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An Empirical Study on the Production of *Dou*: Is Native-like Performance Attainable?*

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Abstract

This study examines the production data of *dou* in a controlled elicitation task performed by English-speaking learners of Chinese. The results show that post-intermediate learners produced *dou* at a similar rate regardless of the type of NP that is intended to be quantified by *dou*, which indicates that learners in this group have not fully acquired or understood the use of *dou*. The advanced learners produced *dou* at a comparable rate to that of native speakers, and the production rate of *dou* by advanced learners varied in a similar way to that of the native controls, which indicates that, although advanced learners have not fully used *dou* in a native-like way, they are approaching greater understanding of *dou*'s use. The results show that the syntactically obligatory *dou* is harder to acquire for English-speaking learners of Chinese than the syntactically optional *dou*. Based on subjects' performance, it is suggested that more emphasis be placed on the syntactically obligatory use of *dou* in CFL teaching.

Keywords: CFL acquisition, scope adverb *dou*, influence of English

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1. Introduction

As one of the most important adverbs in Chinese, *dou* has drawn major attention from Chinese linguists (Lü 1980; Wang 1983, 1988; Lee 1986; Cheng 1991, 1995; Y.H. Li 1992; Chiu 1993; J. Li 1995; Huang 1995, 1996; Xu 1997; Lin 1998; Wu 1999; Y. Li 2000; Dong 2003; Fang & Fan 2003 among others). However, studies devoted to the acquisition of this adverb by second language learners are surprisingly few even though the successful acquisition of *dou* is vital if L2 Chinese learners wish to achieve native-like proficiency. The few existing studies do point out that difficulty with the acquisition of *dou* persists even among advanced learners of Chinese (Hu 2003; Xie 2005; Zhou and Wang 2007; Liu 2009 among others), but many questions related to the acquisition of *dou* remain unanswered, including whether native-like performance of *dou* is attainable by second language learners of Chinese despite the errors that L2 learners make as reported in the literature and whether *dou* used in some types of sentences is easier to acquire than *dou* used in other types of sentences. These questions become even more intriguing when considering the fact that the appearance of *dou* in a sentence can be syntactically obligatory or syntactically optional.¹ For example:

- (1) Meige ren *(dou)² zai kan shu.
 every-CL³person DOU⁴ DUR⁵ read book

¹ In this article, syntactically optional *dou* or syntactically obligatory *dou* is distinguished from the syntactic point of view, i.e. whether the omission of *dou* causes an ungrammatical sentence. As reviewers of this article correctly pointed out, the use of the syntactically optional *dou* is related to the meaning of “exhaustiveness” or “distributiveness”. To express the exhaustive or distributive meaning, *dou* has to be used. In this sense, *dou* is obligatory to express the meaning the sentence needs to convey. Detailed discussion on this issue can be found in section 2.3. This article focuses exclusively on the syntactically obligatory *dou* and syntactically optional *dou*.

² Throughout this article, a star appearing before the parenthesis indicates that omission of the element in the parenthesis results in an ungrammatical sentence.

³ CL: classifier.

⁴ Although it is a common practice to gloss *dou* as *all/both* in English, *dou* is not equivalent to *all/both*. There is a detailed discussion on the comparison of *dou* and

‘Everyone is reading.’

- (2) Tamen (dou) zai kan shu.
they DOU DUR read book
‘They (all) are reading.’

The use of *dou* in sentence (1) is syntactically obligatory because the omission of *dou* results in an ungrammatical sentence; however, the use of *dou* in sentence (2) is syntactically optional: Its omission does not result in an ungrammatical sentence, but simply causes a difference in the meaning.

Studies analyzing errors in the use of *dou* found in Chinese learners’ coursework report that the majority of the errors that L2 learners of Chinese make are ones of omission of the syntactically obligatory *dou* (Hu 2003; Xie 2005; Zhou and Wang 2007). However, the study done by Zhou and Wang (2007) suggests that the syntactically obligatory *dou* is easier for L2 learners to acquire than the syntactically optional *dou*. Is this discrepancy caused by faulty research methods? Possibly. After all, error analysis only spots errors and does not catalog correct answers. Therefore, it might be the case that Chinese learners did not use the syntactically optional *dou* in a native-like manner either, but this was overlooked because such an omission does not result in an ungrammatical sentence and thus would not be picked up by error analysis.

Through a grammaticality judgment task, Y. Li (2012b) investigated the perception of four types of *dou* sentences by English-speaking learners of Chinese: 1. Ones in which *dou* was used correctly; 2. Ones in which *dou* was used incorrectly; 3. Ones in which the omission of *dou* did not result in an ungrammatical sentence; and 4. Ones in which the omission of *dou* did result in an ungrammatical sentence. The results show that English-speaking learners of Chinese have difficulty accepting grammatical sentences using *dou* where the NP associated with *dou* is the object of the sentence no matter

all/both in section 2.5. In this article, we just gloss *dou* in capital letters to remain neutral.

⁵ DUR: durative aspect (*zai*).

whether *dou* is syntactically obligatory or syntactically optional. Chinese learners also failed to reject ungrammatical sentences in which a syntactically obligatory *dou* was missing. Most Chinese learners were not fully aware of the syntactic constraints of *dou* and thus could not reject sentences that violate the syntactic constraints of *dou*. Li's study also showed that the syntactic role of the NP that is associated with *dou* had an influence on Chinese learners' performance. Since Li's study did not check production data, the question of whether L2 learners show the same tendency in their production data arises.

The current study undertakes an investigation into the production data of *dou* produced by post-intermediate and advanced learners of Chinese via a controlled elicitation task with the hope of providing a systematic and comprehensive understanding of the status of *dou* in L2 learners' interlanguage. Specifically, three questions will be addressed: 1) When presented with the same stimuli as their native speaking counterparts, do English-speaking learners of Chinese produce *dou* in a native-like way? 2) Are English-speaking learners of Chinese sensitive to the semantic features of the NP quantified by *dou* in the same way as native Chinese speakers? And 3) does the syntactic role of the NP quantified by *dou* influence L2 learners in producing *dou* in a sentence?

This article is organized as follows: Section 2 discusses the syntactic constraints of *dou* and the linguistic analyses that have been proposed to account for the distribution of *dou*. Section 3 presents the findings of the existing studies on L2 Chinese learners' production of *dou*. Section 4 reports on the current empirical study of *dou*, including research questions, experimental design, results and discussion. Section 5 comprises the conclusion drawn from the experiment and the pedagogical implications of theoretical linguistic studies and the current empirical study on *dou* in a CFL context. Section 6 discusses the limitations of the current study and suggests a direction for future research.

2. The Syntactic and Semantic Properties of the Scope Adverb *Dou*

2.1 Syntactic Constraints of Using *Dou* as a Scope Adverb

Generally speaking, *dou* has three functions: as a scope adverb, as a time adverb, and as a modal particle (Lü 1980). This article focuses on *dou* in its use as a scope adverb, i.e. an unstressed *dou* positioned between the NP it is associated with and the predicate of the sentence as shown in (3)a.

- (3) a. Women *dou* xihuan zhongguo dianying.
we DOU like Chinese movie
'We all like Chinese movies.'
- b. *Women xihuan *dou* zhongguo dianying.
We like DOU Chinese movie
- c. *Women xihuan zhongguo dianying *dou*.
We like Chinese movie DOU
- d. **Dou* women xihuan zhongguo dianying.
DOU we like Chinese movie

One of the syntactic constraints for a well-formed *dou* sentence is that *dou* be used in a preverbal position as shown in the sentence in (3)a. Sentences in which *dou* occurs in a post-verbal position are ungrammatical, as shown in (3)b and (3)c.

However, why is the sentence in (3)d, in which *dou* takes a preverbal position, bad? This is because the sentence violates another syntactic constraint on the use of *dou*, which is that in a non-interrogative sentence, the NPs quantified by *dou* must appear to the left of *dou* (Ma 1983; Cheng 1991, 1993; Huang 1996; Lin 1998; Wu 1999; Y. Li 2000; Dong 2003 among others). In the sentence in (3)d, the NP *women* "we" occurs to the right of *dou*, resulting in an ungrammatical sentence. Therefore, in order to be quantified by *dou*, an element has to take a position to the left of *dou* if it otherwise does not occur there. This can be clearly seen in cases where *dou* quantifies the object of a sentence. In Chinese, the object of a verb usually takes the position after the verb as shown in (4)a, where the object of the sentence *zhongguo dianying he meiguo dianying* "Chinese movies and American mov-

ies” occurs after the verb *xihuan* “like”. In order to be quantified by *dou*, *zhongguo dianying he meiguo dianying* “Chinese movies and American movies” cannot remain in the canonical post-verbal position as shown in (4)b: It has to be moved to a position to the left of *dou* as shown in (4)c and (4)d, so that it appears to the left of *dou*.

(4) a. *Wo xihuan zhongguo dianying he meiguo dianying.*

I like Chinese movie and American movie
'I like Chinese movies and American movies.'

b. **Wo dou xihuan zhongguo dianying he meiguo dianying.*

I DOU like Chinese movie and American movie
Intended meaning: 'I like both Chinese movies and American movies.'

c. *Zhongguo dianying he meiguo dianying wo dou xihuan.*

Chinese movie and American movie I DOU like
'I like both Chinese movies and American movies.'

d. *Wo zhongguo dianying he meiguo dianying dou xihuan.*

I Chinese movie and American movie DOU like
'I like both Chinese movies and American movies.'

2.2 Syntactically Obligatory *Dou* and Syntactically Optional *Dou*

In some cases, the use of *dou* is syntactically obligatory in the sense that its omission results in ungrammatical sentences. In other cases, the omission of *dou* does not result in ungrammatical sentences although it does cause differences in meaning (cf. Lin 1998; Y.H. Liu 2003; Zhou and Wang 2007). For ease of discussion, we call the first type obligatory *dou* and the second, optional *dou*. Whether *dou* is syntactically obligatory or syntactically optional is closely tied to the type of NP being quantified.

When *dou* quantifies a universally quantified NP, its use is syntactically obligatory. This type of NP includes those using *wh*-words to express universal meanings, those expressing universal meanings (*yiqie* “everything” and *quanbu* “all”) and those formed by a universal quantifier modifying an NP, such as *meigeren* “everyone”, *meitian* “every day”, *suoyoude ren* “all the

people”, *suoyoude shu* “all books”, *renheren* “anyone”. When such universally quantified NPs occur in a preverbal position, *dou* must be used (cf. Cheng 1995; Lin 1998; Yuan 2009 among others). For example:

- (5) *Shei* *(*dou*) *xihuan* *ta*.
 who DOU like her/him
 ‘Everyone likes her/him.’
- (6) *Ta* *shenme* *(*dou*) *chi*.
 He/She what DOU eat
 ‘He/She eats everything.’
- (7) *Yiqie* *(*dou*) *an* *ni* *shuo* *de* *ban*.
 everything DOU according you say NOM⁶ do
 ‘Everything will be done according to your instructions.’
- (8) *Meige* *xuesheng* *(*dou*) *canjia* *le* *zuowen* *bisai*.
 every-CL student DOU participate PFV⁷ composition competition
 ‘Every student participated in the composition competition.’

The *wh*-words *shei* “who” used in (5) and *shenme* “what” used in (6) do not indicate questions; rather, with the support of *dou*, these two words therein express the meaning of *everyone* and *everything* respectively. If *dou* were not used in (5) and (6), these sentences would be interpreted as questions. In the sentence in (7), *yiqie* “everything” is the subject and requires the use of *dou*. Omission of *dou* would result in an ungrammatical sentence. Similarly, in the sentence in (8), the universally quantified NP, *meige xuesheng* “every student”, takes a preverbal position making the use of *dou* obligatory in order to form a grammatical sentence.

Dou can also be used to quantify plural NPs (i.e. *tamen* “they”, *sange ren* “three people” etc.), bare NPs and definite singular NPs (Lin 1998). Except for numerical NPs that are normally prohibited in the subject or topic position for independent reasons when not supported by *dou* (Chao 1968; Li

⁶ NOM: nominalizer (*de*).

⁷ PFV: perfective aspect (-*le*).

and Thompson 1981; Lee 1986; Shyu 1995; Tsai 1994, 1996; Y.H. Li 1996), the *dou* used to quantify general NPs can be omitted without affecting the grammaticality of the sentence. For example:

- (9) Tamen (dou) zai kan shu.
they DOU DUR read book
'They (all) are reading.'
- (10) Pingguo (dou) chi wan le.
apple DOU eat finish PFV/CRS⁸
'The apple/apples were (all) eaten up.'
- (11) Niunai (dou) he guang le.
milk DOU drink gone PFV/CRS
'The milk was (all) drunk up.'
- (12) Naben shu ta (dou) kan le.
that-CL book he/she DOU read PFV/CRS
'He/She read (all of) the book'.

In the sentence in (9), *dou* quantifies *tamen* "they", a plural NP. In the sentences in (10) and (11), the NPs quantified by *dou* are bare nouns. In the sentence in (12), *dou* quantifies a singular NP: *nabenshu* "that book". In all of the sentences in (9) through (12), *dou* can be omitted without affecting the grammaticality of the sentences.

2.3 Semantic Differences Caused by the Appearance of the Syntactically Optional *Dou*

Although the syntactically optional *dou* can be omitted without affecting the grammaticality of the sentence, the appearance of *dou* does cause a difference in meaning. Sentences using the syntactically optional *dou* express an exhaustive meaning (J. Li 1995; Lin 1998; Zhang 2008). For example, with *dou*, the sentence in (9) indicates that each person in the group referred to by *tamen* "they" without an exception is *reading*. Without *dou*, this sen-

⁸ CRS: currently relevant state (*le*).

tence simply indicates that *they are reading* without an emphatic meaning on the exhaustiveness of the group. The bare NP *pingguo* “apple” in the sentence in (10) can be interpreted as either one apple or more than one apple. Either way with *dou* the sentence emphasizes that there is no apple left. Similarly, with *dou*, the sentence in (11) means that *there is no milk left at all*. The sentence in (12) with *dou* indicates that *every part of that book has been read by him/her* while, without *dou*, it could mean that, though *he/she read that book*, it is possible that *he/she* read only part of it.

The semantic differences between sentences with *dou* and sentences without *dou* are given a full display when a quantificational phrase is used in the object position and when the NP that is associated with *dou* represents multiple entities where the appearance of *dou* forces a distributive reading of the sentence (cf. Cheng 1991, 1995; Chiu 1993; J. Li 1995; Huang 1995, 1996; Xu 1997; Wu 1999; Fang and Fan 2003 among others). This can be seen from the contrast in meanings of the sentences in (13) and (14).

- (13) Tamen dou kan le yiben shu.
They DOU read PFV one-CL book
'They each read a book.'
- (14) Tamen kan le yiben shu.
They read PFV one-CL book
'They read a book.'

The sentence in (13) has only the so-called distributive reading and is used to describe a situation in which everyone in the group referred to by *tamen* “they” read a book, and probably a different book. The Chinese sentence in (14) means *they* as a group read a book together. In other words, to accurately describe a scenario in which everyone read a different book, the sentence in (13) with *dou* would be used; to accurately describe a scenario in which everyone read the same book together, the sentence in (14) without *dou* should be used. Therefore, while *dou* might be syntactically optional, it is not semantically optional: It is obligatory in a sentence that is meant to express exhaustiveness or a distributive meaning.

In this article, we only focus on the syntactically optional and obligatory uses of *dou*, and do not investigate cases in which *dou* must be used for semantic reasons.

2.4 The Linguistic Analyses of *Dou*

Ever since Jinxi Li (1924), Chinese linguists have advanced various theories to account for the syntactic and semantic properties of *dou*. In the generative approach, it has been widely acknowledged that *dou* is a distributivity operator working on quantified elements occurring on its left and imbues the quantified elements with the meaning of universal quantification (cf. Lee 1986; Liu 1990; Cheng 1991, 1995; Y.H. Li 1992; Lin 1998 among others). Lin (1998) spelled out the semantics of *dou* and also explained the distribution of *dou* at a syntax-semantics interface.

According to Lin (1998), *dou* is a generalized distributivity marker which distributes over the members of a plurality cover. Structurally speaking, *dou* heads a distributive phrase, DistP⁹ (Y.H. Li 1992; Hsieh 1994; Lin 1998; Wu 1999). Using Chomsky's (1992, 1995) Minimalist Program, Lin (1998) argued that universal NPs such as *meige ren* "every person" and NPs like *dabufende ren* "most people" have strong quantificational (and/or distributive) features that need to be checked against *dou* before spell-out. Therefore, these NPs have to move to the Spec of DistP to check their features, or else the derivation will crash. Accordingly, the DistP must be projected. If the DistP is to be projected, then *dou* must be present. This can explain why universally quantified NPs in preverbal positions demand the appearance of *dou*.

On the other hand, definite NPs only optionally bear a quantificational or distributive feature: They move to the Spec of DistP before spell-out if they come with a strong quantificational/distributive feature, and do not move if they do not have such a feature (Hsieh 1995; Lin 1998). This neatly

⁹ The projection for DistP was first proposed by Beghelli and Stowell (1994, 1997). I would refer readers to Beghelli and Stowell (1994, 1997) for detailed discussions about this projection.

explains the optional occurrence of *dou* with plural NPs, and the meaning differences for plural NPs whether *dou* is used or not. When *dou* is used, indicating the projection of the DistP, the sentence has a clear exhaustive and distributive meaning. When *dou* is not used, there is no DistP projected, and thus no exhaustive or distributive meaning.

2.5 The Comparison between *All/both*¹⁰ and *Dou*

Although it is a common practice to gloss *dou* as *all/both* in English, *dou* is by no means the equivalent of *all/both*. These words have very different distribution in their own language (cf. Wang 1983, 1988; Y. Li 2012a).

The first striking difference between *all/both* and *dou* is that *all/both* in English can be used as a quantifier and be placed before a noun while *dou* in Chinese cannot. For example:

- (15) a. English: All students came to school today.
b. Chinese: *Dou xuesheng jintian lai xuexiao le.
 DOU student today come school CRS
 Intended reading: ‘All students came to school today.’

In the English sentence in (15)a, *all* is used as a quantifier and placed before the noun it modifies, *students*. However, *dou* cannot be used this way as shown in the sentence in (15)b where *dou* is placed right before a noun and the sentence is ungrammatical.

Secondly, although it is true that, like *dou* in Chinese, *all/both* can be used before the predicate to modify the subject of the sentence as shown in the sentence in (16)a, neither can be placed in the same position when used to emphasize the object of the sentence as shown in the sentence in (17)a.

- (16) a. English: They all work at home.
b. Chinese: Tamen dou zai jia gongzuo.

¹⁰ We take *both* as a variant of *all* in that *both* requires a set with the exact cardinality of two while *all* needs a set with a number greater than two.

They DOU at home work
'They all work at home.'

- (17) a. English: *I both love you.
b. Chinese: Nimen liangge wo dou xihuan.
you two-CL I DOU like
'I like both of you.'

Unlike NPs associated with *dou* in Chinese, when *all/both* is used to emphasize the object of the sentence, the object does not move to a preverbal position, as shown in the sentences in (18). The sentence in (18)a is correct while the sentence in (18)b and (18)c are not because the object of the sentence, *you*, is moved to a preverbal position in both sentences.

- (18) a. I love you both.
b. * I you both love.
c. *You I both love.

Unlike *dou*, which can be used to quantify nouns referring to a single object ((19)a), *all/both* is not used to modify a noun referring to a single object ((19)b).

- (19) a. Chinese: Zheben shu wo dou kan wan le.
this-CL book I DOU read finish PFV/CRS
'I read every part of the book.'
b. English: *I read this book all.

All/both is never used with universal quantification in English ((20)a) while, in Chinese, *dou* is syntactically obligatory if there is a universally quantified phrase in a preverbal position ((20)b).

- (20) a. English: Everyone loves (*all/both¹¹) Raymond.
b. Chinese: Meige ren *(dou) xihuan Leimeng.

¹¹ In this article, a star inside a parenthesis means the word in the parenthesis cannot be used in the sentence.

Every-CL person DOU like Raymond
'Everyone loves Raymond.'

3. Previous Studies on the Production of *Dou* by Chinese Learners

The majority of the studies on the production of *dou* by learners of Chinese have only used spontaneous production data via the means of error analysis. (cf. D. Li 1995; Xie 2005; Zhou and Wang 2007; Liu 2009). These studies show that the main errors made by Chinese learners occur where *dou* is syntactically obligatory but omitted. Does this imply that L2 learners do not have problems using syntactically optional *dou* or, further, that Chinese learners use the syntactically optional *dou* in a native-like way? The answer is uncertain since omission of syntactically optional *dou* does not result in ungrammatical sentences when analyzed independent of context. Therefore, errors in this context are hard to measure. When analysis of errors found in Chinese learners' spontaneous production data is the only thing measured, there is no indication of how L2 learners use the syntactically optional *dou* where the omission of it does not result in ungrammatical sentences. To get the whole picture of Chinese learners' use of *dou*, a systematic study using well-designed and well-controlled tests would be indispensable.

Using a translation task, Liu (2009) investigated the production of *dou* by beginning and intermediate Japanese-speaking learners of Chinese. As expected, almost every native Chinese speaker used as controls in the experiment used *dou* in their translations of all of the test items whether there were overt clues for the use of *dou* in the Japanese sentences or not. However, Japanese learners of Chinese seemed to rely heavily on the semantic clues present in the Japanese sentences and they performed differently when the NPs quantified by *dou* had different semantic features. Specifically, when there were overt words in the Japanese sentence indicating the meaning of *all*, and the subject NP in the sentence denoted plural entities, Japanese-speaking learners of Chinese used more *dous* in their Chinese translations. However, when the meaning of *all* was not salient in Japanese, or the NP quantified by *dou* did not have a clear plural interpretation (usually when it quantified a

preposed object), learners produced *dou* at a very low percentage. Liu's study is revealing in that it relates the production of *dou* to the overt representation of *dou* in the learner's first language and to the semantic features of the NP quantified by *dou*. However, since Liu's study only tested beginners and intermediate learners, how advanced learners perform remains unknown. In addition, the test did not control different variables, and the tokens for each sentence type were not equal. Moreover, the design of the task, a translation test, might have inflated the influence of the speakers' native language. Liu did not perform any statistical analysis on the results, and thus the ability to generalize the results is limited. Despite these shortcomings, Liu's study suggests two factors that might influence the production of *dou* by L2 learners: the saliency of the plurality of the NP that is associated with *dou* and the presence/absence of overt realization of *dou* in the learners' native language.

Zhou and Wang (2007) analyzed the errors that Chinese learners made using *dou*, and proposed that the acquisition difficulties associated with *dou* can be predicted by two factors: 1) the degree of obligatoriness of *dou* in the sentence: The more obligatory the use of *dou* is, the easier it is for learners to acquire, and 2) the saliency of the meaning of distributivity of the NP associated with *dou*: The more salient the distributive meaning is, the less difficult it is for learners to master. When it comes to degree of obligatoriness, Zhou and Wang (2007) proposed that cases in which *dou* quantifies *wh*-words or a universally quantified NP are the easiest types for Chinese learners to acquire; cases where *dou* quantifies a plural NP are harder; and the most difficult cases for Chinese learners to acquire are those where *dou* quantifies over a single entity. When it comes to distributivity of the NP, Zhou and Wang proposed that cases in which *dou* quantifies plural NPs, universally quantified NPs, and *wh*-words are easier than cases where *dou* quantifies a singular NP. Extrapolating from these proposals, it seems that the easiest types of *dou* sentences for L2 learners to acquire would be those in which *dou* quantifies either *wh*-words used as universal quantifiers or one with a universally quantified NP. Extending this further, it can be predicted

that sentences in which *dou* quantifies a plural NP are harder to acquire and that the hardest type of sentences to acquire are those in which *dou* quantifies a definite singular NP. However, Zhou and Wang (2007) did not fully explain their ranking nor did they provide any empirical data to support the prediction. The perception data presented in Y. Li (2012b) did not support Zhou and Wang's prediction. But, perhaps production is different from perception. If so, the prediction in Zhou and Wang (2007) might be borne out in production.

The understanding of the acquisition of *dou* will be deepened if production data is carefully collected and analyzed in a controlled testing environment. To the author's best knowledge, there has, as yet, been no study done on the production of *dou* with good controls of different variables. The current study intends to fill this gap and investigate the production of *dou* by English-speaking learners of Chinese through a controlled elicitation task.

4. Empirical Study

4.1 Research Questions

The current study aims to answer the following questions:

- (1) Can advanced English-speaking learners of Chinese produce *dou* in a native-like way?
- (2) Do advanced English-speaking learners of Chinese respond to the semantic features of the NP that is intended to be quantified by *dou* and produce sentences using *dou* just like native Chinese speakers do?
- (3) Does the syntactic role of the NP that is intended to be quantified by *dou* influence the production of *dou* in the rest of the sentence? If so, in what manner? Are advanced English-speaking learners of Chinese sensitive to this factor in the same way as native Chinese speakers?
- (4) Can we see the influence of English on the production of sentences using *dou*? Do English-speaking learners of Chinese perform differently using syntactically optional *dou* than they do using syntactically obligatory *dou*? The positive transfer of English would help English-speaking learners of Chinese perform better on sentences where

dou quantifies a plural subject, where the use of *all/both* resembles that of *dou* the most. The negative transfer would prohibit English-speaking learners of Chinese from producing *dou* where *dou* quantifies an object of a sentence or a universally quantified NP.

4.2 Experimental Design

In order to answer the research questions listed in 4.1, a controlled elicitation task was designed. In the task, subjects were asked to complete an incomplete sentence embedded in a context according to the given pictures. Below is an example of one of the stimuli:

(21) 這三個女孩子是小玉、小花和小美。

Zhe sange nühaizi shi Xiao Yu, Xiao Hua, he Xiao Mei.

this three-CL girl is little Yu little Hua and little Mei

她們很喜歡看書。

Tamen hen xihuan kanshu.

they very like read-books

現在，這三個女孩子_____。

Xianzai, zhe sange nühaizi_____.

now this three-CL girl _____

‘These three girls are Xiao Yu, Xiao Hua and Xiao Mei. They like reading very much. Now these three girls_____.’¹²

The context is to make the utterance natural, and help subjects understand the stimulus. The given part in the incomplete sentence is designed to be the NP that will be quantified by *dou*. The pictures serve as a clue to help the subject complete the sentence. In the example in (21), the given NP in the preverbal position is the subject of the sentence denoting multiple entities. In this scenario, *dou* is syntactically optional. Subjects use *dou* or not depending on whether they wish to express the exhaustive meaning of the sentence. Specifically, if the speaker wants to emphasize that *all three of the*

¹² The English translation is only provided here for purposes of this paper but was not included in the test.

girls (*without exception*) are reading a book, then *dou* would be used in their answer. If not, the speaker would not use *dou* in their answer.

This design allows for the use of different types of NPs in the same sentence and makes a clearer comparison between L2 learners' responses and the responses given by native speakers. For example, in a context similar to that in (21), if the given NP is universally quantified, the use of *dou* is syntactically obligatory. The test item in (22) forms a minimal pair with that in (21).

- (22) 這是“書友俱樂部”的孩子。他們很喜歡看書。
Zhe shi “shu you julebu” de haizi. Tamen hen xihuan kanshu.
this is book friend club NOM kid they very like read-book
看，每個孩子_____。
Kan, meige haizi_____。
look every-CL kid_____。
'These are kids in the Book Friends Club. They all like reading.
Look, every kid_____.'

The stimulus in (22) has a similar design as the one in (21), but the given part of the incomplete sentence is a universally quantified NP, *meige haizi* “every kid”, which requires the use of *dou* in the sentence. Comparisons made of subjects' responses to (21) and (22) can reveal whether the subjects are aware that a universally quantified NP in the subject position requires the use of *dou* in the sentence while the appearance of a plural NP does not.

By manipulating the NPs given in the preverbal position, we can see how the production rate of *dou* by native speakers and Chinese learners is influenced by the property of the preverbal NPs intended to be quantified by *dou*. Two variables were manipulated in the test: the syntactic role and the type of NPs quantified by *dou*. The syntactic roles under investigation include the subject and the logical object of the sentence. Two types of NPs were tested: common NPs and universally quantified NPs. Common NPs

have two subcategories: plural NPs and singular NPs¹³. We chose *mei-CL*¹⁴-NP “every NP” and *suoyoude* NP “all NP” for universally quantified NPs. As a result, there are eight types of test sentences with four tokens each in the test. The types of test sentences and examples are presented below. Abbreviation of the name for each sentence type is given in the parentheses.

1. The NP that is quantified by *dou* is a plural noun and the subject of the sentence: The use of *dou* is syntactically optional (OPZ).

這 三個 女孩子 (都) 在 看書。

Zhe sange nūhaizi (dou) zai kan shu.

these three-CL girl DOU DUR read book

‘These three girls are (all) reading books.’

2. The NP that is quantified by *dou* is a singular noun and the subject of the sentence: The use of *dou* is syntactically optional (OSZ).

那瓶 啤酒 (都) 喝 光 了。

Naping piju (dou) he guang le.

that-CL beer DOU drink gone PFV/CRS

‘That bottle of beer was (all) drunk up.’

3. The NP that is quantified by *dou* is a plural noun and the logical object of the sentence is preposed to a preverbal position: The use of *dou* is syntactically optional (OPB).

這些 書 我 (都) 看 完 了。

Zhexie shu wo (dou) kan wan le.

these book I DOU read finish PFV/CRS

‘I have finished reading (all of) these books.’

¹³ It is widely believed that Chinese does not have a plural marker and thus does not mark plural NPs from singular NPs morphologically. Here plural NPs and singular NPs are distinguished according to whether the NP refers to multiple entities, i.e. an NP is a plural NP if it refers to multiple entities while an NP is a singular NP if it refers to a single entity.

¹⁴ When *mei* “every” is used with different nouns, a classifier has to be used between *mei* “every” and the noun, and the classifier varies according to the noun. Therefore, we put *CL* between *mei* “every” and the noun to represent the classifier required by the noun.

4. The NP that is quantified by *dou* is a singular noun and the logical object of the sentence is preposed to a preverbal position: The use of *dou* is syntactically optional (OSB).

那本 書 我 (都) 看 完 了。

Naben shu wo (dou) kan wan le.

that-CL book I DOU read finish PFV/CRS

‘I have finished reading that (whole) book.’

5. The NP that is quantified by *dou* is a *mei-CL-NP* “every NP” and the subject of the sentence: The use of *dou* is syntactically obligatory (MEZ).

每個 人 都 在 喝 咖啡。

Meige ren dou zai he kafei.

every-CL person DOU DUR drink coffee

‘Everyone is drinking coffee.’

6. The NP that is quantified by *dou* is a *suoyoude-NP* “all NP” and the subject of the sentence: The use of *dou* is syntactically obligatory (MAZ).

所有的 人 都 在 喝 酒。

Suoyoude ren dou zai he jiu.

all person DOU DUR drink liquor

‘All of the people are drinking (liquor).’

7. The NP that is quantified by *dou* is a *mei-CL-NP* “every NP”, and the logical object of the sentence is preposed to a preverbal position: The use of *dou* is syntactically obligatory (MEB).

每盤 菜 我 都 吃 光 了。

Meipan cai wo dou chi guang le.

every-CL dish I DOU eat gone PFV/CRS

‘I ate up every dish.’

8. The NP that is quantified by *dou* is a *suoyoude-NP* “all NP”, and the logical object of the sentence is preposed to a preverbal position: The use of *dou* is syntactically obligatory (MAB).

所有的 咖啡 她 都 喝 光 了。

Suoyoude kafei ta dou he guang le.

all coffee she DOU drink gone PFV/CRS

‘She drank up all of the coffee.’

As we have discussed before, the use of *dou* in sentence types 1-4 is semantics-driven: When a non-universally quantified NP is used in a preverbal position, the use of *dou* depends entirely on whether the speaker intends to express the exhaustive or distributive meaning or not. The use of *dou* is syntactically optional. The use of *dou* in sentence types 5-8 is syntax-driven: Omission of *dou* can only result in ungrammatical sentences, and thus the use of *dou* in these types of sentences is syntactically obligatory.

Overall, there were thirty-two test items. In addition to test items, sixteen fillers targeting the adverbs *jiu* “as early as”, *cai* “as late as”, *you* “again (in the past)” and *zai* “again (in the future)” were included in the test. All the test items were randomized and presented in Chinese characters, either in traditional characters or simplified characters per subjects’ request. In order to minimize the possible influence of the ability to read characters on the test results, *pinyin* was provided under each character. The instructions were given in English for L2 Chinese learners and in Chinese for Chinese native controls.

4.3 Subjects and Testing Procedures

Twenty-six English-speaking learners of Chinese and thirty-two native speakers of Chinese participated in the study. The native speakers were undergraduate students at a university in China. The L2 Chinese participants were American undergraduate or graduate students enrolled in advanced Chinese courses at three universities in the USA. The L2 participants had completed at least five full semesters of Chinese study by the time of testing (range: 2.5-11 years of study).

The subjects were first given a language background questionnaire. When the subjects had completed the language background questionnaire, the researcher explained the format of the elicitation task and asked the subjects to try an example. When the subjects did not have any questions, they proceeded to the main test.

Subjects were allowed to write in *pinyin* or Chinese characters. However, as it turned out, all of the subjects wrote in Chinese characters. Subjects' responses were recorded in an Excel file, where the rate of using *dou* as a scope adverb in the responses for each sentence type was calculated. The final results were imported into SPSS for statistical analysis.

As a proficiency measure, the Chinese learners were given a proficiency test adapted from Yuan (2009) which is a cloze test composed of two short stories embedded with forty blanks and the subjects were asked to fill in the blanks according to the context. Overall, only two subjects scored lower than 10/40 (25%), and the rest scored over 26/40 (65%) in the proficiency test. Those two subjects were removed from the analysis as outliers. We also followed the cutoffs used in Yuan (2009) and placed the rest of the subjects in two groups according to their scores on the proficiency test: Subjects who scored higher than 35/40 were in the advanced group; subjects who scored between 26-34/40 were in the post-intermediate group. As a result, there were fourteen subjects in the advanced group and ten subjects in the post-intermediate group.

4.4 Results

4.4.1 Overall Results

Table 1 shows the mean percentage of producing *dou* in all the sentence types where the use of *dou* is syntactically optional.

Table 1: Mean Production Rate of *Dou* in Sentences Where *Dou* is Syntactically Optional

Sentence Types	Subjects	Mean	Std. Deviation
OPZ	POST INTERMEDIATE	.2000*	.32914
	ADVANCED	.6250	.45731
	NATIVE CONTROL	.6172	.31098
OSZ	POST INTERMEDIATE	.1500	.26874
	ADVANCED	.2500*	.29417
	NATIVE CONTROL	.0234	.07404
OPB	POST INTERMEDIATE	.3000*	.34960
	ADVANCED	.5536	.29708
	NATIVE CONTROL	.5938	.25989
OSB	POST INTERMEDIATE	.0750	.16874
	ADVANCED	.1607	.25205
	NATIVE CONTROL	.1563	.18784

Note: *= significantly different from the native control group

According to Table 1, sentences in which the NP quantified by *dou* is a plural subject of the sentence (OPZ) elicited the highest use of *dou* from native Chinese speakers: The production rate of *dou* was 61.72%. Sentences where the NP quantified by *dou* denoted a single subject elicited the lowest use of *dou* from native speakers of Chinese: The production rate of *dou* on OSZ was 2.34%. The results from the native controls also showed that the production rate of *dou* was more influenced by the plurality feature of the NP than the syntactic role that the NP quantified by *dou* assumed in the sentence: When the syntactic role of the NP intended to be quantified by *dou* is the same, plural NPs elicited significantly more use of *dou* than singular NPs. For the subject NP, the production rate of *dou* was 61.72% when the NP denoted multiple entities (OPZ), but it dropped to 2.34% when the NP denoted a single entity (OSZ). For sentences where the NP quantified by *dou* was the logical object of the sentence, the production rate of *dou* was 59.38% (OPB) if the NP was plural while the rate decreased to 15.63% when the NP was singular (OSB).

As we discussed in Section 2, the use of *dou* in syntactically optional cases is driven by semantic reasons: *Dou* is used only if speakers want to ex-

press the exhaustive meaning. Native speakers' performances show that although theoretically, in all the test conditions, subjects have an equal chance of choosing to express exhaustiveness or not, the appearance of a plural NP nonetheless triggered more uses of *dou* than did singular NPs regardless of the syntactic role of the NP quantified by *dou*.

The performance of Chinese learners was very interesting. Post-intermediate learners produced *dou* at a similar rate across the board except in cases where a singular NP quantified by *dou* was the logical object of the sentence (OSB). Results of *post hoc* Tukey tests, which followed a one-way ANOVA, indicated the production rate of *dou* produced by post-intermediate learners was significantly different from that of native controls on sentences where *dou* quantified a plural subject (OPZ) or a plural object (OPB), while their performance was not significantly different from that of native controls on sentences where the NP quantified by *dou* was a singular NP (OSZ and OSB). In expressing exhaustiveness, post-intermediate learners were less responsive to the plurality feature of the NP intended to be quantified by *dou* than native controls and advanced learners. The performance of advanced learners was not significantly different from that of native controls on almost all the sentence types except sentences where the NP quantified by *dou* was the logical object of the sentence denoting a single entity (OSZ) where advanced learners produced *dou* at a higher rate than native controls did. Advanced learners not only produced *dou* at a comparable rate to native speakers on all other three sentence types (OPZ, OPB and OSB), but also showed native-like sensitivity to the semantic features of the NPs quantified by *dou*, which was seen in the way that the production rate of *dou* varied in the same pattern as it did among native controls.

Table 2 shows the mean production rate of *dou* by all three subject groups in sentence types where *dou* is syntactically obligatory.

Table 2: Mean Production Rate of *Dou* in Sentences Where *Dou* is Syntactically Obligatory

Sentence types	Subjects	Mean	Std. Deviation
MEZ	POST INTERMEDIATE	.2750*	.41583
	ADVANCED	.8036	.32785
	NATIVE CONTROL	.9531	.14807
MAZ	POST INTERMEDIATE	.1250*	.31732
	ADVANCED	.7143*	.41437
	NATIVE CONTROL	.9531	.09914
MEB	POST INTERMEDIATE	.4500*	.34960
	ADVANCED	.7321*	.35981
	NATIVE CONTROL	.9766	.09754
MAB	POST INTERMEDIATE	.1500*	.26874
	ADVANCED	.6429*	.40089
	NATIVE CONTROL	.9453	.13817

Note: *= significantly different from the native control group

From Table 2 we can see that native Chinese speakers produced *dou* almost all the time in these obligatory cases no matter whether the NP quantified by *dou* was the subject of the sentence or the logical object of the sentence moved to a preverbal position (MEZ: 95.31%; MAZ: 95.31%; MEB: 97.66%; MAB: 94.53%)¹⁵. This supports the claims made in the linguistic literature that the use of *dou* is syntactically obligatory when there is a universally quantified NP used in a preverbal position.

¹⁵ As one of the reviewers pointed out, the production rate of *dou* in syntactically obligatory cases did not reach 100%. However, the production rates were all above 94.5%. A careful survey of the performance of each native control shows that there were only three subjects who did not use *dou* in two of the four test items testing on MEZ; there were six subjects who did not produce *dou* in one out of the four test items on MAZ; there was one subject who did not use *dou* in two of the test items on MEB and one subject who did not use *dou* in one test item on MEB. As for MAB, there were two subjects who did not use *dou* in two of the test items, while another three subjects did not use *dou* in one of the test items. Because all of the native controls were from the same dialect area, the differences in performance do not represent dialectal variation. Among all the subjects who did not produce *dou* in some test items targeting obligatory *dou*, four subjects failed to use *dou* in more than two test items (two, three or four) in total; the rest only failed to use *dou* in one of a total of sixteen items including all four test types. We would ascribe the performance of these subjects to individual variation.

Results of *post hoc* Tukey tests showed that the production rates of *dou* among post-intermediate learners were significantly different from that of native controls on all sentence types. Although advanced learners produced *dou* at a higher rate than post-intermediate learners on all sentence types, their performance was still significantly different from native controls on all the sentence types except those where the NP in the subject position was quantified by *mei* “every”.

Comparing L2 learners’ performance on sentences where *dou* is syntactically optional and sentences where *dou* is syntactically obligatory, it can be concluded that as a whole, L2 learners performed better on syntactically optional *dou* than on syntactically obligatory *dou*. While post-intermediate learners showed native-like performance on the two types of sentences where *dou* was syntactically optional, they did not show native-like performance on any type of sentences where *dou* was syntactically obligatory. As for advanced learners, they performed like native speakers on three out the four types of sentences where *dou* was syntactically optional, but only showed native-like performance on one out of four types of sentences where *dou* was syntactically obligatory.

4.4.2 Factors Influencing the Production Rate of *Dou*

In order to locate factors that influence the production rate of *dou*, a mixed ANOVA was conducted using SPSS 14.0 to compare the production rate of *dou* across the independent variables at a significance level of $\alpha=.05$. There were two within-subjects factors, the syntactic role of the NP and the type of NP intended for *dou* to quantify. The syntactic role of the NP quantified by *dou* had two levels: the subject of the sentence, and the logical object of the sentence. The type of NP had four levels: plural NP, singular NP, *mei-CL*-NP “every NP”, and *suoyoude*-NP “all NP”. There was one between-subjects factor: the groups, which had three levels: the native control group, the post-intermediate learners group, and the advanced learners group.

The results showed that there was no significant main effect of the syntactic role of the NP quantified by *dou*, $F(1, 53) = .013$, $p > .05$, nor was there

a significant interaction between syntactic role and groups, $F(2, 53) = 1.345$, $p > .05$. This means that when the type of NP is fixed, different groups of subjects do not produce *dou* at a significantly different rate no matter whether the NP is the subject or the logical object of the sentence.

There was no significant interaction between the syntactic role and the type of the NP, $F(3, 159) = .430$, $p > .05$, nor the interaction between syntactic role, NP types and groups, $F(6, 159) = 1.518$, $p > .05$.

However, there was a significant main effect of the type of NP quantified by *dou*, $F(3, 159) = 123.155$, $p < .05$, as well as a significant main effect of the interaction between NP types and groups, $F(6, 159) = 24.974$, $p < .05$. Looking at the interaction graphs, it can be seen that, while the production rates of *dou* by different groups varied according to NP types, the effects were stronger on native speakers and advanced learners than they were on post-intermediate learners.

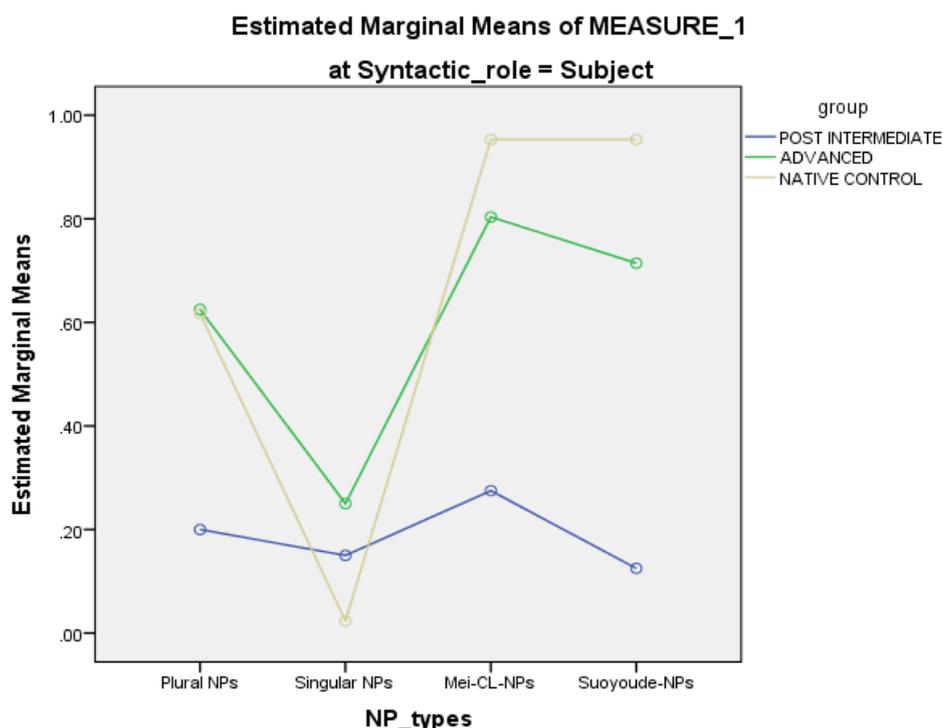


Figure 1: Comparisons of the Production Rate of *Dou* in Sentences Where the NP is the Subject of the Sentence

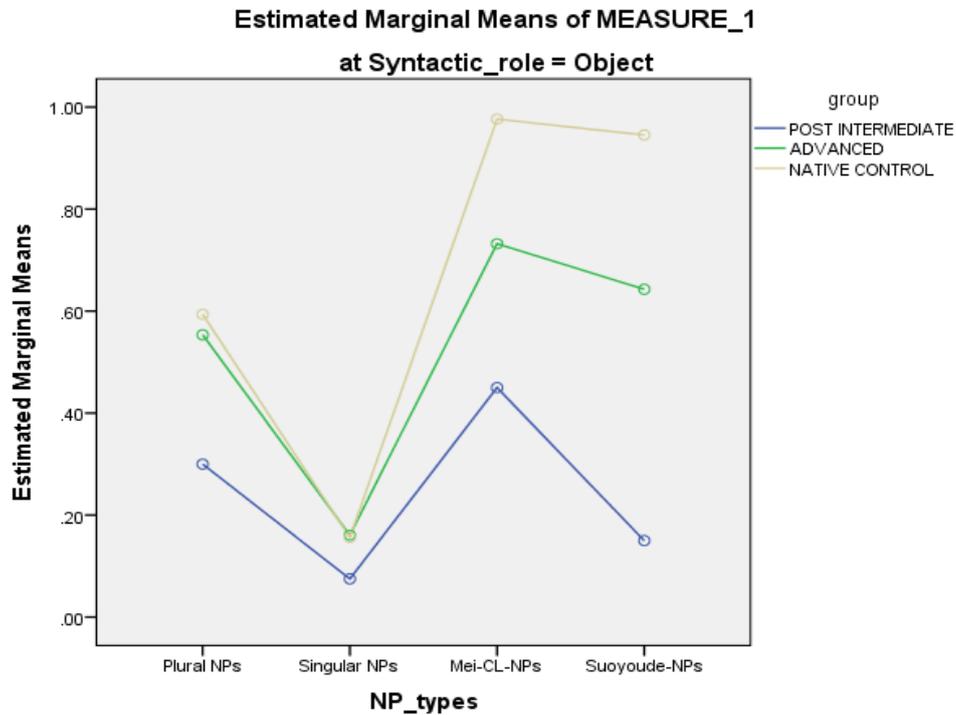


Figure 2: Comparisons of the Production Rate of *Dou* in Sentences Where the NP is the Object of the Sentence

There was a main effect of group, $F(1, 53) = 29.604, p < .05$. *Post hoc* pairwise comparisons were conducted in order to locate the differences. The results showed that post-intermediate learners performed significantly differently from native controls and advanced learners ($p < .05$), but advanced learners and native controls did not perform significantly differently from each other ($p > .05$). This can be interpreted to mean that advanced learners of Chinese displayed the same sensitivity to different types of NPs as native controls in producing *dou*.

4.4.3 Effects of Plurality of the NP on the Production Rate of the Syntactically Optional *Dou*

The results of the significant interaction between NP types and groups indicate that the NP types had different effects on participants' production of *dou*. In order to further locate the effects of different features of the NP, fur-

ther analyses were conducted.

Within sentence types where *dou* is syntactically optional, we did a mixed ANOVA with plurality and the syntactic role of the NP as within-subjects factors, and groups as the between-subjects factor. The results showed that there was a main effect of plurality, $F(1, 53) = 107.567, p < .01$, and a main effect of groups, $F(1, 53) = 166.955, p < .01$. There was also a significant interaction between plurality and groups, $F(2, 53) = 11.226, p < .01$. There was no main effect of the syntactic role of the NP, $F(1, 53) = .013, p > .05$, nor was there a main effect of the interaction between syntactic role and groups, $F(1, 53) = 1.321, p > .05$.

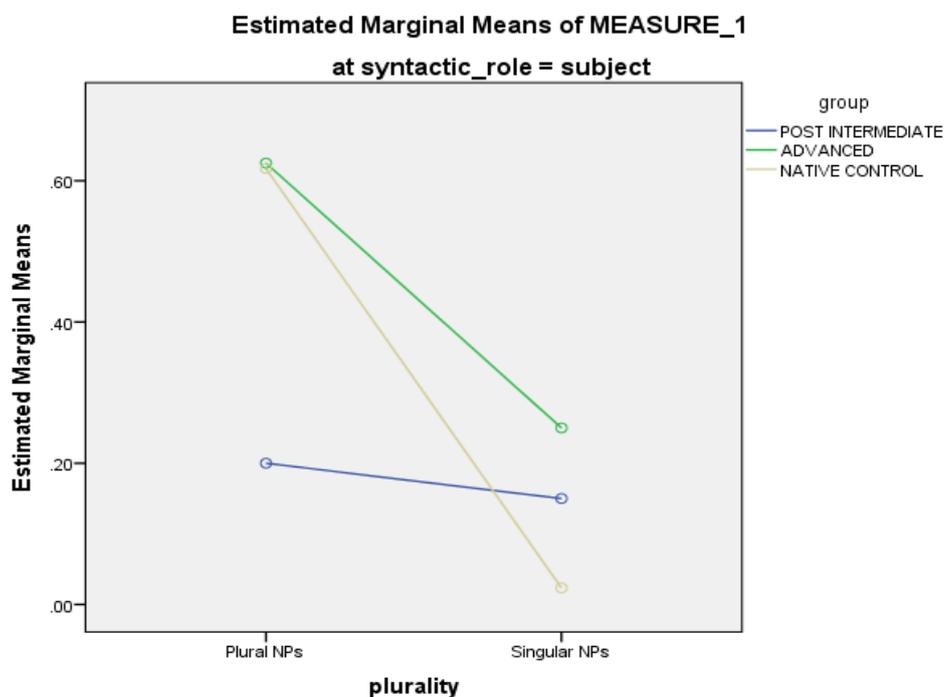


Figure 3: Comparisons of the Production Rate of the Syntactically Optional *Dou* in Sentences Where the NP is the Subject of the Sentence (OPZ and OSZ)

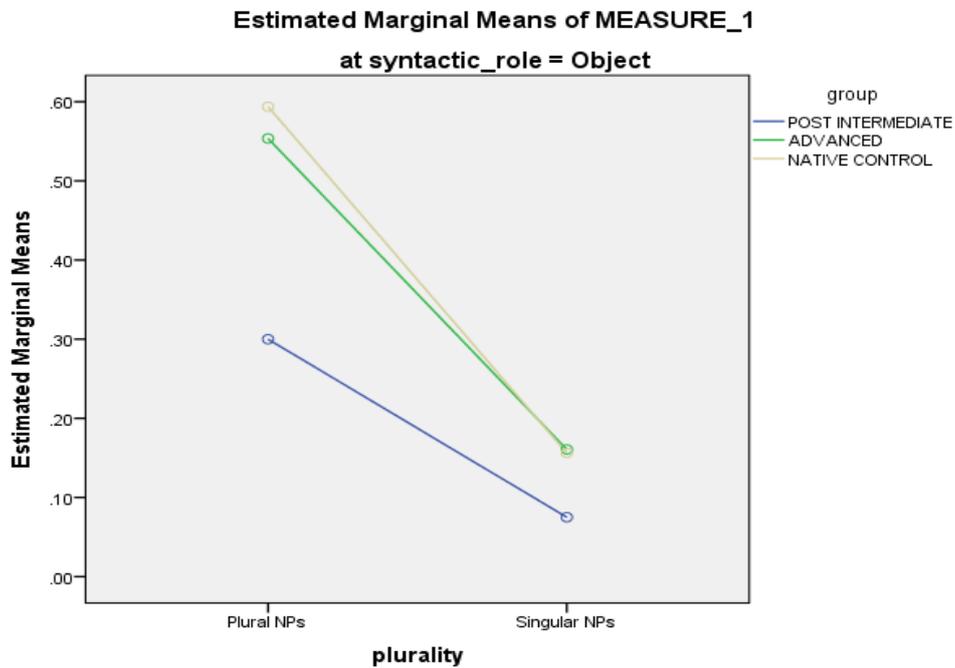


Figure 4: Comparisons of the Production Rate of the syntactically Optional *Dou* in Sentences Where the NP is the Object of the Sentence (OPB and OSB)

Figure 3 and Figure 4 both show that plural NPs elicited more uses of *dou* among different groups than singular NPs no matter whether the NP was the subject of the sentence or the logical object of the sentence. However, the plurality of the NP had a significantly stronger effect on the native control group and the advanced learners group than on the group of post-intermediate learners. Results of *post hoc* Tukey tests showed the performance of advanced learners was not significantly different from that of native controls ($p > .05$), but the performance of post-intermediate learners was significantly different from the performance of both the groups of advanced learners and native controls ($p < .05$).

4.4.4 Effects of Quantifier Types on the Syntactically Obligatory Use of *Dou*

A mixed ANOVA with quantifier types and the syntactic role of the NP as the within-subjects factors, and groups as the between-subjects factor was conducted. The results showed that there was a significant main effect of

quantifier types, $F(1, 53) = 19.809, p < .05$, and a significant interaction between quantifier types and groups, $F(2, 53) = 6.27, p < .05$. There was no significant effect of the syntactic role of the NP, $F(1, 53) = .097, p > .05$, nor the interaction between syntactic role of the NP and groups, $F(2, 53) = 1.276, p > .05$. There was no significant effect of the interaction between the syntactic role of the NP and the quantifier types, $F(1, 53) = 3.131, p > .05$, nor the interaction among all three factors: syntactic role, quantifier types and groups, $F(2, 53) = 1.397, p > .05$. There was a significant effect of groups, $F(2, 53) = 500.540, p < .01$.

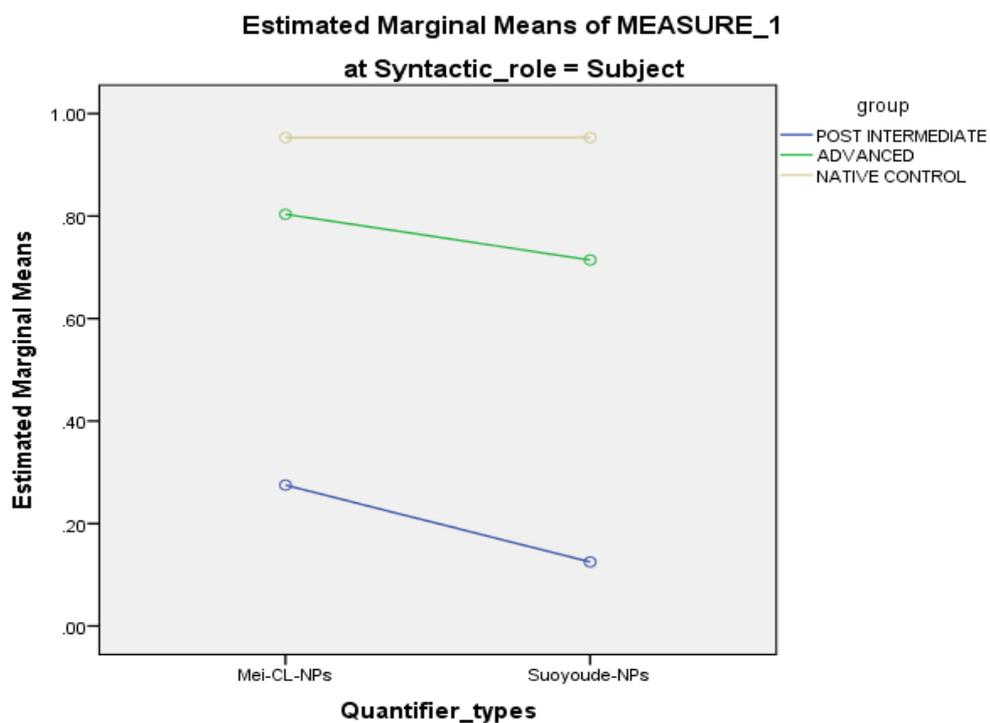


Figure 5: Comparisons of the Production Rate of the Syntactically Obligatory Dou in Sentences Where the NP is the Subject of the Sentence

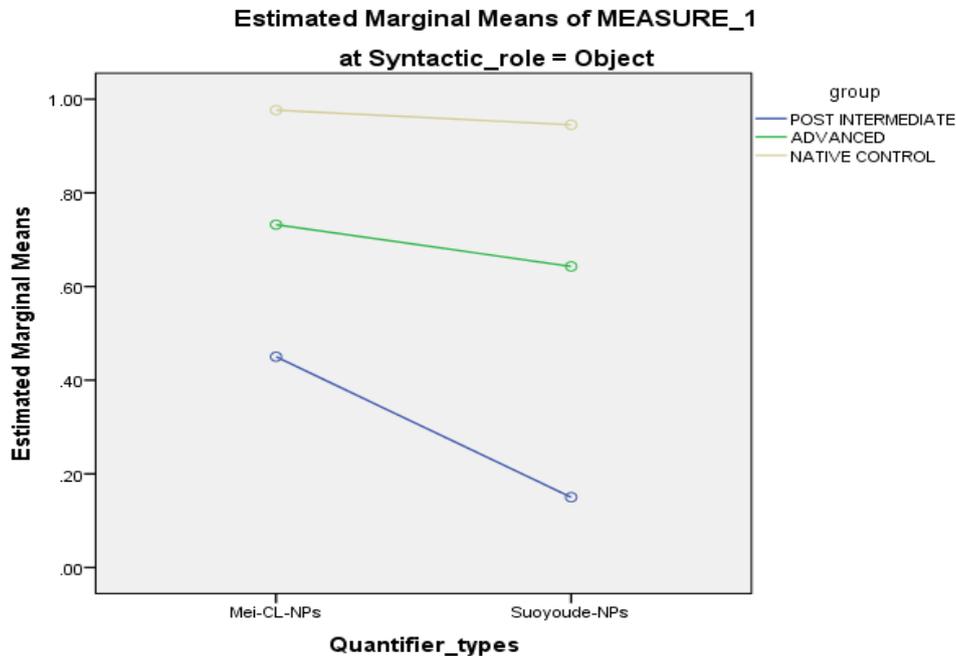


Figure 6: Comparisons of the Production Rate of the Syntactically Obligatory *Dou* in Sentences Where the NP is the Object of the Sentence

From the interaction graph in Figure 5, it can be seen that native controls used *dou* at a similar rate for both types of universally quantified NPs, but L2 learners used significantly more *dou* for *mei-CL* NP “every NP” than *suoyoude* NP “all NP”. The interaction graph in Figure 6 shows that L2 learners responded to the two quantifiers (*mei* “every” vs. *suoyoude* “all”) differently while native speakers treated these two quantifiers the same way. Results of *post hoc* comparisons showed that both post-intermediate and advanced learners performed significantly differently from native controls ($p < .05$) in responding to the two quantifiers. The performance of post-intermediate learners was also significantly different from that of advanced learners ($p < .05$).

4.5 Discussion

Our test results showed that English-speaking learners of Chinese participating in our test did not produce *dou* in a native-like way on all of the

sentence types tested in the experiment. L2 learners performed better on syntactically optional *dou* than on syntactically obligatory *dou*. Specifically, advanced learners performed like native speakers in producing *dou* on most sentence types (three out of four) where *dou* is syntactically optional, but they produced *dou* in a native-like way on only one out of four types of sentences where *dou* is syntactically obligatory. Subjects in the post-intermediate group showed native-like performance on two sentence types where *dou* is syntactically optional, but they did not perform like native speakers in any cases where *dou* is syntactically obligatory.

These results do not support the predictions made by Zhou & Wang (2007) about the difficulties associated with the acquisition of *dou*. According to Zhou & Wang (2007), cases where *dou* quantified a universally quantified NP would be the easiest type for Chinese language learners to acquire, followed by cases where *dou* quantifies a plural NP, with cases where *dou* is used to quantify a singular NP being the hardest to acquire. If successful acquisition is signaled by native-like performance, Zhou and Wang's theory would predict that L2 Chinese learners perform best on the syntactically obligatory cases, followed by cases where *dou* quantifies a plural NP and they would perform the worst on cases where *dou* quantifies a singular object. However, our test results showed that L2 learners had not, in fact, fully acquired the use of *dou* in cases where *dou* quantifies a universally quantified NP while they had already acquired some uses of *dou* in cases where *dou* quantifies a non-universally quantified NP (plural or singular). Specifically, subjects in the advanced group exhibited native-like performance only on one out of four sentence types where *dou* is syntactically obligatory, but they showed native-like performance on three out of four sentence types where *dou* is syntactically optional. Subjects in the post-intermediate group did not perform in a native-like way on any sentence type except cases where *dou* quantifies a singular object. The performance of L2 subjects in cases where *dou* quantifies a plural NP was no better than cases where *dou* quantifies a singular NP either. Post-intermediate learners showed native-like performance in cases where *dou* quantifies a singular NP, but their performance in

cases where *dou* quantifies plural NPs was significantly different from that of native speakers.

In terms of sensitivity to the semantic features of the NP that is quantified by *dou*, advanced learners paralleled native speakers while learners in the post-intermediate group did not. Post-intermediate learners produced *dou* at a similar rate regardless of the type of NP that was quantified by *dou*. This shows that learners in the post-intermediate group have not fully acquired the use of *dou*. The advanced learners produced *dou* at a comparable rate to that of native speakers, and the production rate of *dou* by advanced learners largely varied in a similar way to that of the native controls, which indicates that, although advanced learners have not fully acquired *dou* yet, they are well on their way. One interesting point here is that advanced learners responded to NPs quantified by *mei* “every” and *suoyoude* “all” statistically differently while native controls treated these two quantifiers as the same. This suggests that L2 learners acquire the syntactically obligatory use of *dou* on a word-association basis, i.e. they associate the obligatory appearance of *dou* with a specific word, not as a feature of the class of universally quantified NPs.

The results of this test are in line with Y. Li’s study (2012b) that showed that English-speaking learners of Chinese performed better on sentences using syntactically optional *dou* than they did on sentences using syntactically obligatory *dou*. Y. Li’s (2012b) study revealed that L2 learners could not recognize sentences using syntactically obligatory *dou* as grammatical or sentences omitting the syntactically obligatory *dou* as ungrammatical. This perception problem would naturally result in production of fewer *dous* in cases where *dou* is syntactically obligatory simply because Chinese learners do not recognize that *dou* should be used. Another factor that might contribute to L2 learners’ better performance using syntactically optional *dou* is that L2 learners can feel the need for *dou* in syntactically optional cases since the use of *dou* is driven by meaning, namely, the need to express the exhaustive or distributive meaning in those sentences. On the other hand, in the syntactically obligatory cases, the use of *dou* does not add additional

meaning to the sentence. Moreover, some of the uses of syntactically optional *dou* have overt realization in English as *all/both* while an overt realization of *dou* in English in the syntactically obligatory uses is, in fact, prohibited (cf. section 2.5). This, to some extent, might explain L2 learners' less-than-ideal performance with the syntactically obligatory use of *dou*. At the same time, it can be seen that L2 learners do not rely solely on their L1 to determine how and when to produce *dou*. Remember that with syntactically optional *dou*, when *dou* quantifies a plural subject, it most resembles the use of *all/both* quantifying the subject in English, but when *dou* quantifies the object of the sentence, it does not correspond to the use of *all/both* in English. However, the current test results do not show the influence of the syntactic role of the NP on the production rate of *dou*: L2 learners did equally well when *dou* quantified the objects, where an overt realization was not present in their L1. One of the possible explanations for this performance is that L2 learners' use of the syntactic optional *dou* arises from the wish to express a meaning of exhaustiveness and is not motivated simply by knowledge of their L1. However, because the current experiment did not directly measure subjects' interpretation of the syntactically optional *dou*, this hypothesis needs to be tested in future studies.

5. Conclusions and Pedagogical Implications

Our data show that it is easier for English-speaking learners of Chinese to achieve native-like performance in the use of syntactically optional *dou* than in the use of syntactically obligatory *dou*. Even learners at a rather advanced level who participated in the study did not perform totally like native speakers in producing the syntactically obligatory *dou*. However, advanced learners did show a similar sensitivity to the semantic feature of the NP quantified by *dou* as native controls did, which indicates that native-like performance in producing *dou* is possible, but happens rather late.

As an important function word, *dou* should receive more attention in CFL teaching¹⁶. The findings in linguistic studies on *dou* can equip CFL teachers with the kind of knowledge of *dou* that is necessary for effective teaching. In these studies, the syntactic and semantic constraints are thoroughly examined and discussed and *dou*'s underlying functional mechanism has been analyzed and generalized which will be of great use to CFL teachers in their preparation of teaching materials. Compared with the rich source of information in linguistic studies, information provided in textbooks is sparse. A brief survey of the textbooks that are widely in use in the United States shows the explanation of *dou* therein to be inadequate. In fact, the only examples for the use of *dou* in the grammar section of *Chinese Link* and *Integrated Chinese* are ones in which *dou* is used to quantify a plural subject. No example is given for the *dou* that quantifies the object, nor is there mention of the syntactically obligatory appearance of *dou* when used with universally quantified NPs. In addition to misleading students about the complexity of *dou*'s usage, these omissions put the onus of deducing and explaining the extended rules of *dou* on the CFL teachers as well as on the L2 Chinese learners themselves. With the help of linguistic studies, Chinese instructors could be well informed about the syntactic and semantic constraints of *dou* and, using this information, could plan their teaching and design integrated exercises for different levels of learners to help them acquire all uses of this subtle and tricky adverb. In this way, the linguistic studies can provide practical guidance to CFL teachers in their approach to teaching *dou*.

At the same time, linguistic studies on *dou* can help CFL teachers predict and better understand students' errors, and take proper measures when problems with the use of *dou* arise. These studies not only discuss the syntactic and semantic constraints associated with the use of *dou*, but also the reasons behind such constraints. Moreover, the full paradigm of *dou* used with collective predicates and factors influencing the choice of a particular

¹⁶ Y. Li (2012a) offered a step-by-step curriculum design for teaching *dou* in a CFL context. I would refer readers to that work for a detailed discussion.

cover for the interpretation of *dou* has been thoroughly investigated (cf. Lin 1998). This is exactly what Chinese instructors should be aware of when they face Chinese learners. Equipped with this knowledge, CFL teachers do not need to rely on their sense of Chinese to correct student errors anymore: They can actually explain to the students why each case is the way it is, which will, in turn, prevent more errors.

A natural pedagogical implication of the current empirical study is that *dou* should receive more attention in the classroom with an emphasis on the syntactically obligatory uses of *dou* at the post-intermediate level. The test results show that students at the post-intermediate level still have problems producing *dou* in a native-like way on most of the sentence types. Thus more training in teaching the recognition of these sentence types is necessary. Chinese learners at the advanced level still have problems producing syntactically obligatory *dou* in a native-like manner, and they show differences from native speakers on NPs quantified by different universal quantifiers as well, which indicates that they treat the co-occurrence of *dou* with universal quantifiers as a requirement of a specific quantifier, not as a class, the class of universally quantified NPs. In order to help L2 learners gain a comprehensive acquisition of the properties of *dou*, it might be helpful to expose L2 learners to all kinds of examples and, perhaps, introduce them to the idea of a class of universally quantified NPs at the same time as they learn the words that create this class. This is not limited to the use of *dou* as it is used with *mei* “every”, but also applies to its use with other universally quantified phrases, such as *suoyoude* “all”, as well as reduplicative quantifiers or nouns. The similarities shared by these phrases, i.e. universal quantification, might make it possible for L2 learners to extend the rule about the syntactically obligatory *dou* to include the whole class of universally quantified phrases instead of perceiving it as limited to the properties of specific words. However, the effectiveness of the aforementioned suggestion still needs to be tested through further empirical studies.

6. Limitations of the Current Study and Future Studies

The current study investigated how English-speaking learners of Chinese used *dou* in a controlled elicitation task and compared the performance of Chinese learners with that of native Chinese speakers. Since L2 learners used *dou* only when they felt the need to express the exhaustive or distributive meaning under the stimuli of the contexts and the pictures, it might be reasonable for us to hypothesize that in syntactically optional cases the use of *dou* is motivated by semantic reasons. However, this test, being a production task in nature, did not directly measure subjects' actual interpretation of *dou*. Because of this, the current study did not provide direct evidence that L2 learners use *dou* to express the exhaustive or distributive meaning. Moreover, in this article, we only focus on the syntactically optional and obligatory uses of *dou*, but do not investigate cases in which *dou* must be used for semantic reasons. It is hoped that the limitations of the current study will be addressed in future research.

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An Empirical Study on the Production of *Dou*: Is Native-like Performance Attainable?

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「都」的習得與產出： 漢語學習者能否達到類似母語者的表現？

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摘要

本文考察了母語是英語的漢語學習者在一項控制下的引發輸出任務中使用「都」的情況。實驗結果表明，不同於母語者，中上級水準的學習者「都」的使用率在各類實驗條件下相似；而高級漢語學習者雖然「都」的使用率不完全跟母語者相同，但「都」的使用率隨著「都」所總括的名詞性詞語的特徵變化而變化。這表明雖然他們在「都」的使用上還沒有完全達到母語者的水平，但是他們處於習得「都」的過程中。實驗結果顯示必須使用「都」的情況較難也較晚習得。基於漢語學習者的表現，本文認為，對外漢語教學中在「都」的教學上，應該把重點放在句法上必須使用「都」的情況。

關鍵字：漢語作為外語的習得 範圍副詞「都」 英語的影響