



HAL
open science

**Japanese speakers' second language Chinese
wh-questions: a lexical morphological feature deficit
account**

Boping Yuan

► **To cite this version:**

Boping Yuan. Japanese speakers' second language Chinese wh-questions: a lexical morphological feature deficit account. *Second Language Research*, 2007, 23 (3), pp.329-357. 10.1177/0267658307077644 . hal-00570731

HAL Id: hal-00570731

<https://hal.science/hal-00570731>

Submitted on 1 Mar 2011

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Japanese speakers' second language Chinese *wh*-questions: a lexical morphological feature deficit account

Boping Yuan *University of Cambridge*

In this article, an empirical study of how Chinese *wh*-questions are mentally represented in Japanese speakers' grammars of Chinese as a second language (L2) is reported. Both Chinese and Japanese are generally considered *wh-in-situ* languages in which a *wh*-word is allowed to remain in its base-generated position, and both languages use question particles to mark questions. It is assumed that C⁰ in *wh*-questions is essentially ambiguous and unvalued and that unvalued C⁰ must be valued. In Chinese, the *wh*-particle *ne* values C⁰ with [+Q, +wh] features, which licenses the *wh*-word *in situ*. As a result, no *wh*-movement is necessary and Subjacency becomes irrelevant. Japanese also employs question particles, such as *ka* or *no*. However, they are 'defective' in the sense that they can only value the ambiguous C⁰ as [+Q] and they are unable to specify the question as to whether it is [+yes/no] or [+wh]. To value C⁰ as a head with [+wh], a *wh*-operator in a *wh*-word inside the sentence has to raise overtly to C⁰. The results of an acceptability judgement task show that although the Japanese speakers respond in a broadly target-like way, the lexical morphological feature [+wh] of the particle *ne* in their L2 Chinese lexicons is permanently deficient, which leads to variability in their intuitions about Chinese *wh*-questions. A lexical morphological feature deficit account for the results is proposed, and it is suggested that the lexical morphology–syntax interface can be a source of variability in L2 acquisition.

Keywords: L2 Chinese, *wh*-questions, *wh-in-situ*, *wh*-movement, Japanese, interface properties in L2, variability in L2

I Introduction

A considerable number of studies reported in the second language (L2) research literature have focused on the relationship between the acquisition of overt morphological inflection and the acquisition of underlying syntactic properties, such as functional categories and their features, and these studies are based on data from L2 acquisition of languages with overt morphological inflection. Only a small number of studies have looked at data from L2 acquisition of languages like Chinese, which is impoverished as far as overt inflection is concerned. To narrow the gap, we report in this article on an empirical study investigating how Chinese *wh*-questions are mentally represented in Japanese speakers' L2 Chinese grammars. Both Chinese and Japanese are generally considered *wh-in-situ* languages in which a *wh*-word is allowed to remain in its base-generated position, and both languages use question particles to mark questions. However, the features attached to the question particles are different in the two languages, and this has syntactic consequences. The investigation involved a comparison of the judgements of the grammaticality of interrogative constructions in Chinese by Japanese and English speakers at a range of proficiency levels, and a control group of native speakers. Section II of the article outlines the syntax of *wh*-questions in Chinese, Japanese and English, Section III presents the study and its results, and Section IV discusses the implications of the results.

II *Wh*-questions in Chinese, Japanese and English

All natural languages have ways of phonetically representing *wh*-words,¹ but these *wh*-words have different syntactic properties cross-linguistically. Unlike English *wh*-questions, in which the *wh*-word has to move to the initial position of the sentence, as can be seen in the English translation of (1), the *wh*-word in Chinese *wh*-questions remains *in situ*, as *shenme* (= what) in (1). In Chinese, there are two question particles *ma* and *ne*, with *ma* being a yes–no-question particle (hereafter yes–no particle) and *ne* a *wh*-question particle (hereafter *wh*-particle). The yes–no particle is generally obligatory, as in (2), but the *wh*-particle is

¹Here *wh*-words refer to *who*, *what*, *where*, *when*, *why*, *how* and their counterparts in other languages.

optional in Chinese *wh*-questions, as in (1).² Another characteristic of Chinese *wh*-questions is that the *in-situ wh*-word can be located inside islands, such as a complex NP (CNP) as in (3)³ and a sentential subject as in (4). Obviously, *wh*-words cannot be extracted from these islands in English as this would violate Subjacency.

- 1) Ni xiang chi shenme (ne)?
 you want eat what Q
 'What would you like to eat?'
- 2) Ni xihuan ta ma?
 you like her Q
 'Do you like her?'
- 3) Ni xihuan [shei xie de] shu (ne)?
 you like who write DE book Q
 * 'Who_i do you like the book [that *t_i* wrote]?''
- 4) [Shei qu Beijing] bijiao heshi (ne)?
 who go Beijing relatively suitable Q
 * Who_i is [*t_i* to go/goes to Beijing] more appropriate?'

Similar to *wh*-words in Chinese, Japanese *wh*-words are also allowed to remain in their base-generated position, as in (5). Japanese uses particles, such as *ka* and *no* in its questions, as in (5)⁴ and (6). Japanese is apparently also similar to Chinese with regard to island effects; it allows a *wh*-word to appear in a complex NP (CNP) as in (6) and in a sentential subject, as in (7).

- 5) Mary-ga nani-o katta no?
 Mary-Nom what-Acc bought Q
 'What did Mary buy?'
- 6) Anata-wa [dare-ga kaita] hon-o suki ka?
 You-Nom who-Nom wrote book-Acc like Q
 * Who_i do you like the book [that *t_i* wrote]?''
- 7) [Dare-ga Pekin ni iku]-ga warito ii ka?
 Who-Nom Beijing to go Nomi-Nom relatively suitable Q
 * Who_i is [*t_i* to go/goes to Beijing] more appropriate?'

²In Chinese the yes–no particle and the *wh*-particle can only appear in matrix clauses and cannot be used in an embedded question.

³The abbreviations used in the examples in this article are: CL = classifier; DE = complementizer introducing a relative clause; EXP = experiential aspect marker; PART = particle; PFV = perfective aspect marker; Nomi = nominalizer; Q = question particle; Nom = nominative case marker; Acc = accusative case marker.

⁴Japanese has a head-final VP. This can be seen in (5), where the object *wh*-word *nani* (= what) appears to the left of the verb *katta* (= buy).

In spite of the apparent similarities shown above, Chinese and Japanese *wh*-words do behave differently. An observation, originally made by Hoji (1985) and reported in Watanabe (2001), indicates that a Japanese *wh*-word cannot occur in a position c-commanded by a universal quantifier, as shown in (8)⁵ (from Watanabe, 2001: 215). According to Watanabe (2001), this is because some type of *wh*-movement has to be involved in Japanese *wh*-questions and the quantifier blocks the movement, which results in the unacceptability of the sentence. However, the Chinese counterpart of (8) is acceptable, as in (9). This contrast suggests that some kind of *wh*-movement takes place in Japanese but not in Chinese.

- 8) * Daremo-ga nani-o katta no? (Japanese)
 everyone-Nom what-Acc bought Q
 'What did everyone buy?'
 9) Meigeren dou mai-le shenme? (Chinese)
 everyone all buy-PFV what
 'What did everyone buy?'

Huang (1982a) is among the first to propose that *wh*-words in Chinese undergo *wh*-movement at LF. He argues that there is a parallelism in scope and selection between overt *wh*-movement in languages like English and covert *wh*-movement in languages like Chinese. According to Huang (1982a; 1982b), languages like English and languages like Chinese simply differ in whether *wh*-movement takes place in overt syntax or at LF. This suggests that languages vary in the level at which *wh*-movement applies. Huang (1982b) argues that the Subjacency constraint only applies in overt syntax but not at LF, which explains why the Chinese sentences in (3–4) are acceptable but their English counterparts are not.

However, an increasing number of researchers have found unconvincing the claim that languages vary at the level where *wh*-movement applies (Aoun and Li, 1993b; Cheng, 1991; 2003; Cheng and Rooryck,

⁵ However, according to Watanabe (2001), the sentence can become grammatical if the *wh*-word is scrambled over the quantifier to the sentence initial position, as in (i).

- (i) Nani-o_i dare-mo-ga t_i katta no?
 what-Acc everyone-Nom bought Q

This suggests that the universal quantifier does not block *wh*-phrase scrambling. Roger Hawkins (personal communication) suggests that as the particle *no* has to be valued by the *wh*-phrase but *dare-mo* blocks this valuation process. It may be this blocking effect that forces *nani-o* to scramble closer to *no*, as in (i).

2000; 2002; Ouhalla, 1996; Shi, 1994; Simpson, 1995; 2000; Tsai, 1994b), and they are no longer satisfied with the stipulation that the parametric variation is reflected at the level of *wh*-movement. In recent years, research has re-examined *wh*-movement and *wh-in-situ*, and this re-examination has been further stimulated by developments within the Minimalist Program. An obvious question is: if *in-situ wh*-words in languages like Chinese and Japanese do not undergo covert movement, what allows these *wh*-words to stay *in situ*? Another question is: what prevents *wh*-words in languages like English from staying *in situ*?

The discussion of what makes *wh*-movement necessary or unnecessary has focused on the composition of CP since Chomsky (1981) as CP has generally been assumed to be a projection where a *wh*-feature is accommodated in a *wh*-question. In Rizzi's (1997) split-CP proposal, it is proposed that CP should be split into separate structural layers. Rizzi calls one of the layers Force Projection,⁶ which expresses the illocutionary force or the clausal type. That is, the ForceP provides information about whether the sentence is a declarative, an interrogative, an exclamative, a relative, an imperative, etc. The ForceP functions as an interface between the clause with a higher clause in the case of embedded ForceP or an interface with the superordinate structure of the discourse in the case of matrix ForceP. According to Rizzi, *force* can be expressed by overt morphological encoding on the head of ForceP, or by moving a required operator to ForceP. Chinese seems to have adopted the former and English the latter. In Chinese, the *force* of a sentence is generally specified by phonetically realized or unrealized particles; the yes/no question is specified by the yes/no-particle *ma*, as in (2), and the *wh*-question by the *wh*-particle *ne*, as in (1), (3) and (4). The use of particles in Chinese to specify the *force* of the sentence also supports Cheng's (1991) Clause Typing Hypothesis, in which she suggests that each sentence has to be 'typed' as a declarative sentence or an interrogative sentence.

Simpson (2000) puts forward an account for *wh-in-situ* languages like Chinese without involving any type of raising or movement. Simpson

⁶ The other layers that Rizzi (1997) proposes in his split-CP hypothesis are TopP, FocP and FinP.

suggests that C^0 in languages like English is ambiguous and underspecified (ranging over $+wh+Q$, $yes/no+Q$ and pure focus). A *wh*-phrase is forced to raise to Spec CP to disambiguate C^0 and activate it as a licenser specifically for *wh*-phrases.⁷ The *wh*-licenser triggered this way allows for all *wh*-elements in its domain to be successfully licensed, as in the case of multiple *wh*-questions. For languages like Chinese, this kind of movement for 'triggering' purposes is unnecessary because C^0 can be disambiguated and activated as C^0 with $[+wh]$ and $[+Q]$ features via the direct merging of the *wh*-question particle *ne*. In this way, no *wh*-movement needs to take place and all the *wh*-phrases can remain *in situ* and be licensed by the $[+wh+Q]$ C^0 , providing that they occur within the licensing domain of the C^0 . In Simpson's account, the relation between the head C^0 with the $[+wh, +Q]$ features and the *in-situ wh*-phrase is that between a licenser and a licensee, and the former can license (and check the features of) the latter 'at a distance' prior to Spell-out.

In this study, we follow Rizzi (1997), Simpson (2000) and Cheng and Rooryck (2000; 2002) in assuming that C^0 in *wh*-questions is essentially ambiguous and unvalued with respect to specification of *force*, and that unvalued C^0 must be valued. The valuation can be carried out by merging a *wh*-particle in C^0 , as in the case of Chinese, or by moving a *wh*-phrase to Spec CP, as in the case of English. In Chinese, the *wh*-particle *ne*, whether phonetically realized or not, values C^0 as C^0 with $[+Q, +wh]$ features, which licenses the *wh*-word *in situ* in Chinese. Adopting Chomsky's (2001a; 2001b) concept of Agree, we can assume that the *wh*-particle *ne* in C^0 'probes' in its c-commanding domain for compatible features. Once the features of *ne* in C^0 and those of the *in-situ wh*-word are matched (i.e. Agreed), the *in-situ wh*-word can be checked and licensed at a distance. Since no *wh*-movement is necessary, Subjacency becomes irrelevant, and therefore sentences like (3) and (4) are grammatical in Chinese. In this case, the *wh*-particle *ne* not only values C^0 as $[+Q]$ C^0 but also specifies it as $[+wh]$ C^0 .⁸ Following Rooryck's (1994) idea of embedded Attribute-Value sets of *phi* features,

⁷Simpson's suggestion here is similar to the idea put forward by Cheng (1991), who proposes that the motivation for *wh*-movement to Spec CP is to 'type' a clause as a *wh*-question. However, the *wh*-movement in Simpson's account is due to a formal morphological requirement.

⁸In this case, there is no Spec CP. Here we follow Chomsky (1995) in assuming that specifiers are created by movement and that there should not be any unnecessary branching.

featural representations of Chinese *wh*-questions as in (10) are the result.

- 10) The *wh*-particle: $ne_{[Q: +wh]}$
- a. $[_{CP} \text{ [Ni xihuan shei] } [C^0]]$ (before the force in C^0 is valued)
- | | | | | |
|-----|------|-----|------|--|
| you | like | who | | |
| | | | [F:] | |
- b. $[_{CP} \text{ [Ni xihuan shei] } [C^0 ne]]$ (after the force in C^0 is valued by *ne*)
- | | | | | |
|-----|------|-----|---------------|--|
| you | like | who | | |
| | | | [F: [Q: +wh]] | |

In (10), the *wh*-particle *ne* has a *force* value [+Q], which is further specified as having a value of [+wh] (rather than [+yes/no]). In (10a), the head of CP is underspecified and unvalued as to whether it is a declarative or an interrogative. By merging *ne* into C^0 ,⁹ the *force* of C^0 is valued as a head of CP with both [+Q] and [+wh] features. The *wh*-particle *ne* in C^0 has a dual function: it disambiguates the *force* of the sentence and at the same time it also licenses the *wh*-word *in situ*. In this sense, the *wh*-particle *ne* is the licenser of *wh-in-situ* in Chinese, whether *ne* is phonetically realized or not.¹⁰

Like Chinese, Japanese allows *wh*-phrases to appear in a complex NP and in a sentential subject, as in (6) and (7). However, it has been argued that Subjacency is active in Japanese (Nishigauchi, 1986; 1990). According to Watanabe (1992a; 1992b), there is a phonetically invisible *wh*-operator in Japanese *wh*-words and in Japanese *wh*-questions. This *wh*-operator has to undergo overt movement.¹¹ Under this analysis, the sentence in (11) would have the representation in (12), in which an invisible *wh*-operator undergoes movement from the *wh*-word *nani* (= what) to CP for feature checking. In other words, a phonetically null determiner-like element of a *wh*-word separates off from the rest of the *wh*-word and moves to CP.

⁹It should be noted that the particle *ne* is base-generated in C here. As an anonymous *Second Language Research* reviewer correctly points out, if an adjunction were assumed here, the particle *ne* adjoined to the head C would not be able to c-command or Agree with the *in-situ wh*-word. This also applies to our analysis of Japanese particles in (15).

¹⁰Alternatively, we can follow Aoun and Li (1993a; 1993b), Tsai (1994a; 1994b; 1999) and Reinhart (1998) in assuming that the *wh*-particle *ne* in C^0 functions as an unselective binder which binds the *wh*-word *in situ*. In this sense, there is an operator-variable relation between the *wh*-particle *ne* in C^0 and the *wh*-word *in situ*.

¹¹See Nishigauchi (1990) and Cheng (1991) for a proposal that the invisible operator is basically used in languages where the phonetically-overt *wh*-words are quantificationally underspecified and may be interpreted in various ways depending on the type of operator present.

- 11) Mary-ga nani-o katta no?
 Mary-ga what-Acc bought Q
 'What did Mary buy?'
- 12) [CP Op_i [Mary-ga [_{t_i} nani]-o katta] no]?
 Mary-ga what-Acc bought Q

To account for the absence of the Subjacency effect in sentences like (6) and (7), Watanabe (1992a; 1992b) argues that the invisible *wh*-operator is generated on the complex NP or the sentential subject itself, in which case the movement of the *wh*-operator does not cross an island. However, in Japanese, a *c*-commanding quantifier has a blocking effect on *wh*-movement, as in (8) repeated in (13), which is in contrast to the grammatical sentence in Chinese, as in (9) repeated in (14). According to Watanabe, the raising of the invisible *wh*-operator is blocked by the *c*-commanding quantifier *daremo* (= everyone), which results in the ill-formedness of (13). As there is no *wh*-movement whatsoever in Chinese, the *c*-commanding quantifier *meigeren* (= everyone) does not have any blocking effect on the *wh*-word in (14), and therefore Chinese sentences like (14) are grammatical. This provides further evidence that there is indeed *wh*-movement in Japanese and that it takes place in overt syntax. Based on Watanabe's argument, Japanese *wh*-movement behaves in the same way as overt *wh*-movement in English, and both are sensitive to Subjacency.

- 13) * Daremo-ga nani-o katta no? (Japanese)
 everyone-Nom what-Acc bought Q
 'What did everyone buy?'
- 14) Meigeren dou mai-le shenme? (Chinese)
 everyone all buy-PFV what
 'What did everyone buy?'

A question arises here: what is the motivation for the *wh*-operator movement in Japanese? As we have argued above, the head C^0 is ambiguous as to whether it is a declarative or an interrogative and, therefore, it has to be specified and valued.¹² Although Japanese has question particles *ka* and *no*, they can only value the ambiguous C^0 as [+Q] by merging into C^0 .¹³ However, they are 'defective' in the sense

¹²See Yuan (2007) for evidence of how the *force* of imperative sentences, exclamative sentences in Chinese is valued and specified.

that they are general question particles and are unable to specify the question as to whether it is [+yes/no] or [+wh]. As a result, the sentence would remain ambiguous between being a *wh*-question and a yes/no question. Being underspecified in this situation, the head C^0 would not be able to function as a *wh*-licensor for *in-situ wh*-words in Japanese. To value the head C^0 as [+wh], a phonetically unrealized *wh*-operator in a *wh*-word inside the sentence has to raise overtly to C^0 , which not only specifies the head C^0 as [+wh] but also triggers it to become a licensor for the *in-situ wh*-word in the sentence. Using Rooryck's (1994) Attribute-Value system, the featural representations of Japanese *wh*-questions would be as in (15). The head C^0 in (15a) is ambiguous; when the question particle *no* is merged into the head C^0 ,¹⁴ the *force* of the sentence is valued as [+Q], as in (15b), but it remains ambiguous as to whether it is a yes/no question or a *wh*-question. Only when a *wh*-operator is raised to Spec CP is the head C^0 specified as a [+Q, +Wh], as in (15c).

- 15) The general Japanese question particles: *ka/no*_[Q:]
- | | | | | | |
|----|--------------------------|----------------------|--------|---|---------------------------------------|
| a. | [_{CP} [Mary-ga | nani-o | katta] | C^0] | (before the force in C^0 is valued) |
| | Mary-Nom | what-Acc | bought | | |
| | | | | [F:] | |
| b. | [_{CP} [Mary-ga | nani-o | katta] | [C^0 <i>no</i>] | (after the force in C^0 |
| | Mary-Nom | what-Acc | bought | | is valued by <i>no</i>) |
| | | | | [F:[Q:]] | |
| c. | [_{CP} [Mary-ga | nani _i -o | katta] | [C^0 <i>no</i> + <i>wh_i</i>] | (after a <i>wh</i> -operator |
| | Mary-Nom | what-Acc | bought | | raises to the head C^0) |
| | | | | [F:[Q: + wh]] | |
- 'What did Mary buy?'

Watanabe (2001) modifies his earlier analysis of *wh*-operator movement (1992a; 1992b) and proposes an analysis of *wh*-feature movement for Japanese *wh*-questions, which is based on the idea in Chomsky (1991; 1995) that syntactic operations can include feature movement. However, Chomsky's more recent work (e.g. 2000) has abandoned the idea of feature movement. Instead, he has proposed that only 'syntactic

¹³The choice between the two particles in marking the matrix interrogative, according to Miyagawa (1987; 2001) and Yanagida (1995), depends on the politeness marking on the verb. However, in an embedded *wh*-question, only *ka* can be used, but not *no*.

¹⁴In Hagstrom (1998), it is argued that Japanese question particles originally occur by the *in-situ wh*-word and are subsequently raised to the head C^0 . Although Hagstrom argues that the position of Japanese question particles at the right edge of the sentence is a result of movement rather than merging, he still assumes that it is the question particles in the head C^0 which make *wh-in-situ* possible in Japanese.

objects', i.e. heads or maximal projections, can undergo movement. In this article we follow Watanabe's (1992a; 1992b) earlier analysis and assume that the movement involved in Japanese *wh*-questions is *wh*-operator movement rather than *wh*-feature movement. The *wh*-operator movement values the head C with the [+wh] feature in Japanese *wh*-questions and triggers it to become a licenser for the *in-situ wh*-word. We also adopt Watanabe's (1992a; 1992b) account for the grammaticality of Japanese *wh*-questions with a *wh*-word embedded inside a complex NP as in (6) or inside a sentential subject as in (7). That is, we assume that an invisible *wh*-operator is generated on the complex NP or the sentential subject itself and that the movement of the *wh*-operator to the head C⁰ does not cross an island.¹⁵ In this way the absence of island effects in (6) and (7) follows as a natural consequence.

The discussion above demonstrates that the *wh*-licensor can be established in three ways:

- by merging a *wh*-particle into the interrogative C⁰ as in Chinese;
- by raising a phonetically unrealized *wh*-operator to the head C⁰ as in Japanese; or
- by moving a *wh*-phrase to Spec CP as in English.

The *wh*-licensor established in any of these three ways can perform the operation of Agree on the *in-situ wh*-phrase in its c-commanding domain. We follow Tsai (1994b; 1999) in assuming that an optimal design in UG is that Merger always has intrinsic priority over chain formation and that if a language has a *wh*-particle like Chinese *ne* and Japanese *no* or *ka*, the language will always use it.

III The empirical study

1 Research questions

- How is C⁰ in Japanese speakers' L2 Chinese *wh*-questions disambiguated and valued? If the first language (L1) transfer part of the Full Transfer/Full Access model (Schwartz and Sprouse, 1994; 1996)

¹⁵Here it is also possible to assume Nishigauchi's (1990) idea that there is a percolation mechanism which makes the *wh*-feature associated with the *wh*-word climb up to the dominating CP and further to the entire CNP and the sentential subject. This ensures that a *wh*-question with a *wh*-word embedded inside a complex NP or a sentential subject does not violate Subjacency.

is adopted, we can hypothesize that C^0 in Japanese speakers' initial state of L2 Chinese *wh*-questions would be valued by merging a question particle like the Japanese *ka* or *no* in C^0 and then be further specified as a *wh*-question by raising a *wh*-operator from a *wh*-word *in situ* to the head of CP.

- Will the valuation of C^0 in L2 Chinese *wh*-questions by means of the *wh*-particle *ne* imply *wh-in-situ* in Japanese speakers' L2 Chinese? That is, will the merging of *ne* in C^0 make any *wh*-movement unnecessary and impossible in their L2 Chinese *wh*-questions?
- To what extent do final-state representations of Japanese speakers' L2 Chinese *wh*-questions converge with the Chinese grammar?

2 Participants

The empirical study includes 111 Japanese speakers as participants¹⁶ and 20 native speakers of Chinese as controls. The Japanese participants were undergraduate students, postgraduate students, professors of Chinese from Waseda, Keio and Nihon Universities in Japan as well as Japanese students learning Chinese in Beijing, China. The native Chinese speakers were university students and office workers in China.

All Japanese universities involved teach Chinese from scratch and the students involved in this study include both specialists and non-specialists of Chinese. The weekly classroom teaching of Chinese for Japanese undergraduate students in Japan ranges from 2 to 3 hours. All Japanese professors involved were teaching either Chinese or Chinese-related courses in their universities.

On the basis of their performance in a Chinese cloze test, the Japanese speakers were divided into 5 Chinese proficiency groups respectively: Beginner Group, Post-beginner Group, Intermediate Group, Post-intermediate Group and Advanced Group. The native Chinese speakers are in the Native Chinese Group. Information about each of the 6 groups is given in Table 1. An ANOVA shows that there is a significant

¹⁶Actually, more Japanese speakers participated in the empirical study. However, as some were later found to be Japanese-born Chinese, or Cantonese speakers, or only finished parts of the tasks, these participants' data were discarded.

Table 1 Information about each group

Groups	Number of participants	Average Age	Average monthly of studying in China/ Chinese	Average months in China/ Taiwan	Mean scores in the cloze test (total = 40) (ranges in brackets)
Japanese Beginner	18	20	13	0.12	3 (1–6)
Japanese Post-beginner	17	23	18	4	11 (7–15)
Japanese Intermediate	25	28	42	22	22 (16–25)
Japanese Post-intermediate	29	26	47	23	30 (26–34)
Japanese Advanced	22	29	95	28	37 (35–39)
Native Chinese	20	28	n/a	n/a	39 (38–40)

difference between all groups in their performance in the cloze test, ($F = 855.619$, $p < 0.001$) and the follow-up Scheffé tests indicate that except for the Advanced Group, each of the learner groups is significantly different from the native Chinese group and that all the learner groups are significantly different from each other.

3 Acceptability judgement test

Each of the participants completed an acceptability judgement test, which included 13 types of sentences, as exemplified in (16–21), with each type having 4 tokens.¹⁷ All sentences were presented in Chinese characters but all instructions were given in the experimental participants' L1 Japanese. In order to minimize any possible effect of vocabulary on the participants' judgement, efforts were made to include only basic words of daily life. In addition, Japanese translations and the Chinese *pinyin* (a Chinese phonetic system) were provided for some potentially unfamiliar words. Some sentences were contextualized. The contexts were given in Japanese.

¹⁷There are also other types of sentences testing different aspects of L2 Chinese grammars, which will be reported elsewhere. These different types of sentences also serve as distracters.

- 16) Yes–no questions with or without *ma*
- a. *With ma (Control)*
 Ni shi Riben ren ma?
 you be Japan person y/n-Q
 ‘Are you Japanese?’
 - b. ? *Without ma*
 Ni shi Riben ren?
 you be Japan person
 ‘Are you Japanese?’
- 17) *Wh*-argument *in situ*
- a. *Wh-questions with ne (control)*
 Ta xihuan shei ne?
 she like who *wh*-Q
 ‘Who does she like?’
 - b. * *Moved wh-argument*
 Shei ta xihuan?
 who she like
 ‘Who does she like?’
 - c. *Wh-argument in situ without ne*
 Ta xihuan shei?
 she like who
 ‘Who does she like?’
- 18) *Wh*-adjunct *in situ*
- a. *Wh-adjunct in situ (Control)*
 Ta zhu zai nar?
 he live in where
 ‘Where does he live?’
 - b. * *Moved wh-adjunct*
 Zai nar ta zhu?
 in where he live
 ‘Where does he live?’
- 19) *Wh*-argument inside CNP
- a. *Control*
 Zhe shi Li Ming mai de zixingche.
 This is Li Ming buy DE bike
 ‘This is a bike which Li Ming bought.’
 - b. *Wh-argument inside CNP*
 Zhe shi shei mai de zixingche?
 This is who buy DE bike
 * ‘This is a bike which who bought?’
- 20) *Wh*-argument inside sentential subject
- a. *Control*
 Li Ming lai bijiao heshi.
 Li Ming come quite suitable
 ? ‘That Li Ming comes is quite suitable.’
 (i.e. ‘It is quite suitable if Li Ming comes.’)

- b. *Wh-argument inside sentential subject*
 Shei lai bijiao heshi?
 who come quite suitable
 * 'Who comes is quite suitable?'

21) *Wh-argument c-commanded by a universal quantifier*a. *Control*

(Context: when they were in Beijing,) meigeren dou mai le yixie shu.
 everyone each buy PFV some books
 'everyone bought some books.'

b. *Experimental*

(Context: when they were in Beijing,) meigeren dou mai le yixie shenme?
 everyone each buy PFV some what
 'what did everyone buy?'

The test sentences can be categorized into 6 groups, and in each group there is a control sentence and a corresponding experimental sentence or more than one corresponding experimental sentence. The control sentence and the experimental sentence are identical except for one difference:

- the use or non-use of the yes–no question particle *ma*, as in (16);
- the use of the *wh*-question particle *ne* in relation to *wh-in-situ* or *wh*-movement, as in (17);
- *wh-in-situ* vs. *wh*-movement, as in (18);
- CNP with or without an embedded *wh*-word, as in (19);
- a sentential subject with or without an embedded *wh*-word, as in (20);
and
- a universal quantifier with or without a *wh*-word, as in (21).

In this way, we can be certain that any difference in the participants' judgements of the control sentences and the corresponding experimental sentences is due to the difference in the use of *wh*-words in the two sentences.¹⁸

All test sentences were randomized, and participants were asked to judge the acceptability of each sentence by circling a number on a scale

¹⁸In the pilot study, Chinese *wh*-questions with the *wh*-word embedded in a *wh*-island were also included. However, it was later decided not to include this type of *wh*-question in the main study. There were two reasons for this. First, this type of *wh*-question involves complicated scope interactions and a satisfactory instrument is unavailable to separate *wh*-movement from scope in the analysis of L2 learners' judgements. Second, the Chinese word *shifou* can be translated as both 'whether' and 'if' and it is very difficult to decide whether L2 learners of Chinese treat the Chinese word as a complementizer or as a *wh*-word.

as given in (22). On the basis of the scale in (22), we treat any score of '+1' or above that the participant assigned to a particular sentence as a sign of accepting that sentence, and conversely any score of '-1' or below as a sign of rejecting that sentence. The score of '0' is treated as a sign that the participant is not sure.

22)	-2	-1	0	+1	+2
	completely unacceptable	probably unacceptable	'I don't know'	probably acceptable	completely acceptable

4 Results

As can be seen from Table 2, all groups accept Chinese yes-no questions with *ma*. This suggests that like the native Chinese grammar, the L2 Chinese grammars of these Japanese learner groups allow the Chinese yes-no particle *ma* to value C⁰ of Chinese yes-no questions and specify it as C⁰ with the [+Q] feature. Although the mean scores of the native Chinese group and the Japanese learner groups' judgements of Chinese yes-no questions without *ma* do not show the groups' clear rejection of the sentences (that is, their mean scores do not fall below -1),¹⁹ results of paired-samples *t*-tests indicate that there is a significant difference ($p < 0.001$) between each group's judgement of Chinese yes-no questions with and without *ma*. This suggests that all groups strongly prefer Chinese yes-no questions with *ma* over absence of *ma*.

Table 2 Mean scores of the judgement of yes-no questions with/without *ma*

	Beginners	Post- beginners	Inter- mediate	Post-inter- mediate	Advanced	Chinese
With <i>ma</i>	1.68	1.79	1.93	1.97	1.98	1.91
?Without <i>ma</i>	-0.28	-0.79	-0.74	-0.65	-0.08	-0.53

¹⁹This is probably because in Chinese rhetorical or echo questions, *ma* is not required and the Chinese speakers as well as the Japanese learners may take Chinese rhetorical questions or echo questions into consideration when they make the judgement. The Japanese groups' performance could also be influenced by L1 transfer of Japanese where yes-no particles are not obligatory in yes-no questions.

Table 3 Mean scores of the judgement of *wh*-argument *in situ*

	Beginners	Post-beginners	Inter-mediate	Post-inter-mediate	Advanced	Chinese
with <i>ne</i>	0.85	0.93	1.15	1.68	1.76	1.89
Without <i>ne</i>	1.35	1.6	1.79	1.91	1.94	1.96
*moved <i>wh</i> -	-0.35	-0.71	-1.05	-1	-1.4	-1.49

In judging Chinese *wh*-questions with *ne*, Japanese Intermediate, Post-intermediate and Advanced Groups' mean scores are above +1, as shown in Table 3. The Japanese Beginner and Post-beginner Groups' mean scores are also close to +1. This seems to suggest that the C⁰ of *wh*-questions in these learners' L2 Chinese grammars is specified as [+Q] and [+wh] by the *wh*-particle *ne*, which is merged into C⁰. Within the theoretical framework we have adopted in this article, the *wh*-particle *ne* merged into C⁰ of *wh*-questions should make any movement of *wh*-word to C⁰ unnecessary and impossible. This seems to be supported by results of paired-samples *t*-tests, which show that in every group's judgement, there is a significant difference ($p < 0.001$) between Chinese *wh*-questions with *ne* and Chinese *wh*-questions with the *wh*-word moved from its base-generated position to the sentence initial position.

The data in Table 3 suggest that all groups accept Chinese *wh*-questions with *ne*, but the higher proficiency levels and the native speakers do so more strongly than lower proficiency speakers. All groups accept Chinese *wh*-questions without phonetically realized *ne* and reject Chinese *wh*-questions with moved *wh*-phrases.

Similar results are obtained in the groups' judgements of simple Chinese *wh*-questions with *wh*-adjuncts. As shown in Table 4, all learner groups – including the beginner groups whose mean scores are just below +1 – accept *wh*-adjuncts *in situ* in Chinese *wh*-questions. Although the beginner groups' mean scores only show weak rejection of

Table 4 Mean scores of the judgement of *wh*-adjunct *in situ*

	Beginners	Post-beginners	Inter-mediate	Post-inter-mediate	Advanced	Chinese
<i>in situ</i>	0.74	1.35	1.58	1.86	1.96	1.90
*moved	-0.39	-0.35	-0.82	-0.97	-1.43	-1.69

incorrect *wh*-questions with a *wh*-adjunct moved to the sentence initial position,²⁰ results of paired-samples *t*-tests show that there is a significant difference ($p < 0.001$) in each group's judgement between Chinese *wh*-questions with the *wh*-adjunct *in situ* and those with the *wh*-adjunct moved from its base-generated position to the sentence initial position. The data in Tables 3 and 4 provide us with evidence that C^0 of the *wh*-question in Japanese speakers' L2 Chinese grammars is valued by a phonetically realized or unrealized *wh*-particle *ne* and that *wh*-movement seems to have become unnecessary and impossible as a result.

Obviously, the results above can only provide us with data about simple *wh*-questions in Japanese learners' L2 Chinese grammars, and we need to look at the judgement data of *wh*-questions with *wh*-words embedded in a CNP and in a sentential subject as well. The results of the control sentences in Table 5 are from participants' judgement of sentences with a CNP but without any *wh*-word. The control sentences are used to identify those participants who have mastered the basic structure of the sentence with an embedded CNP. The results in Table 5 suggest that all groups have mastered the basic sentence structure with

Table 5 Mean scores of the judgement of *wh*-argument inside CNP

	Beginners	Post-beginners	Intermediate	Post-intermediate	Advanced	Chinese
Control	1.03	1.5	1.67	1.76	1.75	1.93
Experimental	0.97	1.03	1.13	1.24	1.27	1.71

²⁰ This can be due to the influence of their L1 Japanese, where it is possible to scramble the *wh*-word to the sentence initial position. This probably can also account for Japanese groups' weak rejection of the incorrect *wh*-questions with the *wh*-argument moved to the sentence initial position, as shown in Table 3. In (ib.) and (iib.) below are examples of scrambling *wh*-words to the sentence initial position in Japanese.

- (i) a. Kare-wa nani-o kai tai desu ka?
 He-Nom what-Acc buy want AUX Q
 b. Nani-o kare-wa kai tai desu ka?
 What-Acc he-Nom buy want AUX Q
 'What does he want to buy?'
- (ii) a. Anata-wa donoyouni (site) gakko ni kaeri masu ka?
 You-Nom how school to go-back AUX Q
 b. Donoyouni (site) anatatati-wa gakko ni kaeri masu ka?
 How you-Nom school to go-back AUX Q
 'How do you go back to school?'

an embedded CNP in Chinese although the Beginner Group's mastery seems to be rather weak.

From the results of the experimental sentences in Table 5, we can see that all learner groups accept or tend to accept Chinese *wh*-questions with a *wh*-argument embedded inside a CNP. It seems that so long as L2 Chinese grammars can handle the basic sentence structure, there is no problem for a *wh*-word to stay inside a CNP in Japanese speakers' L2 Chinese *wh*-questions. This seems to imply that Subjacency is irrelevant here as no movement is involved in this type of *wh*-question in L2 Chinese.

Can we get similar results from *wh*-questions with a *wh*-word embedded in a sentential subject? This type of sentence is also useful for testing possible *wh*-movement in L2 Chinese grammars as any movement out of a sentential subject would violate Subjacency. Table 6 presents results of the groups' judgement of the control sentences, i.e. sentences with a sentential subject but without a *wh*-word, and the experimental sentences with a *wh*-word embedded inside a sentential subject. The results in Table 6 indicate that participants in Post-intermediate and Advanced Groups confidently accept the control sentences as their mean scores of the control sentences are above +1. These two groups also accept Chinese *wh*-questions with a *wh*-argument embedded in a sentential subject, with their mean scores being 0.95 and 1.28 respectively. Although participants at beginner and early intermediate levels do not seem to have a full command of sentences with a sentential subject, results of paired-samples *t*-tests show that there is no significant difference ($p > 0.05$) between the control sentences and the experimental sentences in any group's judgement, which suggests that Japanese learners are not distinguishing the grammaticality of sentences with or without *wh*-words embedded inside a sentential subject (both of which are appropriate for Chinese), even at the beginner level.

Table 6 Mean scores of the judgement of *wh*-argument inside sentential subject

	Beginners	Post-beginners	Inter-mediate	Post-inter-mediate	Advanced	Chinese
Control	0.49	0.29	0.7	1.16	1.59	1.84
Experimental	0.07	0.02	0.41	0.95	1.28	1.73

The results from the judgement of *wh*-questions with a sentential subject seem to be compatible with those from *wh*-questions with a CNP; Japanese learners allow *wh*-expressions to remain *in situ* inside a CNP or a sentential subject. From these data, we cannot find evidence of any possible movement related to *wh*-expressions in Japanese speakers' L2 Chinese. Instead, there are signs of native-likeness in Japanese speakers' judgement of Chinese *wh*-questions.

Are these signs of native-likeness genuine manifestations of the underlying representations in Japanese speakers' L2 Chinese grammars? Recall that it has been argued by Watanabe (1992a; 1992) that there is a *wh*-operator movement in Japanese. As Japanese question particles *ka* and *no* can only value the ambiguous C^0 of the *wh*-question as [+Q], they are unable to specify whether the question is [+wh]. The function of moving a *wh*-operator from a *wh*-word inside the sentence to the head C^0 is to specify C^0 of a *wh*-question as [+wh] and at the same time license the *in-situ wh*-word in the sentence. However, recall that a universal quantifier is argued to be able to block *wh*-operator movement in Japanese (cf. Watanabe 1992a; 1992b; 2001). To test whether there is any possible *wh*-operator movement transferred from Japanese speakers' L1 to their L2 Chinese, *wh*-questions with a *wh*-word c-commanded by a universal quantifier were included in the judgement test. If there is *wh*-operator movement in Japanese speakers' L2 Chinese, a universal quantifier should serve as a blocker for the movement and the sentence should not be accepted by Japanese speakers' L2 Chinese grammars.

For the sake of comparison, we also include data from English-speaking learners' judgement of the sentences here. There are 107 English-speaking learners of Chinese involved. Based on their performance in the cloze test, the English speakers are also divided into five groups corresponding to the five Japanese learner groups. Results of independent-samples *t*-tests indicate that there is no significant difference ($p > 0.05$) between any of the two corresponding groups, that is, between the Japanese Beginner Group and the English Beginner Group, between the Japanese Post-beginner Group and the English Post-beginner Group, etc. This implies that any of the Japanese groups is compatible with the corresponding English group with regard to Chinese language proficiency.²¹

²¹Detailed results of English speakers' judgement of other types of Chinese *wh*-questions are reported in Yuan (2007).

Table 7 Mean scores of the judgement of sentences with a universal quantifier but lacking a *wh*-word (control)

	Beginners	Post-beginners	Inter-mediate	Post-inter-mediate	Advanced	Chinese
English	0.74	0.70	0.84	1.24	1.61	
Japanese	0.54	0.38	0.52	1.05	1.43	
Chinese						1.73

Table 8 Mean scores of the judgement of *wh*-word c-commanded by universal quantifier (experimental)

	Beginners	Post-beginners	Inter-mediate	Post-inter-mediate	Advanced	Chinese
English	0.38	0.71	0.37	0.96	1.21	
Japanese	0.43	0.06	-0.23	-0.28	0.01	
Chinese						1.33

The results in Table 7 are from the groups' judgement of control sentences with a universal quantifier but without a *wh*-word. As we can see from Table 7, Japanese and English participants in Beginner, Post-beginner, Intermediate Groups do not seem to have a full command of Chinese sentences with a universal quantifier as their mean scores of the control sentences are below +1,²² but Japanese and English Post-intermediate and Advanced Groups clearly accept the control sentences. Table 8 presents the results of the experimental sentences with a *wh*-word c-commanded by a universal quantifier. We can see that English Post-intermediate and Advanced Groups accept the experimental sentences (their mean scores are 0.96 and 1.21 respectively). In a striking contrast, Japanese Post-intermediate and Advanced Groups fail to accept Chinese *wh*-questions with a *wh*-word c-commanded by a universal quantifier, although they accept the control sentences with a universal quantifier but without a *wh*-word, as shown in the contrast between Tables 7 and 8. In paired-samples *t*-tests, significant differences are found between the control sentences and the experimental sentences in Japanese Intermediate ($p < 0.004$), Post-intermediate ($p < 0.001$) and Advanced ($p < 0.001$) Groups' judgement although no significant

²²This could be due to the obligatory use of *dou* (= each) (see the example sentences in (21)) in Chinese sentences with a universal quantifier.

difference ($p > 0.05$) is found in Japanese Beginner or Post-beginner Groups' judgement. There is no significant difference ($p > 0.05$) in any English learner group or native Chinese group's judgement between the control sentences and the experimental sentences. This implicates that *wh*-operator movement is transferred from Japanese speakers' L1 to their L2 Chinese and that the *wh*-operator movement is blocked by the universal quantifier. This type of movement seems to be persistent even at very advanced levels, which we can count as an example of fossilization, a term first used by Selinker (1972) to refer to a phenomenon where a certain part of the L2 ceases to develop in spite of being short of native-like attainment.

As the mean scores of Japanese Post-intermediate and Advanced Group's judgement of the experimental sentences are around '0', a careful examination of the judgement of each token sentence by each participant in these two Japanese groups is conducted to find out whether the mean scores so close to '0' are the result of many participants in the two Japanese groups assigning the category of 'I don't know' to the sentences. However, the result of the examination reveals that out of the 116 attempts made by Japanese Post-intermediate Group and the 88 attempts by Japanese Advanced Group, only 4 (3%) and 3 (3%) attempts are marked with '0' respectively in these two groups' judgement of the sentences. The rest of the attempts are roughly equally divided between 'acceptable' and 'unacceptable',²³ which is considered evidence of variability in these groups' L2 Chinese *wh*-questions.

These results suggest that although Japanese learners of Chinese show native-like behaviours by allowing Chinese *wh*-words to remain inside a CNP or a sentential subject, the native-likeness is only superficial and that their underlying representations are still deviant from the native Chinese grammar with regard to the Chinese *wh*-question. There is no *wh*-movement in the native Chinese grammar but *wh*-operator movement is found to be involved in Japanese speakers' L2 Chinese.

²³Very few participants in these two Japanese groups make consistent judgements of the experimental sentences. Out of the 29 participants in Japanese Post-intermediate Group, three consistently (i.e. 4 out of 4) reject the experimental sentences and one consistently accepts the sentences; out of the 22 participants in Japanese Advanced Group, two consistently reject the sentences and two consistently accept the sentences.

IV Discussion

We have seen in the above that all Japanese groups overwhelmingly allow the Chinese yes–no particle *ma* to value and specify the head C^0 of Chinese yes–no questions. Similarly, Japanese speakers' L2 Chinese grammars seem to value and specify L2 Chinese *wh*-questions by merging the Chinese *wh*-particle *ne* into the head C^0 of the *wh*-question. This apparently makes it possible for *wh*-words to remain *in situ* in their L2 Chinese grammars as all Japanese groups apparently have native-like intuitions and accept Chinese *wh*-questions with the *wh*-word remaining *in situ*.

The valuation of the head C^0 of Chinese *wh*-questions with the *wh*-particle *ne* also appears to make it possible for *wh*-words to stay *in situ* inside a CNP and inside a sentential subject in Japanese speakers' L2 Chinese grammars. This appears to suggest that no *wh*-movement is involved in *wh*-questions in Japanese speakers' L2 Chinese grammars as any extraction from inside a CNP or inside a sentential subject would violate Subjacency. This is supported by results from paired-samples *t*-tests, which indicate that Japanese learners do not distinguish the grammaticality of Chinese *wh*-questions with and without *wh*-words embedded inside a CNP or inside a sentential subject. All these data appear to suggest that Japanese learners can have native-like representations in their L2 Chinese grammars; that is, the head C^0 of Chinese *wh*-questions in their L2 Chinese grammars is valued and specified by merging the Chinese *wh*-particle *ne* into C^0 , and the head C^0 valued and specified this way makes any type of *wh*-movement unnecessary and impossible. Is it really true that no *wh*-movement takes place at all in Japanese speakers' L2 Chinese grammars? The answer to this question is NO. We would argue that all the native-like behaviours we have seen in Japanese speakers' judgement of Chinese *wh*-questions are only superficial. Their underlying mental representations still deviate from the native Chinese grammar.

Recall that we follow Watanabe (1992a; 1992b) in assuming that in Japanese *wh*-questions a phonetically invisible *wh*-operator is required to raise from the *wh*-word to the head C^0 in overt syntax and that this movement can be blocked by a *c*-commanding universal quantifier. Since there is no such requirement for *wh*-operator movement in Chinese,

and since in English overt movement of the *wh*-word puts it outside the scope of the universal quantifier, Chinese *wh*-questions with a *wh*-word c-commanded by a universal quantifier can be used to test whether there is any L1 transfer and whether any *wh*-operator movement takes place in English and Japanese speakers' L2 Chinese grammars. Our data clearly show that both English and Japanese intermediate and advanced learners accept Chinese sentences with a universal quantifier. However, when a *wh*-word is added to the sentence, which is c-commanded by the universal quantifier, only English learners, like the native Chinese, judge the sentences as acceptable. In contrast, the Japanese intermediate and advanced learners judge these sentences variably as their judgements can be roughly equally divided between 'acceptable' and 'unacceptable'. There are significant differences in Japanese Intermediate, Post-intermediate and Advanced Groups' judgement between the sentences with and without a *wh*-word c-commanded by a universal quantifier.

This suggests that in contrast to English speakers' L2 Chinese grammars, there is *wh*-operator movement in the Chinese grammars of Japanese speakers and that *wh*-operator movement can be blocked by a c-commanding universal quantifier. It is clear that the difference between the Japanese speakers' results reported in Table 7 and their results in Table 8 is due to the presence of the *wh*-word c-commanded by a universal quantifier in the experimental sentences. The universal quantifier functions as a blocker to the variable raising of the *wh*-operator from the *wh*-word in the sentence. The variable raising of the *wh*-operator seems to be so persistent that it takes place even in the Japanese Advanced Group, a group of participants considered to represent the stable/final state of L2 acquisition of Chinese. Persistent variability in *wh*-operator raising in Japanese speakers' L2 Chinese provides us with evidence of fossilization.

Then a question arises as to what the motivation is for the raising of the *wh*-operator. That is, why does the *wh*-operator have to raise in Japanese speakers' L2 Chinese grammars? We would argue that the answer to this question does not lie in the *wh*-word itself but is related to the lexical morphological features attached to the particle that Japanese speakers use in specifying Chinese *wh*-questions. In Japanese speakers' L1 lexicon, they have question particles *ka* and *no* which can

be used to value both yes–no questions and *wh*-questions in Japanese. However, these Japanese question particles only have the feature [+Q] and can only function as a general question particle. When they are merged into the head C^0 , the *force* of the sentence is only specified as [+Q], but it remains ambiguous as to whether it is a *wh*-question. To specify the *force* of the sentence as a *wh*-question in Japanese, a *wh*-operator has to be raised from the *wh*-word in the sentence to the head C^0 . It is likely that in Japanese speakers' L2 Chinese lexicons, the Chinese *wh*-particle *ne* is taken as the Chinese counterpart of the Japanese question particles *ka* and *no*, which have the [+Q] feature but no [+wh] feature. As a result, when this variant of *ne* is used to value the *force* of a *wh*-question, the head C^0 of the sentence can only be specified as [+Q] and it cannot Agree with the features of the *wh*-word in the sentence at a distance and cannot license it as an *in-situ wh*-word. In this situation, the head C^0 of the *wh*-question in Japanese speakers' L2 Chinese grammars remains ambiguous and the *force* of the sentence remains partially unspecified.

Why is variability so persistent? We would argue that this is due to the lexical morphological features attached to the question particles in Japanese speakers' L2 Chinese lexicons and to the unavailability of positive evidence in input data. The two Chinese question particles *ma* and *ne* have a clear division of labour in the native Chinese grammar, with the former having the function of specifying the *force* of the sentence with the features [+Q] and [+yes–no] and the latter specifying the sentence with the features of [+Q] and [+wh]. It seems likely that Japanese speakers take the two question particles *ma* and *ne* as Chinese counterparts of the Japanese question particles *ka* and *no*. If this happens, there will be no division of labour in Japanese speakers' L2 Chinese lexicons between *ma* and *ne*. Furthermore, there is no positive evidence in the input data which can inform Japanese speakers that the Chinese particle *ne* can only be used in *wh*-questions and cannot be used to specify the head C^0 of a yes–no question and there will be no positive evidence to them that the Chinese particle *ma* can only be used in yes–no questions and cannot be used to value the head C^0 of a *wh*-question. The consequence of the absence of positive evidence in the input data is that the particle *ne* in Japanese speakers' L2 Chinese lexicons remains as a variant with no

[+wh] feature, which leads to persistent variability in *wh*-operator raising.²⁴ As English does not employ particles for specifying the *force* of the sentence, there is no L1 interference in English speakers' acquisition of the Chinese yes–no particle and *wh*-particle. The use of *ma* in Chinese yes–no questions and the use of *ne* in Chinese *wh*-questions provide English speakers with positive evidence that there is a clear division of labour between the two Chinese particles. In this way, the positive evidence informs English speakers' L2 Chinese lexicons that the particle *ma* has the features [+Q] and [+yes–no] and the particle *ne* the features [+Q] and [+wh].

If our analysis above is on the right track, it can be argued that the native-like responses of the Japanese speakers on some of the test items is only superficial and that the underlying representations are still deviant from those of the native Chinese grammar. The results of the experimental sentences presented in Tables 3 and 4 appear to indicate that in judging simple Chinese *wh*-questions, Japanese speakers, particularly those in Japanese Post-intermediate and Advanced Groups, behave similarly to the native Chinese. However, the data from Japanese speakers' judgement of Chinese *wh*-questions with a *wh*-word c-commanded by a universal quantifier provide us with reasons to believe that variable raising of the *wh*-operator takes place in Japanese speakers' L2 Chinese grammars when these simple *wh*-questions are judged. As there is nothing in the sentence that blocks the raising of the *wh*-operator, the non-native representations are not manifested at the surface level. The same is true of Japanese speakers' judgement of Chinese *wh*-questions with a *wh*-word embedded inside a CNP or inside a sentential subject. Recall that we follow Watanabe (1992a; 1992b) and assume that in Japanese *wh*-questions with a *wh*-word embedded inside a CNP or inside a sentential subject, an invisible *wh*-operator is generated on the CNP or on the sentential subject, rather than on the *wh*-word itself. In this way, the raising of the *wh*-operator to the head C⁰ of the *wh*-question does not cross an island and therefore does not violate Subjacency. If Japanese speakers transfer this

²⁴The argument here would be further strengthened if we could obtain data showing that the *wh*-particle *ne* is incorrectly used to mark Chinese yes–no questions by Japanese speakers. This is for future research.

mechanism from their L1 and generate the *wh*-operator on the CNP and the sentential subject respectively in their L2 Chinese, we will not be able to detect any *wh*-operator movement from their judgements of Chinese *wh*-questions with a *wh*-word embedded inside a CNP or inside a sentential subject. Japanese speakers' judgements of this type of sentence give a false impression of native-likeness.

The data have demonstrated that although Japanese speakers' L2 Chinese grammars are syntactically capable of merging the Chinese *wh*-particle *ne* into the head C⁰ of a Chinese *wh*-question, the lexical morphological features of the particle *ne* in their lexicons are deficient, the syntactic consequence of which is the variable raising of the *wh*-operator. This interlanguage *ne* has the same phonetic and morphological forms as the Chinese *wh*-particle *ne* but bears lexical features similar to those of the Japanese question particles *ka* and *no*. Of course, our finding here does not imply that lexical features are the only source of L1 transfer. On the contrary, what we would like to argue is that the L1 effect can come from various modules and components of one's L1 although L1 transfer does not occur inevitably in every part of a second language (Yuan, 2001; 2004).

V Conclusions

In this study, it has been argued that some apparently native-like intuitions shown by Japanese speakers' Chinese *wh*-questions are only superficial and that there is persistent variable raising of the *wh*-operator in their underlying syntactic knowledge. We attribute the variable raising of the *wh*-operator to the deficient particle *ne* in Japanese speakers' L2 Chinese lexicons, which only has the [+Q] feature but with no [+wh] feature. The data from this study demonstrate that it cannot be taken for granted that L2 speakers will acquire lexical morphological features in the L2. According to the Minimalist Program (Chomsky, 1995; 1998), the computational system in the language faculty selects words from the lexicon together with their morphological features and forms PF and LF representations via a derivational procedure. If we adopt this view in L2 research, it is not unreasonable to assume that L2 learners first have to acquire the features of lexical items in order for derivations to be formed. If the feature specification of the particle *ne* in Japanese speakers' L2 Chinese lexicons is different from that of native speakers of Chinese, it

comes as no surprise that Japanese learners behave differently from native Chinese speakers. We can argue that any lexical item with deficient morphological features selected from the L2 lexicon by the computational system will have an effect on the L2 syntax. On the basis of this analysis, we propose that the lexical morphology–syntax interface is likely to be a source of variability in L2 grammars.

Acknowledgements

The research reported in this article is part of a project on mental representations of *wh*-words in non-native grammars of Chinese, which is funded by the Economic and Social Research Council in the UK (grant reference number RES-000-22-0180). I gratefully acknowledge the financial support for the project from the ESRC. I would also like to thank the following people for their invaluable assistance in my data collection: Kazuyuki Inoue, Wenzhi Chen, Da Yang, Shio-yun Kan, Yang Song, Jing Fang, Lianyi Song, Dian Huang, Guohua Chen, Yang Zhao, Limin Jin, Xue Gu and Bin Yu. I am also in debt to students and teaching staff from Waseda, Keio and Nihon Universities in Japan, Japanese students studying at Beijing Foreign Studies University and Peking University in China, and students and teaching staff from Oxford, London, Westminster, Leeds, Durham, Newcastle, Edinburgh and Cambridge Universities in the UK for their participation in my empirical study. Without their help, this research project would have been impossible. Earlier versions of this article were presented at the 2004 Annual Conference of the Japanese Second Language Association in Kansai University in Osaka, the 1st GALANA Conference in the University of Hawaii at Manoa, and the 13th Annual Conference of the International Association of Chinese Linguistics at Leiden University. I thank the audiences for their valuable and helpful comments and suggestions. I would also like to express my gratitude to three anonymous *Second Language Research* reviewers and Roger Hawkins for their valuable and helpful comments on an earlier version of the article.

VI References

Aoun, J. and Li, A.Y.-H. 1993a: *Syntax of scope*. Cambridge: MIT Press.

- 1993b: *Wh*-elements *in-situ*: syntax or LF? *Linguistic Inquiry* 24, 199–238.
- Cheng, L.L.-S.** 1991: On the typology of *wh*-questions. Unpublished PhD dissertation, MIT, Cambridge, MA.
- 2003: *Wh-in-situ*. *Glott International* 7, 103–09, 129–37.
- Cheng, L.L.-S. and Rooryck, J.** 2000: Licensing *wh-in-situ*. *Syntax* 3, 1–19.
- 2002: Types of *wh-in-situ*. Unpublished manuscript, Leiden University, The Netherlands.
- Chomsky, N.** 1981: *Lectures on government and binding*. Dordrecht: Foris.
- 1991: Some notes on economy of derivation and representation. In Freidin, R., editor, *Principles and Parameters in Comparative Grammar*. Cambridge, MA: MIT Press, 417–54.
- 1995: *The minimalist program*. Cambridge, MA: MIT Press.
- 1998: Minimalist inquiries: the framework. *MIT Occasional Papers in Linguistics* 15, 1–56.
- 2000: Minimalist inquiries: the framework. In Martin, R., Michaels, D. and Uriagereka, J., editors, *Step by Step: Essays on Minimalist Syntax in Honour of Howard Lasnik*. Cambridge, MA: MIT Press, 89–115.
- 2001a: Derivation by phrase. In Kenstowics, M., editor, *Ken Hale, a life in language*. Cambridge, MA: MIT Press, 1–52.
- 2001b: Beyond explanatory adequacy. Unpublished manuscript, MIT, Cambridge, MA.
- Hagstrom, P.** 1998: Decomposing questions. Unpublished PhD dissertation, MIT, Cambridge, MA.
- Hoji, H.** 1985: Logical form: constraints and configurational structures in Japanese. Unpublished PhD dissertation, University of Washington, Seattle, WA.
- Huang, C.-T.J.** 1982a: Move WH in a language without WH movement. *The Linguistic Review* 1, 369–416.
- 1982b: Logical relations in Chinese and the theory of grammar. Unpublished PhD dissertation, MIT, Cambridge, MA.
- Miyagawa, S.** 1987: LF affix raising in Japanese. *Linguistic Inquiry* 18, 362–67.
- 2001: The EPP, scrambling, and *wh-in-situ*. In Kenstowics, M., editor, *Ken Hale, a life in language*. Cambridge, MA: MIT Press.
- Nishigauchi, T.** 1986: Quantification in syntax. Unpublished PhD dissertation, University of Massachusetts, Amherst, MA.
- 1990: *Quantification in the theory of grammar*. Dordrecht: Kluwer.
- Ouhalla, J.** 1996: Remarks on binding properties of *wh*-pronouns. *Linguistic Inquiry* 27, 676–708.
- Reinhart, T.** 1998: *Wh-in-situ* in the framework of the minimalist program. *Natural Language Semantics* 6, 29–56.

- Rizzi, L.** 1997: The fine structure of the left periphery. In Haegeman, L., editor, *Elements of Grammar: Handbook of Generative Syntax*. The Netherlands: Kluwer Academic Publishers, 281–337.
- Rooryck, J.** 1994: On two types of underspecification: towards a feature theory shared by syntax and phonology. *Probus* 6, 207–33.
- Schwartz, B. and Sprouse, R.** 1994: Word order and nominative case in non-native language acquisition: a longitudinal study of (L1 Turkish) German Interlanguage. In Hoekstra, T. and Schwartz, B., editors, *Language Acquisition Studies in Generative Grammar: Papers in Honour of Kenneth Wexler from the 1991 GLOW workshop*. Amsterdam: John Benjamins, 317–68.
- 1996: L2 cognitive states and the full transfer/full access model. *Second Language Research* 12, 40–72.
- Selinker, L.** 1972: Interlanguage. *International Review of Applied Linguistics* 10, 209–31.
- Shi, D.** 1994: The nature of Chinese *wh*-questions. *Natural Language and Linguistic Theory* 12, 301–33.
- Simpson, A.** 1995: *Wh*-movement, licensing and the locality of feature checking. Unpublished PhD dissertation, The School of Oriental and African Studies, UCL, London.
- 2000: *Wh-movement and the theory of feature-checking*. Amsterdam: John Benjamins.
- Tsai, W.-T.D.** 1994a: On nominal islands and LF extractions in Chinese. *Natural Language and Linguistic Theory* 12, 121–75.
- 1994b: On economizing the theory of A-bar dependencies. Unpublished PhD dissertation, MIT, Cambridge, MA.
- 1999: On lexical courtesy. *Journal of East Asian Linguistics* 8, 39–73.
- Watanabe, A.** 1992a: Subjacency and S-structure movement of *wh-in-situ*. *Journal of East Asian Languages* 1, 255–91.
- 1992b: *Wh-in-situ*, subjacency, and chain formation. *MIT Occasional Papers in Linguistics* 2.
- 2001: *Wh-in-situ* languages. In Baltin, M. and Collins, C., editors, *The Handbook of Contemporary Syntactic Theory*. Oxford: Blackwell Publishers, 203–25.
- Yanagida, Y.** 1995: Focus projection and *wh*-head movement. Unpublished PhD dissertation, Cornell University, Ithaca, NY.
- Yuan, B.** 2001: The status of thematic verbs in the second language acquisition of Chinese: against inevitability of thematic-verb raising in second language acquisition. *Second Language Research* 17, 248–72.
- 2004: Negation in French–Chinese, German–Chinese and English–Chinese interlanguages. *Transactions of the Philological Society* 102, 169–97.
- 2007: Behaviours of *wh*-words in English speakers' L2 Chinese *wh*-questions: evidence of no variability, temporary variability and persistent