DrCI input told them that the number 'eight' in Chinese is not just a lucky number. In particular, G1 may have understood七七八八 as 'double seven and double eight', therefore a lot of luck, and 七上八下 as 'seven up and eight down', therefore also involving luck. G2, however, based on the DrCI, may have understood 七七八八 as 'many wives and husbands' leading to negative connotations, and 七上八下 as 'a couple is up and down' similarly leading to negative connotations. This seems to suggest that the DrCI succeeded in at least providing the students with a more general guide to the implied cultural references based on "yin yang".

Similarly, in Week 8 when Test 3 was given to assess the effect of the CCI and DrCI on the retention of information by the students for understanding number-related metaphors, G1 did not perform as well as G2 on 吆五喝六 and 七嘴八舌, though the overall performances did not differ significantly. Those two metaphors, again, contain the so-called lucky numbers, 'six' and 'eight' according to CCI. In contrast, the information given by DrCI to the experiment groups was very different. Based on the "yin yang" concept, 五 means 'the sun' or 'day'; 六 denotes the yin side and means 'the moon' or 'night'. As a result, it was difficult for the control group to understand the negative meanings when the target domain, the numbers, carried very different references from those provided by the CCI. Moreover, the source domain expressed in the characters, 吆, 喝, 嘴 and 舌, which they had not learned as beginners, made it more difficult for them to interpret the metaphors correctly. Therefore, they could only rely on the CCI and interpret the two metaphors as having positive meanings because of the lucky numbers, 'five' and 'six'. This was reported in the reasons they gave for their decisions. For example, they thought that 七嘴八舌 had a positive meaning because 'seven certain things and eight other things should be good things'. Some knew the meaning of 舌 and reported that 八舌 meant "eight tongues", therefore, signifying "speak well" or "speak nicely". Those in G2, however, made decisions based on the DrCI and judged 吆五喝六 as bearing a negative reference because 'five' and 'six', signifying 'day and night', or 'the sun or the moon' could have a mixed meaning. As a result, most in G2 indicated a negative implication for the metaphor, while none in G1 did so. Furthermore, a T-test revealed a significant difference between the performances of the two groups on each of these four difficult metaphors. It is clear that, to a certain extent, DrCI is more effective than CCI in helping the students to understand and accurately interpret the target domains in the conceptual metaphors.

In the case of the beginner learners, the different performances of G1 and G2 on Tests 1, 2 and 3 have shown that, though CCI could help students to understand the metaphors, DrCI was more effective when they were dealing with difficult metaphors. The learners who had learned the cultural-related information about numbers in Chinese enhanced with DrCI were obviously in an advantageous position. The participants in G2 also had more successful information retention for those difficult metaphors, possibly because the deep-rooted cultural input can, to some extent, establish an interaction between nature, culture and the extended meanings of number-related conceptual metaphors across cultural boundaries.

*IV.2. Effect of DrCI in Comparison with CCI for Intermediate and Advanced Learners*

As outlined above in Table 1, prior to the experiment the intermediate students in G3 and the advanced students in G4 had already been informed of the Chinese perceptions of numbers with CCI during their earlier stages of learning Chinese. For this experiment, in Week 6 in the first hour of the lesson, they were asked to answer the questions in Tests 1 and 3 based on their existing knowledge provided by CCI. Then, they were provided with the DrCI input and asked to do Test 3 again. A T-test showed no significant difference between the performances of G3 and G4 on Test 3 before and after the DrCI was provided. However, the number of correct answers given by the two groups and the accuracy rates produced were different before and after the DrCI input (See Table 7).

[Insert Table 7 here]

After the teacher's input of DrCI more students in both Group 3 and 4 answered the N or P questions correctly, as they had learned the cultural references integrated with the concept of "yin yang" and knew that the numbers in Chinese have different references than the cultural information given by CCI. For example, according to DrCI, 四 refers to 'females' not 'death' or 'die'; 六 does not mean 'smooth' or 'successful' but 'the moon' or 'night'. Furthermore, 八 no longer indicates 'prosperity' or 'wealth', it indicates the prosperity or harmony when a man marries a woman. As a result, more correct answers were given after DrCI was provided, suggesting that such cultural input could create greater metaphoric transparency for students. The image schemata in the number-related metaphors could also, to some extent, more successfully activate reasoning and analysis and improve comprehension.

Nevertheless, after the DrCI input some students were still not able to provide correct answers. On the one hand, this may have been due to difficulties in understanding the "yin yang" concept. On the other hand, it might have been caused by the persistent interference of CCI that was the first and more influential cultural input. For instance, among the reasons given by the students for their choices of P or N, some said that, as there was 六，'six' and 吆, 'to shout' in the metaphor, the reference should be positive and the phrase could mean "cheering to support the winning team" or "waving team flags as in a sports match".

Hence, to answer the first research question based on the effectiveness of DrCI, as compared to CCI, for helping students to understand number-related conceptual Chinese metaphors, the results are mixed. The overall insignificant differences between the performance by G1, G2, G3 and G4 on Test 3 indicate that, though the DrCI provides clearer pictures of cultural meanings while the CCI supplies superficial and sometimes anecdotal information as cultural input, the beneficial impact of the DrCI can be observed only when the metaphoric meanings of the numbers are difficult. Some students were still not able to interpret the hidden layers of significance combined in the source and target domain. CCI could be deeply rooted in the minds of the students if it was provided before the DrCI input. The effectiveness of DrCI, however, seemed greater when the number-related metaphors were more difficult to understand using CCI alone, as in the case of the numbers, 'four', 'six' or 'eight' in Chinese. As a result, G2's performance on those difficult metaphors was better than G1; and after G3 and G4 were taught DrCI their performance on the metaphors with those numbers also improved.

*IV.2. Effect of DrCI on Learners at Different Proficiency Levels*

The second research question of this study concerns the relationship between understanding conceptual metaphors and CFL learners' proficiency levels. Specifically, the experiment procedure and the generic test, Test 3, were designed to find out whether DrCI can improve students' interpretation of the number-related metaphors regardless of their proficiency level. In other words, if DrCI is more effective, it should enable not only the learners at higher levels, but also those at beginner levels to comprehend the metaphoric meanings accurately. To answer this research question, comparisons were made between the performances of G2, G3 and G4 on Test 3 and of G3 and G4 on Test 4 (See Table 8 and 9).

[Insert Table 8 here]

[Insert Table 9 here]

The non-significant differences between students' performance on Tests 3 and 4 clearly demonstrate that, with DrCI as the cultural input, proficiency levels or previous linguistic knowledge did not make any difference to the students' understanding and interpretation of the metaphors. Based on Table 8, the beginner learners who had learned the language for only 7 weeks performed very similarly to those who had learned Chinese for one or two academic years. This was not expected as they had only learned the pronunciation system, *Pinyin*, some basic sentence structures and simple communicative language functions such as

greetings, introducing people or giving their name and nationality, etc. They learned the numbers in Chinese only when this experiment was conducted. Most impressively, although the beginner learners in G2 had not learned the characters used in Test 3, aside from the numbers and the DrCI provided, they achieved very similar accuracy rates to the intermediate and advanced learners. Therefore, this result has highlighted the importance of DrCI, strongly suggesting that cultural input based on the essence of the culture in question can transcend CFL learners' linguistic knowledge and assist them in successfully interpreting metaphoric and abstract concepts. Such a result seems to disagree with Byram's proposal that 'language and culture are inseparable' (1994: 43), which is echoed by Kramsch: 'culture is transmitted through language and language expresses cultural reality' (1998: 14).

In the same way, Table 9 reveals that there was no significant difference between the performance of the intermediate and advanced learners, even though the language competence of CFL learners at CEFR levels A2 and B1 is considered to be great. The only difference between the performance of G3 and G4 was that G3 had a lower accuracy rate than G4 for the metaphor, 张三李四, showing that two more students in G3 than in G4 lacked the DrCI knowledge to understand or the ability to retain the information to answer the question correctly. As a result, they did not fully understand the extended meanings of the two most common surnames, 张 and 李, interpreting them as 'Mr Zhang and Mrs Li' instead of 'anybody' at a deeper level of the metaphor.

Furthermore, in light of the students' performance on Test 3, as shown in Table 8, the metaphor, 吆五喝六, caused difficulties for each of the three groups of learners across the proficiency levels. As discussed in IV.1 and IV.2, the number 'six' in the metaphor could hinder the students from inferring the correct answer. However, for the beginner learners the difficult characters 吆 and 喝 might have prevented them from interpreting the reference correctly. In the case of the intermediate and advanced learners, who had learned or were familiar with the meanings of the characters, why did they also make the same mistakes? This again indicates the importance of cultural input based on the essence of a culture rather than superficial or anecdotal cultural information. The fact that their superior linguistic knowledge did not help them demonstrates that language proficiency level alone cannot guarantee correct comprehension of the conceptual metaphors when the cultural input is not of the deep-level proposed here.

Finally, also of interest to this study are the rather low accuracy rates for 放肆 (50%) and 队伍 (71%) by G4, consisting of the advanced CFL learners. The interpretations given were "*women's right*", "*women liberty*" for 放肆, and "*social order*", "*to queue*" for 队伍, which should have been 'loose' or 'unbridled' behaviour and 'troop' respectively. These discrepancies may indicate that, due to cultural divergence, though the students had understood the literal meanings of the metaphors with DrCI for 肆, 'four' in character, as woman/women, and 伍, 'five' in character, as 'a person in the right place at the right time', they still failed to interpret the metaphoric meanings. This may suggest that language can be seen to influence thought as the culture embedded in the native languages of the students clearly may have shaped their interpretations of the Chinese metaphoric content.

## V. Conclusion

This chapter has explored the feasibility of applying enhanced cultural input designed with reference to CMT and Image Schema ICMs and the Chinese philosophical concepts of "yin yang" for teaching and learning Chinese number-related metaphors. The study has also attempted to examine whether the concept of nature, as understood by the Chinese mindset, can function through activating Image Schema ICMs to explain 'conceptual metaphors through our physical interaction with the world and through the way we perceive the environment, move our bodies and exert and experience force' (Littlemore 2009: 97). In particular, the experiment conducted aimed to find out if DrCI associated with nature can be more transparent and effective than superficial "Cultural Corners" in making form and meaning relationships clear to students and aiding successful analysis, understanding and inferencing. Furthermore, DrCI has been investigated in terms of language proficiency levels to explore whether such enhanced cultural input can surpass linguistic knowledge and competence to assist in deciphering the abstract complexities of Chinese number-related metaphors.

The principal finding of this study is that DrCI is more effective than the conventional and superficial cultural input when the metaphors are more difficult, although it may not affect CFL learners' overall understanding or interpretation of the number-related metaphors.

Furthermore, the results have shown that DrCI plays an important role when students identify the source and target domains of number-related metaphors in order to achieve comprehension of the L2 with less influence from the prevailing perceptions of numbers in Chinese. It also assists students' retention of information when the metaphors cannot fully be explained by CCI. Most significantly, this study evidenced the great impact of DrCI for learners at different proficiency levels, surpassing lack of linguistic knowledge and competence. It was demonstrated that CFL learners of just a few weeks and those of several years are equally able to understand DrCI and apply the "yin yang" concept accordingly. It suggests that, once DrCI is channelled through the concept of nature, interlanguage differences among students can be minimized and the cultural concepts can be more easily transmitted to learners at any proficiency level. This might be due to the fact that, as DrCI is based on the universal images created through "Earth, people, sky", language barriers become insignificant. Another reason could be that the "yin yang" interpretation of nature, revealed by the extended meanings of numbers embedded in the ancient roots of Chinese culture, can be learned without much difficulty with Image Schema of ICMs illustrating these interconnections in a dynamic and visual way.

Nevertheless, the "yin yang" concept in DrCI does not translate easily into another language, and may be hard to interpret from the standpoint of an entirely different cultural mindset. The different image schema existing in different languages could hinder understanding or acceptance of metaphors deeply embedded in another culture and another language. In addition, the influence and persistence of the conventional or more popular cultural input received in CFL classrooms or from the media can affect students' understanding of the Chinese culture. Even after students are provided with DrCI, the widespread known perceptions of the Chinese people's ideas or behaviours can prevent them from satisfactorily interpreting conceptual metaphors in Chinese language. This implies that CFL practitioners and courses should explore and implement alternative forms of cultural input for their students to develop or improve their intercultural competence. Those alternatives should be derived from the core of the target culture and should not be superficial, anecdotal or based on stereotypes. Students' own human experiences should be integrated with the alien and distant culture in a new language in order to facilitate effective learning. However, the data and scale of the research are not as large as hoped, therefore the results are tentative by nature

and only indicative of future attempts to implement DrCI in other aspects of Chinese culture integrated with the Chinese language.

**Acknowledgement**

The author would like to thank Dr Julio Gimenez for his advice on this chapter.

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