Second Language Acquisition of Japanese Wh-constructions

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ABSTRACT

This dissertation investigates the second language (L2) acquisition of Japanese wh-constructions by Chinese- and English-speaking learners. The focus of this study is twofold; first, it examines whether parameter resetting is possible in L2 acquisition, as both Chinese and English wh-constructions are parametrically different from Japanese wh-constructions. Second, it examines whether parameter resetting is affected by the learners' first language (L1). Not only do Chinese and English wh-constructions differ from Japanese wh-constructions, but they also differ from each other. Chinese is, like Japanese, a wh-in-situ language, while English is a wh-movement language. Chinese wh-constructions, therefore, can be said to be more similar to Japanese wh-constructions than English wh-constructions. It is investigated whether the similarity between Chinese and Japanese and dissimilarity between English and Japanese affect the course and/or the ultimate attainment in the acquisition of wh-constructions in Japanese.

Fifty-two Chinese and 32 English speakers, who were at intermediate and advanced levels, as well as 12 native speakers of Japanese, took part in the study, taking tests designed to examine their interpretations of Japanese wh-phrases. The results showed that the acquisition of targetlike knowledge of Japanese wh-constructions is possible, as evidenced by some advanced learners. However, it was also found that many learners, both at the intermediate and the advanced levels, failed to interpret wh-phrases in Japanese in a targetlike way, showing no evidence of parameter resetting. The results also showed that there was no L1 difference at the intermediate level, but at the advanced level, English-speaking learners outperformed their Chinese counterparts.

The present study showed that acquiring L2 wh-constructions with a different parametric value from the learners' L1 is possible, as demonstrated by some advanced learners. However, it was also found that acquiring targetlike interpretations of wh-phrases in Japanese is difficult, and that it is only after extensive exposure and attainment of high proficiency that targetlike interpretations can be achieved. The present study also demonstrated that the typological similarity between Chinese and Japanese does not play a role in the L2 acquisition of Japanese wh-constructions. An alternative view of L1 influence to account for the out-performance by English speakers is proposed.

RÉSUMÉ

Cette dissertation enquête sur l'acquisition des constructions wh du japonais appris comme langue seconde (L2) par les anglophones et les sinophones. Le point de mire de cette étude est double. Dans un premier temps, elle cherche à savoir si le changement paramétrique est possible en acquisition L2, puisque les constructions wh de l'anglais et du chinois sont paramétriquement opposées à celles du japonais. Deuxièmement, elle cherche à savoir si le changement paramétrique est affecté par la langue maternelle de l'apprenant. Non seulement les constructions wh de l'anglais et du chinois sont différentes de celles du japonais, elles diffèrent également l'une de l'autre. Le chinois, comme le japonais, est une langue wh-*in-situ*, alors que l'anglais est une langue à movement wh. Les constructions wh du chinois peuvent donc être décrites comme étant plus semblables à celles du japonais qu'à celles de l'anglais. Ce travail cherche à savoir si la similarité entre le chinois et le japonais et la dissimilarité entre l'anglais et le japonais ont un effet sur le processus et/ou le résultat final de l'acquisition de ces constructions en japonais.

Cinquante-deux sinophones et trente-deux anglophones ayant atteint un niveau intermédiaire ou avancé en japonais, ainsi que douze locuteurs natifs du japonais, ont pris part à l'étude, prenant des tests visant à examiner leur interprétation des éléments wh du japonais. Les résultats démontrent que l'acquisition d'une connaissance des constructions wh en japonais comparable à celle des natifs est possible, tel que démontré par certains apprenants avancés. Toutefois, on constate aussi que de nombreux apprenants, avancés comme intermédiaires, n'ont pas pu interpréter les éléments wh du japonais comme le ferait un natif, ne démontrant ainsi aucun changement paramétrique. Les résultats ont également démontré qu'il n'y avait aucune disparité selon la langue maternelle au niveau intermédiaire, mais qu'au niveau avancé, les anglophones obtenaient plus de succès que leurs homologues sinophones.

La présente étude a démontré qu'il est possible d'acquérir les constructions wh dans une L2 ayant une valeur paramétrique différente de la langue maternelle de l'apprenant, tel que démontré par les apprenants avancés. Toutefois, on a aussi constaté qu'il est difficile d'acquérir l'interprétation native des éléments wh en japonais, et que c'est seulement après une exposition prolongée et l'atteinte d'une compétence élevée qu'elle devient possible. La présente étude a également démontré que la similarité typologique entre le chinois et le japonais ne joue pas

un rôle dans l'acquisition L2 des constructions wh du japonais. Une conception alternative de l'influence de la langue maternelle est proposée pour expliquer la meilleure performance des anglophones.

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ABBREVIATIONS

Asp	aspect marker
Acc	accusative
BA	Chinese Ba-construction marker
Dat	dative
DE	Chinese possessive marker
Decl	declarative
Gen	genitive
Imp	imperfect (imperfective)
KA	Japanese interrogative and existential quantification particle
Loc	locative
MO	Japanese universal quantification particle
Mod	sentence modalizer
Neg	negation
NO	Japanese interrogative particle
Nom	nominative
Part	sentence participle
Past	past tense marker
Pret	preterite (perfective)
Pol	polite form marker
Q	quantificational particle
Qwh	wh-question particle
Qyn	yes/no question particle
Rel	Chinese relative clause marker
Top	topic marker

TABLE OF CONTENTS

Chapter 1: Introduction

This dissertation investigates the second language (L2) acquisition of Japanese wh-constructions.[1] In particular, it investigates whether L2 learners of Japanese, whose first language (L1) is either Chinese or English, are able to reset a parameter which determines interpretations of wh-phrases. Japanese is a so-called wh-in-situ language, in which wh-phrases do not undergo obligatory movement but stay in their base-generated position, as shown in (1).

(1) Mary-wa John-ni nani-o agemasita-ka?
Mary-Top John-Dat what-Acc gave-KA
'What did Mary give to John?'

In wh-movement languages, the movement of wh-phrases is obligatory, as shown in (2) from English.[2]

(2) What$_1$ did Mary give t_1 to John?

Another property relevant to Japanese wh-constructions is that wh-phrases in Japanese are interpreted not only as interrogative phrases but also as existential and universal quantifiers. Examples are given in (3).

[1] Throughout this dissertation, *L2* refers to non-native language acquisition by post-puberty language learners, including cases where the target language may be learners' L2, L3 or L4, and so forth.

[2] Wh-movement is not obligatory in echo question contexts in English.

(3) a. Dare-ga ringo-o tabemasita-*ka*?
who-Nom apple-Acc ate-KA
'Who ate an apple?'

b. Dare-*ka*-ga ringo-o tabemasita.
who-KA-Nom apple-Acc ate
'Someone ate an apple.'

c. Dare-*mo*-ga ringo-o tabemasita.
who-MO-Nom apple-Acc ate
'Everyone ate an apple.'

In (3a), the wh-phrase, *dare* 'who,' is interpreted as an interrogative phrase. In (3b), it is interpreted as an existential quantifier, *someone*, and in (3c), as a universal quantifier.

The interpretations of wh-phrases are determined by their association with the Q(uantificational)-particles *KA* and *MO*, in Japanese. In (3a), the wh-phrase appears with a sentential interrogative particle *KA*, and it is interpreted as an interrogative phrase. In (3b), the existential particle *KA* is suffixed to the wh-phrase, and the wh-phrase is interpreted as an existential quantifier.[3] In (3c), the wh-phrase occurs with the Q-particle *MO*, and it is interpreted as a universal quantifier. The examples such as those above lead us to believe that Japanese wh-phrases are not inherently interrogative, and they lack quantificational force, which is determined by Q-particles (Nishigauchi, 1990).

Although the examples in (3) may seem peculiar compared to languages like English, many natural languages, in fact, show similar properties to those

[3] The interrogative particle *KA* and the existential *KA* have the same phonetic realization. These two particles may be considered the same particle, occurring in different positions (Hagstrom, 1998), or different particles (Nishigauchi, 1990; Watanabe, 1992a, 1992b; Shimoyama, 1999, 2001). Since this is not crucial for the purpose of this dissertation, I leave this as an open question.

exemplified in Japanese. The same association between a wh-phrase and a quantificational element is found in languages like Albanian and Korean, as shown in (4) and (5), respectively.

(4) Albanian (from Turano, 1998)

a. kush 'who'

b. *di*-kush 'someone'

c. kush-*do* 'everyone'

(5) Korean (from Kim, 2000)

a. nuka 'who' (or 'someone'[4])

b. nuka-*(i)nka* 'someone'

c. nuka-*(i)na* 'everyone'

In Chinese, wh-phrases are also often interpreted as existential and universal quantifiers, just like in Japanese.

(6) Chinese (from Cheng, 1991)

a. Ta mai-le shenme (ne)?
he buy-Asp what Qwh
'What did he buy?'

b. Ta mai-le shenme ma?
he buy- Asp what Qyn
'Did he buy something?'

[4] Bare interrogative phrases in Korean can be interpreted as existential quantifiers in non-interrogative clauses.

c. Ta shenme dou chi.
he what all eat
'He eats everything.'

In English, wh-phrases are in most cases interrogative, but in some restricted cases they are associated with quantifiers such as *some* and *every* and acquire existential or universal force, as in *some-what* and *every-where.*

Although wh-phrases are interpreted as existential and universal quantifiers in many languages, the conditions under which these interpretations come about are different. In this dissertation, these conditions are considered to be parameterized. The idea for parameterization comes from proposals put forth (some independently) by Nishigauchi (1990), Watanabe (1992a, 1992b), Aoun & Li (1993), Cole & Hermon (1998), and Tsai (1999). The main idea of this parameter is that wh-phrases are universally non-quantificational, i.e. not interrogative, and language variation comes from the way in which a quantificational operator associates with a wh-phrase. This parameter will be referred to as the *wh-construal parameter* in this dissertation.

The objective of this study is to investigate whether or not L2 learners, whose L1 is either Chinese or English, are able to reset this parameter. In Chapter 2, background discussion on generative L2 research is presented. Assuming that Universal Grammar (UG) constrains L1 acquisition, whether or not UG also constrains L2 acquisition has been a central issue in the research of the 1980s and early 1990s. Three models of L2 acquisition in terms of UG-accessibility in L2 acquisition have emerged: *full access*, *no access*, and *partial access.*[5] In recent years, however, the focus has shifted from *whether* UG is available to *to what*

[5] The names for these hypotheses may differ among L2 researchers. The details of these hypotheses are given in chapter 2.

extent it is accessible for L2 learners. More recent approaches to L2 acquisition speculate that for L2 learners, some aspects of UG are intact, but others are impaired. Parameters are one of the aspects that were considered impaired in L2 acquisition, and thus, the possibility of parameter resetting has become particularly important in recent generative L2 research.

Learners from different L1s, Chinese and English, were tested in order to investigate whether resetting of the wh-construal parameter to the Japanese value is possible with either L1 background. Chinese and English wh-constructions differ from Japanese wh-constructions as well as from each other. Chinese is a wh-in-situ language, like Japanese, whereas English is a wh-movement language. Chinese, however, is different from Japanese in some respects, as discussed and in detail in chapter 3. We will examine whether resetting of the wh-construal parameter to the Japanese value is possible by learners with either L1, or whether the learners' L1 affects the possibility of parameter resetting.

In Chapter 3, we will see that the way the operator features are realized in Chinese, English, and Japanese leads to the observed differences in the interpretations of wh-phrases in these languages. In particular, Chinese, English, and Japanese all adopt different strategies to establish the association between the wh-phrase and the quantificational element. In Japanese, as we saw in the examples in (3), the wh-phrase is associated with a Q-particle to acquire quantificational force. In Chinese, on the other hand, Q-particles equivalent to Japanese *KA* and *MO* do not exist. Instead, the wh-phrase associates with an abstract quantificational operator at the sentential level (Aoun & Li, 1993; Cole & Hermon, 1998; Tsai, 1999). In English, bare wh-phrases, such as *who* and *what*, are interrogative and associated with a null question operator, and it is this operator feature associated with wh-phrases which triggers wh-movement (Nishigauchi, 1990; Watanabe, 1992a, 1992b; Chang & Ryoorck, 2000). In

restricted cases, wh-phrases may associate with quantificational elements, such as *every-* and *some-* in *every-where* or *some-what*, as mentioned above.

In Chapter 4, previous studies relating to the wh-construal parameter are discussed. Whether or not the wh-construal parameter can be reset is related to one of the most well-studied phenomena in L2 acquisition research, the L2 acquisition of wh-movement (e.g. Bley-Vroman, Felix, and Ioup, 1988; Johnson & Newport, 1989, 1991; Schachter, 1990; Martohardjono, 1993; White & Genesee, 1996; Hawkins & Chan, 1997; White & Juffs, 1998). As we will see, there is great controversy over the question of whether L2 learners are able to acquire genuine wh-movement, as many studies seem to have produced conflicting results. Recently, the L2 acquisition of wh-in-situ has attracted attention in the literature (Choi & Lardiere, 2006a, 2006b; Yuan, to appear). These studies also investigated the interpretations of wh-phrases in wh-in-situ languages (Chinese and Korean). Both studies found that targetlike interpretations of wh-in-situ are difficult to acquire. Choi & Lardiere argue that, although it is difficult, target interpretations can be achieved, while Yuan argues that they cannot.

For Chinese- and English-speaking learners of Japanese, the resetting of the wh-construal parameter involves acquiring knowledge that bare wh-phrases in Japanese are not interrogative and that the quantificational force of wh-phrases is determined by the Q-particle, *KA* or *MO*. Chapter 5 discusses how we can go about testing the resetting of the wh-construal parameter. In particular, I argue that successful resetting of the wh-construal parameter can be demonstrated if L2 learners have targetlike interpretations of wh-phrases which are not directly derivable from the L2 input. I propose sentences which can be used to determine whether parameter resetting has taken place and argue that targetlike interpretations of these sentences are not achievable by means of explicit positive

evidence, negative evidence, or indirect negative evidence. Thus, if L2 learners display targetlike interpretations of these sentences, parameter resetting is implicated.

To investigate whether the wh-construal parameter can be reset, allowing L2 learners to achieve targetlike interpretations of wh-phrases, a series of experiments was conducted. Chapter 6 details the experimental design and results. Chinese- and English-speaking learners of Japanese at both intermediate and advanced levels participated in the study. Like Choi & Lardiere and Yuan, the present results show that L2 learners of Japanese also have difficulties at arriving at the targetlike interpretations of wh-phrases in Japanese. Even learners at the advanced level in both L1 groups showed non-targetlike interpretations. Many learners seem to lack the knowledge that Q-particles determine the quantificational force of wh-phrases in Japanese. However, like Choi & Lardiere's study, the results here suggest that it is not impossible for L2 learners to attain the targetlike interpretations, showing that parameter resetting is indeed possible.

In terms of differences between learner groups, it was found that, overall, English speakers were more successful at resetting the wh-construal parameter to the Japanese value; there was little evidence that Chinese speakers were able to do so. These were unexpected results, as Chinese wh-constructions appear to be typologically more similar to Japanese than English wh-constructions.

Discussion on the results is given in Chapter 7. It becomes clear from the results that the acquisition of wh-constructions is closely related to learner proficiency, and only those who are at a high level of proficiency were able to reset the wh-construal parameter. I argue that the difficulties in resetting the wh-construal parameter come from the complex relationship between positive evidence and parameter resetting. Although positive evidence for resetting the wh-construal parameter to the Japanese value is assumed to be present, the

presence of positive evidence itself does not guarantee the acquisition of the property at early stages in L2 acquisition. I maintain that, in the case of the acquisition of wh-in-situ, true parameter resetting only takes place after many years of exposure to the target language (TL) and attainment of high proficiency.

The lack of the predicted L1 effect indicates that parameter resetting from a wh-in-situ to another wh-in-situ is not easier than from wh-movement to wh-in-situ. This goes against our intuitions. In chapter 7, a different view on L1 influence which looks at the relationship between learners' L1 and positive evidence for parameter resetting is proposed.

Although the number of learners who demonstrated successful parameter resetting is small, it is nevertheless shown that the resetting of the wh-construal parameter is possible. The results, thus, implicate the involvement of UG in L2 acquisition.

Chapter 2: Second Language Acquisition: Background

This chapter provides an overview of generative L2 research over the last two decades. Whether or not UG, a set of principles and conditions which constrains all natural languages, is also involved in L2 acquisition has been actively debated. In §2.1, three hypotheses on UG-accessibility in L2 acquisition are introduced. As we will see, some hypotheses argue that L2 acquisition is fully constrained by UG, and others maintain that L2 learners have only limited access to it, or none whatsoever. In §2.2, some recent approaches to parameter resetting in L2 acquisition are presented, and in §2.3, discussion on how these recent approaches can be translated into the three previous hypotheses of UG-accessibility is provided. In §2.4, the issue of underdetermination when testing parameter resetting is discussed, and §2.5 provides a summary of this chapter.

2.1. UG access in L2 acquisition

2.1.1. Introduction

UG, intended as the genetically endowed knowledge of language, has been postulated for L1 acquisition, based on the observation that the linguistic knowledge children come to attain is underdetermined by the input, or the primary linguistic data (PLD) (e.g. Chomsky, 1965, 1972). Within the Principles and Parameters (P&P) framework (Chomsky, 1981, 1986), UG is assumed to consist of a set of principles, which constrain all natural languages, and a set of parameters, which allow for cross-linguistic variation. Children are assumed to set the values of a parameter based on PLD. Parameters are argued to limit the possible choices for language variation, which reduces the task of language acquisition that children are faced with.

In generative L2 research, whether or not UG is involved in L2 acquisition

has been a crucial issue. This is because if UG constrains all natural languages, and if L2 knowledge is what we can consider *language*, the effects of UG must also be present. If, on the other hand, L2 knowledge shows no evidence of UG, L2 knowledge must be a type of knowledge that is different from *language*. Thus, the involvement of UG in L2 acquisition addresses a fundamental issue in L2 acquisition; what L2 knowledge really is (Schwartz, 1986, 1987).

In the 1980's, assuming the P&P framework, generative L2 research centered on the UG debate; that is, whether or not L2 knowledge is UG-constrained (e.g. White 1985, 1987; Clahsen & Muysken, 1986; Finer & Broselow 1986; Bley-Vroman, et al., 1988; Schachter 1989). Researchers attempted to show whether there are "UG-effects" in grammars that L2 learners construct in the process of L2 acquisition, which are referred to as interlanguage grammars (Selinker, 1972). UG-effects were tested by looking at the operation of UG principles that are not activated in the L1, or by investigating whether or not L2 learners can set or reset parameters of UG.[6]

In the following sections, I present three main hypotheses on UG-involvement in L2 acquisition, *full access* (e.g. White, 1989; Schwartz & Sprouse 1994, 1996; Epstein, Flynn & Martohardjono, 1996), *partial access* to UG mediated by learners' L1 (e.g. Clahsen & Muysken, 1989; Bley-Vroman, 1990; Clahsen & Hong, 1995), and *no access* (Clahsen & Muysken, 1986; Meisel, 1997). The predictions these hypotheses make with regard to universal and

[6] UG-involvement in L2 acquisition has also been tested with reference to the poverty of stimulus problem. In L1 acquisition, involvement of UG is motivated by the poverty of stimulus problem: the knowledge of language that children come to attain goes beyond what they can derive from exposure to PLD (e.g. Chomsky 1965; Hornstein & Lightfoot 1981). Adopting the same logic, some researchers have investigated whether there is also a logical problem in L2 acquisition (see, for example, Schwartz & Sprouse, 2000 and White, 1989, for the logic of this argument in L2 acquisition). Studies such as Martohardjono (1993), Thomas (1995), Kanno (1996, 1997), Dekydtspotter, Sprouse, & Anderson (1997), Dekydtspotter, Sprouse & Thyre (1998), and Marsden (2004), among others, have shown that there is indeed a poverty of stimulus problem in L2 acquisition, implicating the involvement of UG.

parameterized properties in UG are summarized.

2.1.2. The full access hypothesis

The *full access* view assumes that all principles and parameters of UG are available to L2 learners. This view can be categorized into two types: one assumes that the learner's L1 plays a role, while the other does not. Among proposals in which L1 transfer is assumed, the most influential and explicit hypothesis is the Full Transfer Full Access hypothesis (FT/FA) (Schwartz & Sprouse, 1994, 1996). The FT/FA claims that learner's entire L1 grammar, excluding the phonetic matrices of lexical and morphological items, transfers to the initial state of L2 acquisition.

The full access hypothesis which assumes no L1 transfer is a proposal put forth by Epstein, Flynn, & Martohardjono (1996).[7] The validity of this approach is not examined in the present study, as it does not directly address the presence of L1 transfer.[8]

The full access hypothesis assumes that UG is fully active, and therefore, parameter resetting is expected to be possible. Learners are able to set or reset parameters, provided that positive evidence is available to trigger parameter resetting (e.g. Schwartz & Sprouse, 1994, 1996).

2.1.3. The no access hypothesis and partial access hypothesis

The opposite of the full access hypothesis is the *no access* view, exemplified in Clahsen & Muysken (1986) and Meisel (1997). They argue that L2 learners show

[7] White (2003) points out that it is not clear what the initial state for L2 acquisition really is for Epstein et al. (1996). If there is no L1 transfer and learners have full access to UG, it seems logical to assume that UG is the initial state, like L1 acquisition. However, Epstein et al. (1996) do not claim that this is the case either.

[8] The present study assumes that learners transfer their L1 grammar to the initial state of L2 acquisition, due to much evidence for L1 transfer in the literature.

no UG effects at all in their interlanguage representations and development. They claim that L2 learners instead rely on problem-solving skills to imitate L2 input strings.

The partial access view represented in proposals by Clahsen & Muysken (1989), Bley-Vroman (1990), and Clahsen & Hong (1995) claims that L2 learners have UG access mediated only by their L1.[9] For this reason, they may show some UG-effects, but, since their knowledge cannot go beyond their L1, it is predicted that UG-effects are also limited to their L1. Thus, if a certain UG principle is manifested in the L2, but absent in the L1, learners are predicted to be unable to demonstrate the knowledge of that principle. For example, if the learners' L1 lacks Subjacency effects because the L1 is a wh-in-situ language, the effects of Subjacency are predicted to be absent in the L2.

For both hypotheses, parameter resetting is impossible. In the no access hypothesis, parameter resetting is impossible because UG, including parameters, is no longer accessible. In the partial access hypothesis, learners are not expected to show knowledge of the L2 that goes beyond their L1 and input; thus parameter resetting is again predicted to be impossible.

2.1.4. Summary

To sum up, the full access hypothesis (in particular FT/FA) predicts that parameter resetting is possible, while the no access hypothesis and the partial access hypothesis predict that it is not.

The hypotheses presented in this section were proposed assuming the P&P framework. However, views on UG have changed with recent developments in linguistic theory. With such changes, the UG-debate in L2 acquisition has also

[9] The partial access hypothesis is sometimes referred to as the *no access* hypothesis because, although some UG-effects are predicted to be present under this hypothesis, such UG-effects are not derived directly from UG, but from learners' L1.

undergone some revisions. In the following section, new approaches to UG-involvement and parameter resetting in L2 acquisition are discussed.

2.2. New approaches to parameter resetting

The assumptions on UG have changed under more recent theoretical proposals. In the Minimalist Program (e.g. Chomsky, 1993, 1995, 1998), for example, the language faculty is viewed as computational procedures and an inventory of phonological, syntactic, and semantic features. Parameterization among languages is assumed to be the result of features selected from a feature inventory in UG. Language variation is then viewed as what kinds of features and what feature strengths are selected from the inventory and how the selected features are assembled into lexical items (e.g. Hawkins, 2000; Hawkins & Liszka, 2003).

As linguistic theories change, the way generative L2 research views parameter resetting has also changed. The first influential proposal on parameter resetting from the more recent theoretical perspective came from Hawkins & Chan (1997).[10] Their approach, often referred to as the representational deficit hypothesis, was revised in Hawkins (2000, 2001, 2005), Hawkins & Liszka (2003), and Tsimpli (2003). Under the representational deficit hypothesis, L2 learners have full access to computational procedures; however, the acquisition of formal features absent in their L1 from the UG inventory becomes impossible after the critical period. In this hypothesis, parameter resetting is therefore viewed as acquiring new formal features.

Another way of looking at parameter resetting under recent developments in linguistic theory is pointed out in Lardiere (2005, 2007a). She argues that

[10] Hawkins & Chan's (1997) proposal was based on Tsimpli & Smith (1991) and Smith & Tsimpli (1995). Tsimpli & Smith's studies were, however, not on L2 acquisition; they studied a cognitively impaired, yet linguistically gifted individual, Christopher. Their proposal was based on observations of his linguistic abilities, rather than those of L2 learners.

parameter resetting in L2 acquisition is not restricted to cases involving the acquisition of features absent from the learners' L1. There are cases in which the learners' L1 and L2 select the same features, yet they are assembled differently. To illustrate her point, let us consider the feature [±past]. Lardiere points out that English, Irish, and Somali all select the formal feature [±past]. However, the way in which these languages assemble [±past] into lexical items is different. In English, the feature [+past] is associated with perfective aspect as in (1a), irrealis mood in conditionals as in (1b), sequence of tense constructions on stative verbs as in (1c), or in so-called historical present contexts as in (1d) (from Lardiere, 2007a: (3)-(5)).

(1) English (narrative data reported in Schiffrin, 1981)

a. The cow jumped over the moon.

b. If I only had a brain…

c. Roger said that he disagreed with her analysis.

d. So we asked some guy to come over and help us. So he opens the car and everyone gets out…

In Irish, [±past] is associated with a complementizer, agreeing with the tense in the embedded clause as in (2) (McCloskey 1979).

(2) Irish (data from McCloskey, 1979)

Deir sé *gurL* thuig sé an scéal

Says he that.Past understood he the story

'He says that he understood the story.'

In Somali, [+past] shows up with determiners and adjectives in nominal DPs,

expressing past time agreement as in (3a), temporal habitualness as in (3b), and whether the nominal DP is visible to the speaker or not, as in (3c) (Lecarme, 2003, 2004).

(3) Somali (data from Lecarme, 2003, 2004)

a. árday-*gii* hore
student-detM.Past before
'the former student'

b. (weligay) dúhur-*kii* baan wax cunaa
(always) noon-detM.Past F.1S thing eat.Pres
'I (always) eat at noon.'

c. Inán-*tii* halkée bay joogta?
Girl-detF.Past place-DetM.Q F.3S stay.F.Pres
'where is the girl?'

As shown in the data from (1) to (3), the feature [+past] is not restricted to past events or restricted as verbal morphology.

In an L2 acquisition context, if [±past] is selected, it does not need to be acquired by, for example, English-speaking learners acquiring Irish. Therefore, an acquisition question does not arise for the representational deficit hypothesis. Lardiere, however, argues that the issue of acquirability also arises for this type of environment because the way in which the feature [±past] is assembled in one language may be different in another. If this is the case, L2 learners must *reassemble* the already existing feature in their L1 grammar to a different lexical item, which may not be bundled in the same way in the L1.[11] Therefore, it can be said that, even if certain parameterized formal features exist both in the L1 and L2,

[11] The feature reassembly approach assumes L1 transfer.

if those features are assembled differently, "parameter resetting" is required.

Lardiere (2005, 2007a) suggests that the *feature reassembly approach* can potentially explain variable performance, mostly inflectional, by L2 learners, which is a common characteristic of L2 learners. She speculates that it is particularly difficult for L2 learners to tease apart the relevant formal features that already exist in the L1 and reassemble them in a different way for the L2. For example, in a case where English speakers acquire Somali, they must acquire the conditions in which the feature [+past] appears. This must be learned based on positive evidence. Lardiere argues that, in some cases, this task seems highly complex, and therefore, it is likely to pose difficulties in L2 acquisition.

2.3. UG access and parameter resetting: new and old approaches[12]

As presented in the last section, the changes in theoretical assumptions about UG have led to some revisions of the approaches to parameter resetting in L2 acquisition. The new approaches, however, are still new and need to be worked out. Rather than trying to work out the technical details of these approaches, I consider in this section how they are compatible with the previous hypotheses on UG-involvement in L2 acquisition, and determine what predictions they make for the possibility of parameter resetting in L2 acquisition.

First, the representational deficit hypothesis can be considered equivalent to the partial access hypothesis as it allows some access to UG, but disallows the possibility of parameter resetting. The representational deficit hypothesis allows

[12] As discussed in §2.2, in more recent work, parametric differences are proposed to be linked to features associated with functional categories. Under these proposals, parameters are not actually set or reset; rather, what is relevant is whether some features are selected and how these are assembled, and thus the term parameter (re)setting seems inaccurate, as pointed out by Lardiere (2007a). However, I will continue to use the term *setting* or *resetting* parameters, metaphorically, when interlanguage grammars undergo changes.

more access to UG than the partial access hypothesis originally proposed, as the former does not restrict access to UG principles, or computational procedures, but it still does not allow acquisition of parameterized properties absent in the learners' L1.

This hypothesis, however, restricts parameterized features to only those that are absent in the learners' L1. However, as pointed out by Lardiere (2005, 2007a) in the proposal of the feature reassembly approach, parameterized properties may go beyond features absent in the L1, and features that are present both in the L1 and L2 can potentially pose problems in L2 acquisition. Another case that is potentially problematic in L2 acquisition is when certain features are selected in the learners' L1 but not selected in their L2.[13] Different choices made for the selection of formal features leads to language variation, and thus it seems that such cases can also be considered parameter resetting. There seems to be no reason to assume that it is only the selection of formal features is difficult, while the delearning, or unselecting, of features is not.[14] Therefore, it is still an open question as to what we should consider to be parameterized properties in L2 acquisition. For this reason, I assume that all parameterized formal features are subject to parameter resetting, irrespective of whether those features are selected in the L1. If learners must acquire, delearn, or reassemble the formal features, I assume that that is parameter resetting in L2 acquisition. The representational deficit hypothesis, thus, is assumed to be a type of partial access hypothesis, which disallows parameter resetting.

The feature reassembly approach does not reject the possibility that learners can ultimately reset parameters if positive evidence is available (Choi & Lardiere,

[13] White (2003: 126) raises the same point.

[14] In his study on the L2 acquisition of non-pro-drop by Japanese- and Spanish-speaking learners of English, Wakabayashi (2002) argues that it is more difficult for Spanish speakers to acquire the non-pro-drop property of English since delearning of features is involved for Spanish speakers. See Wakabayashi (2002) for detail.

2006a; Lardiere, 2007b), although in some cases it is difficult, depending on the complexity involved in reassembling features. Since the feature reassembly approach predicts that the reassembly of parameterized features is possible, I consider this approach a full access hypothesis.

There is no equivalent approach, proposed under recent theoretical assumptions, to the no access hypothesis. However, I consider that this approach can still be maintained, even with the changes in linguistic theories. The no access hypothesis would assume that both computational procedures and formal features are no longer accessible, contrary to the partial access hypothesis, which allows access to the former.

As we will see in the next chapter, the resetting of the wh-construal parameter does not involve acquiring a new formal feature; rather, the reassembly of some features in the L2 which already exist in the L1 is required. Thus these constructions allow us to investigate whether parameter resetting is possible, supporting the full access hypothesis, or whether it is impossible, supporting the no access and partial access hypotheses.

2.4. Underdetermination

As mentioned in §2.1, within the P&P framework, UG provides a set of parameters, and language learners set the values of the parameters based on positive evidence. A crucial part of the parameter theory is that not only do parameters provide built-in choices for language variation, but they are also associated with a cluster of apparently unrelated syntactic properties. Thus children do not need to have evidence for each property; rather, setting one parameter could potentially lead to the acquisition of a few other related properties.[15]

[15] The Pro-drop Parameter (e.g. Chomsky, 1981; Jaeggli, 1982) and the Compounding Parameter

L2 research conducted within the P&P framework tested whether or not L2 learners are able to reset parameters, with an appropriate cluster of properties also present (e.g. White, 1985, 1986; Hilles, 1986, 1991; Clahsen & Hong, 1995; Slabakova, 1997, 2002).[16] The investigation of parameter resetting focused on clusters of properties because researchers realized that it was not sufficient merely to show, as evidence for parameter resetting, that L2 learners are able to produce or make judgments on L2 sentences that are derivable from the L2 input. For example, to investigate the resetting of the Pro-drop parameter (Chomsky, 1981) by demonstrating that learners accept (4a) but reject (4b) is not sufficient evidence for parameter resetting from pro-drop to non-pro-drop.

(4) a. Mary ate edamame.

b. *ate edamame.

This is because learners rarely hear input such as (4b) in the L2 and may thus reject it because it sounds "odd."

Another example is given in (5). To demonstrate that learners have acquired wh-movement, showing that learners accept (5a) but reject (5b) is not again enough. This is because it is possible that learners have created a strategy to move a wh-phrase to the sentence initial position because that is what they hear in most cases when a wh-phrase is used.

(Snyder, 1995) are examples of parameters which show clustering effects.

[16] These studies generally found that there is evidence for parameter resetting, but clustering properties were not always present. One parameter that has been the focus of much work is the Pro-drop Parameter, and for this parameter, the lack of cluster effects is sometimes taken as evidence that parameter resetting is impossible in L2 acquisition, on the assumption that the related properties of the parameter should appear simultaneously if UG is active in L2 acquisition (Tsimpli and Roussou, 1991). However, a clustering effect is not even observed in L1 acquisition data (Radford, 1990), where parameter setting is assumed to be guided by UG. Thus, it has been pointed out that, with regard to the Pro-drop Parameter, the lack of a clustering effect in interlanguage grammars may not have a bearing on the UG accessibility in L2 acquisition (Liceras, 1989; White, 1989).

(5) a. What did Mary eat?

b. *Mary ate what? (in a non-echo question context)

When a particular property is parameterized, there must always be positive evidence in the input to trigger parameter resetting. However, it is not enough to show that learners are able to detect or produce what sounds like the TL, because they may be superficially imitating TL input strings. In this case, even if learners are able to perform in a targetlike manner, their performance may not reflect parameter resetting. Evidence for successful parameter resetting, therefore, cannot come from something that learners have direct evidence for, but it should come from properties that are underdetermined by the input.

Since clustering properties are not superficially related, learners do not have evidence in the L2 input that a certain parameter brings together a cluster of properties. In other words, knowledge of the cluster is underdetermined. It is through this underdetermined knowledge, and not the knowledge which can be derivable from input, that successful parameter resetting can be demonstrated.

One example of a parameter and its clustering properties is the connection between the Pro-drop Parameter and *that*-trace effects. It was argued that the *that*-trace sequence is possible in pro-drop languages, but it is not in non-pro-drop languages (e.g. Chomsky, 1981), as shown below (White, 1985: 48, (1c)):

(6) a. Quien$_1$ [pro dijiste [que t_1 vino]]?
who said that came
'Who did you say came?'

b. *Who$_1$ did [you say [that t_1 came]]?

Spanish is a pro-drop language, and as shown in (6a), the *that*-trace sequence is possible. On the other hand, English, a non-pro-drop language, prohibits this

sequence, as shown in (6b). The connection between pro-drop and the *that*-trace sequence cannot be known from the input, and is thus underdetermined.

Another example is a comparison between wh-movement languages and wh-in-situ languages. Wh-movement is associated with Subjacency, a principle which constrains the extraction of wh-phrases. Subjacency is irrelevant in wh-in-situ languages, since movement of wh-phrases does not occur. The examples in (7) are English wh-constructions.

(7) a. What did Mary say [$_{CP}$ [John ate t_1]?

b. *What did Mary say [$_{CP}$ who [t_1 ate t_1]?

The ungrammaticality of the example in (7b) arises from the wh-phrase in the embedded CP. The extraction of a wh-phrase is impossible out of a clause with another wh-phrase in CP. This is called the wh-island constraint, one of the constraints subsumed in Subjacency.[17] The connection between the extraction of wh-phrases and Subjacency is not available in the input, and thus again presents a case of underdetermination. Researchers were interested in showing whether the resetting of a parameter is accompanied with the knowledge of clustering properties. It has been assumed that, if a certain parameter is reset, clustering properties must also be present. It is the presence of clustering properties that provides firm evidence of successful parameter resetting and learners' access to UG.

With the changes in linguistic theory, the relationship between parameter resetting and the issue of underdetermination has started to be overlooked, as pointed out by Schwartz & Sprouse (1998, 2000). In particular, without the set of

[17] For simplicity, I will not go into details of the formulation of Subjacency. Some discussion of one of the recent approaches to Subjacency is given in §3.3.1.

parameters and their clustering properties, it is not clear how successful parameter resetting can be demonstrated. However, as White (1998) maintains, parameter resetting should still be associated with underdetermination even under more recent theoretical assumptions.

> Such changes in linguistic theory (hence in the definition of UG) should not be seen as a matter of major concern. What we are interested in (in part) is whether certain abstract and complex properties which are underdetermined by the L2 input manifest themselves in interlanguage grammars. (White, 1998: 1)

In investigating parameter resetting under new approaches such as the representational deficit hypothesis or the feature reassembly approach, it is crucial to keep the notion of underdetermination in mind.

One example of underdetermination in L2 acquisition comes from a study conducted by Hawkins & Chan (1997). They investigated the acquisition of wh-movement by Chinese (Cantonese) speaking learners of English. Hawkins & Chan assumed that Chinese lacks the wh-feature, and thus, under the assumption of the representational deficit hypothesis, Chinese speakers are predicted to be unable to acquire this feature and, as a result, they are predicted to fail to acquire genuine wh-movement. In order to test whether or not Chinese speakers are able to acquire wh-movement, Hawkins & Chan included a test for Subjacency.[18] As was discussed above, wh-movement is associated with Subjacency, but this association is not present in the input. They argue that if the wh-feature is acquired, the Subjacency effect should also be observed. As Subjacency is underdetermined by the input, learners' knowledge of Subjacency implicates parameter resetting.[19] A lack of Subjacency in interlanguage grammars, on the

[18] Hawkins & Chan (1997) tested the acquisition of relative clauses in English, rather than wh-interrogative sentences.

[19] This is the logic underlying Hawkins & Chan (1997), but as I argue in §4.2.1, Subjacency may not be a good test for investigating parameter resetting in the acquisition of wh-movement.

other hand, shows the failure of parameter resetting.[20]

Another way to address the issue of underdetermination in parameter resetting is by investigating the syntax-semantics interface. Properties at the syntax-semantics interface have been used to examine the poverty of stimulus problem in L2 acquisition, as the exact mapping between form and meaning is not obvious; in some cases, it is completely absent from the L2 input (e.g. Dekydtspotter, Sprouse, & Anderson, 1997; Dekydtspotter, Sprouse, & Thyre, 1999; Slabakova, 2003; Slabakova & Montrul, 2002; Marsden, 2004). For example, Marsden (2004) tested this by investigating scope interpretations of two quantified NPs in English-Japanese interlanguage.[21] In English, as shown in (8a), the wide-scope reading of a quantified NP in the object position is possible, while in Japanese, as shown in (8b), the quantified object cannot take scope over the quantified NP in the subject position.

(8) a. Somebody read every book. (some > every, every > some)

b. Dare-ka-ga dono hon-mo yonda. (some > every, *every > some)
who-KA-Nom which book-MO read
'Someone read every book.'

The impossibility of the wide-scope reading of *dono hon-mo* "every book", if acquired by English-speakeing learners, shows underdetermination. This is because, even though learners are exposed to sentences like (8b), the input does not inform them which interpretation is possible and which is not. In particular,

[20] Hawkins & Chan (1997) argue that their results indicate that learners fail to detect Subjacency effects, thereby showing a lack of parameter resetting. However, there are studies which show the opposite (e.g. Bley-Vroman, et al., 1988; Martohardjono, 1993; White & Juffs, 1998; Ojima, 2005).

[21] Marsden (2004) also included Chinese- and Korean-speaking learners of Japanese. However, I only discuss the results from English-speaking learners for simplicity.

learners cannot know that the wide-scope reading of *every book* is impossible unless they are given negative evidence or the interpretation of (8b) is taught in the classroom (which Marsden notes it is not (2004, p. 12)). In addition, this information is not available from the L1. Scope interpretations of quantifiers as shown in (8b), therefore, presents a case of the poverty of the stimulus problem.[22]

Investigating at the level of the syntax-semantics interface, I believe, is also useful for investigating parameter resetting. Interlanguage grammars undergo syntactic changes, if parameter resetting is to occur. We can investigate whether learners come to know [form-meaning] mappings in the L2 as a result of resetting a parameter. Let us look again at examples from wh-movement, as shown in (9) and (10).

(9) When did John say Mary saw Bill?

a. John said <u>yesterday</u> Mary saw Bill.

b. John said Mary saw Bill <u>yesterday</u>.

(10) When did John say who Mary saw?

a. John said <u>yesterday</u> who Mary saw.

b. #John said who Mary saw <u>yesterday</u>.

In (9), the interpretation of the wh-phrase is ambiguous, as the wh-phrase in the matrix clause, *when*, can be interpreted as originating in the embedded clause or in the matrix clause. However, the interpretation of the wh-phrase in the matrix clause in (10) is not. The impossibility of the interpretation in (10b) is due to

[22] The results from Marsden's study can be summarized as follows: Intermediate learners (n= 20) allowed both wide- and narrow-scope readings of the universally quantified NP, while the advanced learners (n = 9) generally rejected the wide-scope reading, showing targetlike interpretations. Marsden argues that the fact that intermediate learners accept both readings shows L1 transfer. Moreover, the results from the advanced learners demonstrate that learners are able to delearn the wide-scope reading.

Subjacency. If learners come to know that (10b) is impossible, this knowledge is acquired in spite of a poverty of stimulus. The point I want to make here is that the knowledge that (10b) is impossible can only arise *after* acquiring wh-movement. In other words, parameter resetting brings about the new [form-meaning] mapping, which is not directly derivable from the L2 input. Therefore, examples like (9) and (10) are also possible test cases for parameter resetting.

The present study investigates learners' knowledge at the level of the syntax-semantics interface. The interpretations of wh-constructions by L2 learners of Japanese are examined to see whether parameter resetting brings about a new [form-meaning] mapping, which is not derivable from the L2 input. The test sentences for the experiments are discussed in Chapter 5.

2.5. Summary: Chapter 2

In this chapter, I summarized issues surrounding parameter resetting in L2 acquisition. Three main approaches to parameter resetting assuming the P&P framework were summarized: the full access, partial access and no access hypotheses. In addition, I presented two new approaches to parameter resetting, the representational deficit hypothesis and the feature reassembly approach, both of which assume a more recent approach to UG, e.g. the Minimalist Program. In accordance with the claims of these new approaches, I categorized the former as being representative of the partial access hypothesis and the latter as the full access hypothesis.

The relevant parameter for the present study is the wh-construal parameter, and we examine whether the resetting of this parameter is possible. If resetting of the wh-construal parameter is successful, it supports the full access hypothesis. If it is not, the no access and partial access hypotheses are supported.

Chapter 3: Theoretical background

3.1. Introduction: wh-constructions and L2 acquisition research

Languages incorporate two main strategies in forming wh-questions. On the one hand, there are languages called wh-movement languages, which move one (or all) wh-phrases to the left periphery of the clause.[23] On the other hand, there are languages in which wh-phrases do not undergo such movement. Instead, in these languages, referred to as wh-in-situ languages, wh-phrases stay in their thematic positions.[24] English is of the former type. In English, one wh-phrase (per clause) is overtly moved to the left periphery of the clause.

(1) What$_1$ did Mary give t_1 to John?

Chinese, Japanese and Korean, among others, are languages of the latter type, in which wh-phrases do not undergo such movement.[25] Examples from Chinese and Japanese are shown in (2).

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[23] Languages that move only one wh-phrase per clause are, among others, English, Spanish and German. Languages that move all wh-phrases to the left periphery of the clause are called multiple wh-fronting languages, which include Bulgarian, Russian and Serbo-Croatian. I will restrict my discussions on wh-movement languages to the former type, as the nature of multiple wh-fronting languages is out of the scope of this dissertation.

[24] There are languages that seem to incorporate both, adopting both wh-movement and wh-in-situ strategies. Malay (Cole & Hermon 1998), French (Aoun, Hornstein & Sportiche 1981), Passamoquoddy (Algonquian) (Bruening 2007) are some languages which have been claimed to be of this type.

[25] Japanese and Korean have so-called wh-scrambling, where wh-phrases can be dislocated. This is not equivalent to wh-movement, as argued in e.g. Saito (1989, 1992); Maki & Ochi (1998); Kuwabara (1999); Aoshima (2003) (Cf. Takahashi (1993)).

(2) a. Chinese

Mary gei-le John shenme (ne)?

Mary give-Asp John what (Qwh)

'What did Mary give to John?

b. Japanese

Mary-wa John-ni nani-o agemasita-ka?

Mary-Top John-Dat what-Acc gave-KA

'What did Mary give to John?

The existence of these two language types has triggered extensive debate as to what causes such parametric variation in natural languages. In most L2 studies, the acquisition of wh-movement by learners whose L1 is a wh-in-situ language has been examined. L2 learners have been tested to establish whether they have acquired knowledge of Subjacency, mentioned in the previous chapter.

The present dissertation investigates the L2 acquisition of wh-in-situ in Japanese by learners whose L1 is either Chinese, another wh-in-situ language, or English, a wh-movement language. Wh-in-situ has generally not been considered an interesting topic for L2 acquisition research, presumably because wh-in-situ is also allowed in wh-movement languages, as shown in (3) from English.[26] In most wh-movement languages, wh-in-situ is allowed in multiple wh-questions as in (3a) and in echo-questions as in (3).

(3) a. What$_1$ did Mary give t_1 to whom?

b. Mary gave what to whom?

[26] In multiple wh-fronting languages, wh-in-situ is not allowed even in echo-questions except for some restricted cases. See Bošković (1998, 2002) for relevant discussions.

In (3a), one of the wh-phrases, *what*, is moved, and the other wh-phrase, *whom*, stays in-situ. In (3b), which is an echo-question, both wh-phrases, *whom* and *what*, remain in their base-positions. Since wh-movement languages also permit wh-in-situ, the question of parameter resetting from wh-movement to wh-in-situ appears to be uninteresting. It rather seems that there is nothing that learners whose L1 is a wh-movement language need to learn, considering the existence of sentences like in (3b).

As we will see in this chapter, however, wh-in-situ languages have properties which wh-movement languages lack. Acquisition of wh-in-situ by learners whose L1 is a wh-movement language is, therefore, not simply a matter of not moving the wh-phrase. We will see that there also seem to be parametric variations among wh-in-situ languages as well. Chinese and Japanese are both wh-in-situ languages, but differences exist between them as to how wh-phrases in-situ are interpreted. This being the case, wh-constructions in natural languages do not simply fall into two types, wh-movement and wh-in-situ. Rather, it is proposed that, as mentioned in the introduction, the parameterization of wh-constructions is linked to the way an operator is associated with a wh-phrase (e.g. Watanabe, 1992a, 1992b; Aoun & Li, 1993; Tsai, 1994, 1999; Cole & Hermon, 1998). This approach not only accounts for the differences between wh-movement and wh-in-situ languages, but also the differences among wh-in-situ languages, like the differences observed between Chinese and Japanese.

In this chapter, I present an overview of Japanese, Chinese, and English wh-constructions and the theoretical assumptions I make for wh-constructions in these languages. Traditionally, wh-phrases in-situ have been assumed to undergo LF wh-movement, analogous to overt wh-movement (Chomsky, 1973; Huang, 1982). In §3.3.1, the LF wh-movement hypothesis and island facts viewed from the perspective of this hypothesis are presented. As will be shown, Huang's

(1982) proposal that LF movement is immune to island constraints may account for Chinese and English data, but it does not account for Japanese data. §3.3.2.1 presents the analysis for Japanese wh-constructions proposed by Nishigauchi assuming the LF wh-movement hypothesis. It is shown that this analysis, however, still has difficulties accounting for all island facts in Japanese.

In this dissertation, I adopt more recent analyses of Chinese and Japanese wh-constructions which claim that, instead of LF wh-movement, in-situ wh-phrases are interpreted by means of unselective binding by a Q-operator, originally suggested by Baker (1970). In §3.3.2.2, I present the analysis proposed by Shimoyama (1999, 2001) for Japanese wh-constructions, and in §3.3.3, Chinese wh-constructions are discussed under the unselective binding account, proposed by Aoun & Li (1993), Tsai (1994, 1999), and Cole & Hermon (1998), among others. Discussion of English wh-constructions is presented in §3.3.5.

The last section of this chapter is dedicated to the wh-construal parameter and issues regarding the resetting of this parameter in L2 acquisition.

3.2. Overview: wh-constructions in Japanese, Chinese and English

In this section, a basic overview of Chinese, English, and Japanese wh-constructions is presented. Analyses for the wh-constructions in these languages are given in §3.3.

3.2.1. Japanese wh-constructions

As mentioned above, Japanese is a wh-in-situ language, as exemplified in (4).

(4) John-wa nani-o kaimasita-ka?[27]

John-Top what-Acc bought-KA

'What did John buy?'

In Japanese, wh-questions are expressed with a question particle, *KA*, which is suffixed to the verb.[28] Only in the root clause, *KA* may be omitted and substituted

[27] All verbs in the matrix clause are in polite forms, rather than plain forms throughout this dissertation, unless the examples are taken from other sources. This is to create the consistency with test sentences used in the experiment conducted with L2 learners of Japanese. For simplicity, I do not gloss them as such, but simply give the meaning of the verb. For example, for a verb, *tabe*, 'eat', the plain past form is *tabe-ta*, 'ate', with the past test form *–ta* suffix to the verb stem. The polite past form for *tabe* is *tabemashita*. This form is glossed as in (i), rather than (ii) in most cases, unless other affixes, such as negation, are further attached to the stem, as in (iii).

(i) tabemashita
ate
(ii) tabe-mashi-ta
eat-Pol-Past
(iii) tabe-mas-en-deshi-ta
eat-Pol-Neg-Pol-Past
'didn't eat'

[28] There is another interrogative particle, *-no*, which is used when the verb is in the plain form, as shown in (i). The question-particle *–no* is sometimes used with the matrix verb in the polite form, as in (ii).

(i) John-wa nani-o katta-no?
John-Top what-Acc bought-NO
'What did John buy?'
(ii) John-wa nani-o kai-mashi-ta-no?
John-Top what-Acc buy-Pol-Past-NO
'What did John buy?'

The question-particle *KA* is inappropriate with a matrix verb in the plain form.

(iii) *John-wa nani-o katta-ka?
John-Top what-Acc bought-KA
'What did John buy?'

In the embedded clause, the verb obligatorily takes the plain form, and the polite form is impossible. However, unlike in the matrix clause, *KA* must be attached to the plain embedded verb, rather than the question-particle *–no*. Thus (iv) is grammatical but (v) is not.

(iv) Mary-wa [John-ga nani-o katta-ka] sitteimasu.
Mary-Top John-Nom what-Acc bought-KA know
'Mary knows what John bought.'

by rising intonation as in (5). This is not possible in embedded wh-questions, where *KA* cannot be omitted, as the contrast between (6a) and (6b) illustrates.

(5) John-wa nani-o kaimasita-Ø ?
John-Top what-Acc bought
'What did John buy?'

(6) a. Mary-wa [John-ga nani-o katta-ka] sitteimasu.
Mary-Top John-Nom what-Acc bought-KA know
'Mary knows what John bought.'
b. *Mary-wa [John-ga nani-o katta-Ø] sitteimasu.
Mary-Top John-Nom what-Acc bought know

When *KA* appears without a wh-phrase, the sentence is interpreted as a yes/no question, as in (7), showing that *KA* is ambiguous between a wh-question particle and a yes-no question particle.

(7) John-ga ringo-o kaimasita-ka?
John-Nom apple-Acc bought-KA
'Did John buy apples?'

Because of the great interest in the typology of wh-constructions in natural languages and the differences between wh-movement and wh-in-situ languages, research on Japanese wh-constructions has centered around wh-interrogatives. However, Japanese wh-constructions show another interesting property. As first

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(v) *Mary-wa [John-ga nani-o katta-no] sitteimasu.
Mary-Top John-Nom what-Acc bought-NO know

noted by Kuroda (1965), wh-phrases in Japanese may also be interpreted as existential quantifiers, universal quantifiers, or negative polarity items (NPIs), as shown in (8).

(8) a. Dare-ka-ga ringo-o tabemasita.
who-KA-Nom apple-Acc ate
'Someone ate an apple.'

b. Dare-mo-ga ringo-o tabemasita.
who-MO-Nom apple-Acc ate
'Everyone ate an apple.'

c. Dare-mo ringo-o tab-masen-desi-ta.
who-MO apple-Acc eat-Neg-Pol-Past
'No one ate an apple.'

The interpretation of wh-phrases depends on a Q-particle used with a wh-phrase. In a context in which the wh-phrase is interpreted as a wh-interrogative phrase as in (4), it occurs with a question particle *KA* on the verb. When *KA* is suffixed onto the wh-phrase itself, as in (8a), it is interpreted as an existential quantifier. When the particle *MO* is used with a wh-phrase as in (8b), the wh-phrase is interpreted as a universal quantifiers, and with *MO* and a negation, it is interpreted an NPI, as shown in (8c).[29]

[29] *KA* and *MO* have other seemingly related uses. First, *KA* can be used as a disjunctive connective, *or*, as shown in (i). *MO*, on the other hand, is used as a conjunctive connective, *and*, as shown in (ii).

(i) Mary-ka-John-ga pizza-o tabeta.
Mary-KA-John-Nom pizza-Acc ate
'Either Mary or John ate pizza.'

(ii) Mary-mo-John-mo pizza-o tabeta.
Mary-MO-John-MO pizza-Acc ate
'Both Mary and John ate pizza.'

Japanese wh-phrases are infelicitous without the presence of Q-particles. They must always occur with a particle, either *KA* or *MO*, as illustrated in (9) and (10).

(9) a. *Dare-ga ringo-o tabeta.
who-Nom apple-Acc ate
'Someone ate an apple.'
Or 'Everyone ate an apple.' (compare with (8a) and (8b))

b. *Dare(-ga) ringo-o tabe-masen-desi-ta.
who(-Nom) apple-Acc ate-Neg-Pol-Pst
'No one ate an apple.' (compare with (8c))

(10) a. Mary-wa [dare-ga kita-ka] sitteimasu.
Mary-Top who-Nom came-KA know
'Mary knows who came.'

b. *Mary-wa [dare-ga kita-to] sitteimasu.
Mary-Top who-Nom came-that know
'Mary knows who came.'

A Q-particle may occur adjacent to a wh-phrase or separated from one. The interrogative particle *KA* and the wh-phrase are always in a non-local association,

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MO can be interpreted as *also*, when it is not associated with a wh-phrase. This is shown in (iii).

(iii) Mary-mo paatii-ni kita.
Mary-MO party-Dat came
'Mary also came to the party.'

Another use of *MO* is to be used as a clause-connective, *even if*.

(iv) Mary-ga kite-mo, watasi-wa aw-anai.
Mary-Nom come-MO I-Top meet-Neg
'Even if Mary comes, I will not see her.'

since the wh-phrase in Japanese remains in the base-generated thematic position and the question-particle *KA* occurs clause-finally, suffixed onto the verb. The existential quantifier particle *KA* must be suffixed directly to the wh-phrase and non-local association between them seems difficult.[30] A non-local association of the universal quantifier particle *MO* and the wh-phrase is possible. *MO* can attach to a PP as shown in (11a), to a complex NP, as shown in (11b), or to an IP/CP, as shown in (11c).

(11) a. Watasi-wa [[$_{PP}$ dare-kara]-mo] tegami-o uketotta.
I-Top who-from-MO letter-Acc received
'I received a letter from everyone.'

b. Watasi-wa [[$_{NP}$ [$_{CP}$ Dare-ga Ø kai-ta] tegami]-mo] yon-da.
I-Top who-Nom write-Past letter-MO read-Past
'I read the letters everyone wrote.'

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[30] Non-local association between the existential particle *KA* and the indeterminate phrase appears to be more restricted than between the universal particle *MO* and the indeterminate phrase. One possible case for non-local association between the indeterminate phrase and the existential particle *KA* was pointed out by Nishigaushi (1990), as given below:

(i) Dare-kara-ka henna tegami-ga todoita.
who-from-KA strange letter-Nom arrived
'A strange letter came from god knows who.' (Nishigauchi, 1990: 121, (6b))

In (i), the existential particle *KA* attaches to a PP.

Yatsushiro (2001) presents the following, given in (ii) and (iii), to show that non-local association between the existential KA and the indeterminate phrase is possible.

(ii) Dare-o hihansita hito-ka-ga John-o hometa.
who-Acc criticized person-KA-Nom John-Acc praised
'Someone or other who criticized someone praised John.'

(iii) Dare-no hahaoya-ka-no kaban-wa koko-ni aru.
who-Gen mother-KA-Gen bag-Top here-Loc exist
'The bag of the mother of someone or other is here.'

However, as Yatsushiro herself notes, the non-local existential *KA* seems to be marginal, as some native speakers of Japanese consider such sentences ungrammatical.

c. [[$_{IP/CP}$ Dare-ga kite]-mo], watasi-wa ai-tai.
who-Nom come-MO I-Top meet-want
'No matter who comes, I want to meet (him).'
(For all x, x a person, if x comes, I want to meet x.')

(Nishigauchi 1990: 12, (27))

3.2.2. Chinese wh-constructions

Like Japanese, Chinese is also a wh-in-situ language. The wh-phrase remains in its based-generated position in non-echo-questions, as shown in (12).[31]

(12) John mai-le shenme (ne)?
John buy-Asp what Qwh
'What did John buy?'

Chinese also has question particles, but it differs from Japanese in that it has a different question particle for wh-questions and yes/no questions. The question particle *ne* is used in wh-questions,[32] as can be seen in (12), and *ma* is used for

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[31] As shown by Xu & Langendoen (1985) and Wu (1999), wh-phrases can occur in the matrix CP, leaving their thematic position in Chinese, as in (i).

(i) Shenme$_i$ Zhangsan zhidao Lisi mai-le?
what Zhangsan know Lisi buy-Asp
'What does Zhangsan know Lisi bought.' (Adapted from Wu, 1999: 85, (5))

Given that there is no superiority effects and that resumptive pronouns can fill in the thematic position of the wh-phrase in the matrix CP (Wu 1999), I assume, following Xu & Langendoen (1985), that this is an instance of base-generated topicalization, rather than involving movement.

[32] The particle *ne* is also used in non-interrogative sentences such as that shown below:

(i) ta zai jiang gushi ne.
he zai tell story ne
'He is telling a story.' (Chan 1980: 65)

Ne in sentences like (i) is considered to be a durative marker, giving a sentence a progressive meaning. Given examples like (i), it is not clear whether *ne* can be viewed as a true wh-interrogative particle, as Paul Hagstrom (p.c.) pointed out to me. However, for the purpose of

yes/no questions as in (13). The particles *ne* and *ma* in the matrix clause can be omitted, replaced by a rising intonation, like Japanese.

(13) John mai-le xie ma?
John buy-Asp book Qyn
'Did John buy a book?

In Chinese, the embedded wh-question cannot be marked with *ne*, as the contrast between (14a) and (14b) illustrates. The sentence in (14b) is ungrammatical as it is not a question, but a statement. The ungrammaticality of (14b) shows that the embedded clause cannot contain a question particle, since the cause of its ungrammaticality seems to come solely from the fact that the particle *ne* in (14b) has to be interpreted within the embedded clause. When a question particle is not used, as in (14a), it is grammatical. This contrasts with Japanese, in which the interrogative question particle *KA* is obligatory in the embedded clause (see (10)).

(14) a. John zhidao [Mary mai-le shenme].
John know Mary buy-Asp what
'John knows what Mary bought.'
b. *John zhidao [Mary mai-le shenme ne].
John know Mary buy-Asp what Qwh
'John knows what Mary bought.'

Chinese wh-phrases share the same characteristics as Japanese wh-phrases with regard to their ability to be interpreted not only as wh-interrogative phrases

this dissertation, I follow Cheng (1991), among otbers, treating it as a wh-interrogative particle.

but also as existential quantifiers, universal quantifiers, and NPIs, as noted in Huang (1982). This is illustrated in (15).

(15) a. Ta mai-le shenme ma?
he buy-Asp what Qyn
'Did he buy something?' (Cheng 1991: 113, (3))

b. Ta shenme dou chi.
he what all eat
'He eats everything.' (Cheng 1991: 115, (11))

c. Ta mei-you mai shenme.
he not-have buy what
'He didn't buy anything.' (Cheng 1991: 113, (5))

In Chinese, the wh-phrase is interpreted as a universal quantifier with the presence of the adverb, *dou*, 'all,' as can be seen in (15b). Another instance where wh-phrases are interpreted as universal quantifiers is in bare conditionals as in (16).

(16) a. shei lai, shei chi.
who come who eat
'If x comes, x eats (it).'

b. shei xian lai, shei (jiu) xian chi.
who first come who then first eat
'If x comes first, x eats first.' (Tsai 1999: 15, (28))

As for the existential reading of wh-phrases, as Li (1992) noted, conditions in which wh-phrases are interpreted as existential quantifiers are similar to

conditions typically associated with NPIs.[33] In Chinese, wh-phrases are freely interpreted as existential quantifiers when they are c-commanded by negation, conditionals, or a yes/no question particle. The following examples show this effect.

(17) Negation

a. *Ta xihun shenme.
he like what
'He likes something.' (Li 1992: 127, (3))

b. Ta bu xihuan shenme.
he not like what
'He does not like anything.'

(18) Conditionals

Yaoshi/Ruguo shenme ren (shei) xihuan ta ...
if what man who like him
'If anyone likes him, ...' (Li 1992: 128, (9a))

(19) Questions

Ta xihun shenme ma?
he like what Qyn
'Did he like something (anything)?' (Li 1992: 128, (6b))

Li further notes that there are instances where we find wh-phrases interpreted as existential quantifiers which are not typically linked to NPIs. Such instances occur when the wh-phrase is c-commanded by adverbs of tentativeness and

[33] Lin (1998) challenges Li's (1992) characterization of the licensing conditions in Chinese wh-phrases as existential quantifiers.

uncertainty and non-factive verbs. Examples are given in the following.

(20) Tentativeness and uncertainty

Ta dagai/keneng xihuan shenme.

he probably like what

'He probably likes something.' (Li 1992: 131, (17b))

(21) Non-factive verbs

a. Wo yiwei ta xihun shenme.

I think he like what

'I think that he likes something.' (adapted from Li 1992: 129, (10b))

b. Wo zhidao ta xihun shenme.

I know he like what

'I know what he likes.'

*'I know that he likes something.' (adapted from Li 1992: 129, (11b)

The sentence in (20) shows that, although (17a) is ungrammatical with the wh-phrase interpreted as an existential quantifier, it becomes grammatical with the adverb *dagai/keneng* 'probably'. (21a), on the other hand, shows that when (17a) is embedded under the non-factive verb, *yiwei* 'think', the existential reading, again, is licensed. This is not the case when (17a) is embedded under a factive verb, as shown in (21b).

3.2.3. English wh-constructions

English is a wh-movement language. In non-echo questions, wh-phrases must move to the clause-initial position.

(22) What$_1$ did John buy t_1 ?

Although English is a wh-movement language, wh-in-situ is found in two contexts. As discussed earlier, one is when there are multiple wh-phrases in a clause, as shown in (23). When there is more than one wh-phrase per clause, only one moves to the clause-initial position and the rest remain in-situ.

(23) What$_1$ did John give t_1 to whom?

Another instance where we find wh-in-situ in English is in echo-questions, as in (24).

(24) John gave what to whom?

There are some limited instances where English wh-phrases appear to be non-interrogative, but interpreted as universal or existential quantifiers. Such cases are found in free relative pronouns, such as *whoever* and *whatever*, and wh-adverbials, as in *somewhat* and *everywhere*. The interpretations for (a) sentences in (25) and (26) are shown in (b). As can be seen, the relative pronouns seem to have the interpretations of universal quantifiers (Nishigauchi 1990). In case of wh-adverbials, on the other hand, the wh-phrase is interpreted as existential, if *some-* is attached to the wh-phrase, as in (27a), and universal if *every-* is attached to the wh-phrase, as in (27b). Unlike Chinese and Japanese, however, English wh-phrases are never interpreted as existential or universal quantifiers in their bare forms.

(25) a. *Whatever*$_1$ he buys t_1, John will not like it.

b. For all x, if he buys x, John will not like x

(26) a. *Whoever*$_1$ you invite t_1, I will not talk to him.

b. For all x, if you invite x, I will not talk to x

(27) a. The movie was *somewhat* slow.

b. You find it *everywhere*.

3.2.4. Summary of §3.2

In this section, we looked at wh-constructions in Chinese, English, and Japanese. Chinese and Japanese can be grouped together as they are wh-in-situ languages. They are also similar with regard to the fact that their wh-phrases are often used not only as wh-interrogative phrases but also as existential and universal quantifiers. English shows some uses of wh-phrases as existential or universal quantifiers under restricted cases.

Chinese and Japanese differ, however, with their use of Q-particles. Japanese has the existential Q-particle *KA* and the universal Q-particle *MO*, as well as the interrogative particle *KA*. Chinese, on the other hand, has two interrogative particles, *ma* for yes/no questions and *ne* for wh-questions. Japanese requires that wh-phrases appear with a Q-particle, but Chinese does not have any such requirement, since some of the particles existing in Japanese are absent in Chinese.

Table 1 summarizes the facts regarding wh-constructions in Chinese, English, and Japanese.

Table 1: Wh-constructions in Chinese, English and Japanese

Properties	Chinese	English	Japanese
Wh-construction type	in-situ	movement	in-situ
Question-particles	yes	no	yes
∃/∀-particles	no	no[34]	yes

In the following sections, analyses accounting for the distribution and interpretations of wh-phrases in-situ in Chinese, Japanese and English are presented.

3.3. Syntax and semantics of wh-in-situ in Chinese, English, and Japanese

3.3.1. Wh-in-situ: LF-movement account

In this section, I briefly sketch the traditional account for wh-in-situ, an LF-movement account. It will be pointed out in this section that this account falls short of accounting for data in Japanese wh-constructions, and therefore, a different approach will be adopted for this study, the no LF wh-movement approach, which will be discussed in §3.3.2 and §3.3.3.

One of the differences among Chinese, English and Japanese is whether or not the wh-phrase undergoes wh-movement. As we have seen, English is a wh-movement language while Chinese and Japanese are wh-in-situ languages. In the P&P framework, wh-movement was argued to be related to [+Q]-Comp.

[34] It may be possible to consider *every-* and *some-* in *every-where* and *some-where* to be corresponding to *MO* and *KA* respectively, as argued in Bruening (2007). If so, English can be considered having ∃/∀ morphemes. As we will see in the following sections, I assume, following Tsai (1999), that *every-* and *some-* are in fact like *MO* and *KA*, but the way they associate with wh-phrases is different. See §3.3.5.

(28) a. [What$_1$ [$_{C[+Q]}$ did John buy t_1] ?

b. [Mary asked [what$_1$ [$_{C[+Q]}$ John bought t_1]].

In Huang (1982), it is proposed that wh-movement also takes place in wh-in-situ languages, at LF. He argues that wh-movement is a universal phenomenon and that, in wh-in-situ languages, wh-phrases also move to a [+Q]-Comp. What distinguishes wh-in-situ languages from wh-movement languages is the timing at which wh-movement takes place. It takes place at S-structure in wh-movement languages, and it takes place at LF in wh-in-situ languages. One piece of supporting evidence for LF wh-movement is a selectional restriction. In English, the wh-phrase moves to the scope position overtly. Moreover, there is a selectional restriction on the matrix verb as to what type of embedded clause it takes as its complement. In (29a), the matrix verb is *ask*, which takes an interrogative complement ([+Q]-Comp) clause. The wh-phrase must move to the clause-initial position of the embedded clause, taking embedded scope. In (29b), the matrix verb is *believe*, which obligatorily takes a declarative clause ([-Q]-Comp) as a complement. The wh-phrase must move to the matrix clause to take scope there.

(29) a. [$_{CP}$ He asked me [$_{CP}$ who$_1$ t_1 bought books]].

b. [$_{CP}$ Who$_1$ does he believe [$_{CP}$ t_1 bought books]]?

In Chinese, the same scope interpretation holds for the two types of verbs: one takes an interrogative complement clause and the other a declarative clause. In (30a), the matrix verb is *wen* 'ask', and the wh-phrase takes embedded scope. The matrix verb in (30b), on the other hand, is *xiangxin* 'believe', and it obligatorily takes matrix scope, even though the wh-phrases in both sentences are

in the embedded clause.

(30) a. [$_{CP}$ Ta wen wo [$_{CP}$ shei mail-le shu].
he asked me who buy-Asp book
'He asked me who bought books.' (Huang 1982: 254, (162))

b. [$_{CP}$ Ta xiangxin [$_{CP}$ shei mei-le shu]?
he believe who buy-Asp book
'Who does he believe bought books?' (Huang 1982: 254, (163))

Huang proposes that wh-phrases in wh-in-situ languages also move to the scope-taking position at LF, represented as follows for the sentences in (30).

(31) a. [$_{CP}$ Ta wen wo [$_{CP}$ shei$_1$ t_1 mail-le shu].
b. [$_{CP}$ shei$_1$ ta xiangxin [$_{CP}$ t_1 mei-le shu]?

LF wh-movement, if it exists, differs from overt wh-movement in a number of respects. One of the differences which has been observed is its insensitivity to Subjacency. A wh-phrase that has undergone wh-movement is subject to Subjacency, which subsumes the wh-island constraint and the complex NP (CNP) island constraint, amongst others (Ross, 1967). Examples are given in (32).

(32) English
a. Wh-island
*What$_1$ did Mary say [where$_2$ John bought t_1 t_2]?
b. Complex NP island
*What$_1$ did Mary hear [the rumor that John bought t_1]?'

In (32a), the wh-phrase, *where*, is fronted to the left periphery of the embedded clause, creating a wh-island, and another wh-phrase, *what*, is extracted from that clause, violating the wh-island constraint. In (32b), the wh-phrase, *what*, is extracted from a CNP.

As Baker (1970) and Chomsky (1973) noted, wh-phrases in-situ are immune to Subjacency, unlike wh-phrases that have undergone overt wh-movement. Some examples are given in (33) and (34).

(33) a. Who said [where you bought *what*]?

b. For which <x>, x said where you bought what?

c. For which <x, y>, x said where you bought y?

(34) a. Who heard [the rumor that John bought *what*]?

b. For which <x, y>, x heard the rumor that John bought y?

In (32a), the wh-phrase, *what*, cannot take matrix scope by overtly moving out of a wh-island. However as shown in (33), when it remains in-situ, the wh-phrase, *what*, can take matrix scope, as indicated in the interpretations in (33c). In (34), also, it is shown that the wh-phrase in-situ, *what*, can take matrix scope, crossing over a CNP island.

Subjacency effects are not observed in wh-in-situ in Chinese either.[35] Questions in (35) are acceptable in non-echo question contexts.

[35] Huang (1982) noted that wh-adverbials such as *weisiem* "why" and *zeme* "how" are subject to wh-island effects. Only wh-arguments are assumed to be immune to the wh-island constraint (e.g. Huang, 1982; Tsai, 1994, 1999).

(35) Chinese

a. Wh-island

ni xian-zhidao shei mai-le shenme?

you wonder who bought what

'For which x, x is a thing, you wonder who bought x?

b. Complex NP island

ni xihuan piping shei du shu?

you like criticize who Rel book

'For which x, x is a person, you like books that x criticize?

(Watanabe 1992a: (3) & (4))

Based on the observation that wh-in-situ is immune to Subjacency, Huang argued that Subjacency is a constraint on movement in S-structure, not on movement in LF.

Huang's proposal was pursued further for the analysis of wh-constructions in other wh-in-situ languages. Nishigauchi (1986) first noted that, contrary to Huang's proposal, Japanese wh-in-situ phrases show effects of the wh-island constraint, while the CNP island constraint is not observed.[36]

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[36] Whether or not Japanese indeed shows wh-island effects has been debated extensively. Arguments have centered around subtle judgments relying on evidence such as intonation patterns and contextual information (e.g. Ishihara 2002; Kitagawa 2005). However, as Yoshida (1999) convincingly shows, Japanese indeed has wh-island effects. He shows wh-island effects in Japanese by using two question particles, one is used for wh-questions, and the other is used for yes/no questions. The key contrast is the following (Yoshida 1999, 15: (37)):

(i) a. John-wa [dare-ga nani-o katta-ka] shitteiru-nokai?
John-Top who-Nom what-Acc bought-KA know-Qyn
'Does John know who bought what?'
b. *John-wa [dare-ga nani-o katta-ka] shitteiru-ndai?
John-Top who-Nom what-Acc bought-KA know-Qwh
*'Who does John know bought what?'

The question in (ia) is grammatical as a yes/no question, as there is a yes/no question particle in the matrix clause. Having a wh-question particle in the matrix clause, (ib), on the other hand, is ungrammatical, which demonstrates that the wh-phrases in the embedded clause cannot be

(36) Wh-island

Mary-wa [dare-ga nani-o katta-ka] siritagatteimasu-ka?

Mary-Top who-Nom what-Acc bought-KA want-to-know-KA

a. 'Does Mary know who bought what?'

b. *'For which x, x is a thing, Mary knows who bought x?'

c. *'For which x, x is a person, Mary knows x bought what?'

d. *For which <x, y>, x is a person, y a thing, Mary knows x bought y?

(37) CNP island

Anata-wa [dare-ga kaita hon]-ga sukidesu-ka?

you-Top who-Nom wrote book-Nom like-KA

'For which x, x is a person, you like the book which x wrote?'

Watanabe (1992a, 1992b) also points out that in Japanese, wh-questions involving *kadooka* 'whether' show Subjacency effects as well (Watanabe 1992a: 12, (19b)).

(38) ??John-wa [Mary-ga nani-o katta-kadooka] Tom-ni

John-Top Mary-Nom what-Acc bought-whether Tom-Dat

tazunemasita-ka?[37]

asked-KA

'For which x, x a thing, John asked Tom whether Mary bought x?'

As can be seen, these facts pose a puzzle for Huang's proposal. Chinese and Japanese are both wh-in-situ languages, and if Huang is correct, we expect

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associated with the wh-question particle in the matrix clause. The wh-phrase, *nani* 'what', in the embedded clause cannot take matrix scope, showing a wh-island effect.

[37] Judgments for this sentence vary from marginal (?) (Lasnik & Saito, 1984) to ungrammatical (*) (Nishigauchi, 1990). The judgment in (38) is that of Watanabe (1992a, 1992b).

Japanese to behave in the same way as Chinese in terms of Subjacency effects, contrary to the data shown above. Furthermore, it is also puzzling as to why Japanese only shows wh-island effects, and not CNP island effects.

The island facts in Japanese wh-constructions have triggered an extensive investigation into the issue. What has been crucial to many analyses of Japanese wh-constructions has been the role of Q-particles, *KA* and *MO*. Nishigauchi (1986, 1990) incorporates the Q-particles into the analysis of Japanese wh-construction. His analysis is presented in the next section.

3.3.2. Japanese wh-constructions

3.3.2.1. Indeterminate phrases

Nishigauchi (1986, 1990) attempts to account for the island puzzle in Japanese by incorporating the LF wh-movement approach and a proposal put forth by Kamp (1981) and Heim (1982) for indefinites. As we will see below, his approach also falls short of accounting for island facts in Japanese wh-constructions. However, Nishigauchi's insight of treating wh-phrases in Japanese like indefinites has been adopted in more recent approaches to wh-in-situ, a non-LF-movement approach. Thus, I will sketch out his account in this section as a background for the no-LF-movement approach, which will be presented in the next section.

In Heim (1982), it is proposed that indefinites do not have inherent quantificational force; their quantificational force is determined by elements, such as adverbs of quantification, which c-command them.[38] See examples below from Heim (1982: 123, (4)).

[38] If no adverb of quantification is available, indefinites are assumed to be bound by an implicit existential quantifier (existential closure) (Heim, 1982; Kamp, 1981).

(39) a. If a man owns a donkey, he always beats it.

b. In most cases, if a table has lasted for 50 years, it will last for another 50 years.

c. Sometimes, if a cat falls from the fifth floor, it survives.

d. If a person falls from the fifth floor, he very rarely survives.

Heim points out that the indefinites in these sentences show varying quantificational force. She presents the following paraphrases (Heim 1982: 127, (4a-4d)).

(40) a. For every man and every donkey such that the former owns the latter, he beats it.

b. Most tables that have lasted for 50 years last for another 50 years.

c. Some cats that fall from the fifth floor survive.

d. Very few people that fall from the fifth floor survive.

As can be seen, the indefinites are interpreted as universal quantifiers when they occur with *always*, as existential quantifiers when they occur with *in most cases* and *sometimes*, and as *few* when they occur with *rarely*. It may seem that indefinites are quantificational, but they are somehow able to change their quantificational force depending on an adverb they occur with. Heim thus proposes that indefinites are non-quantificational and their quantificational force is determined by quantifiers such as adverbs of quantification.

As we saw in §3.2.1, Japanese wh-phrases must occur with a Q-particle, and their interpretation (interrogative, existential, or universal) depends on what Q-particle they occur with (Kuroda, 1965). Table 2 summarizes wh-phrases in Japanese and their existential and universal counterparts. There are some gaps in

the list, but it is clear that existential and universal quantifiers are built on a wh-phrase and a Q-particle.

Table 2: Japanese quantificational expressions*

wh-phrases		existential		universal	
dare	'who'	dare-ka	'someone'	dare-mo	'everyone'
nani	'what'	nani-ka	'something'	(nani-mo)	
dore	'which'	dore-ka	'something'	dore-mo	'everything'
dono	'which N'	dono-N-ka	'some N'	dono-N-mo	'every N'
doko	'where'	doko-ka	'somewhere'	doko-mo	'everywhere'
itu	'when'	itu-ka	'sometime'	itu-mo	'always'
naze	'why'	naze-ka	'for some reason'	*naze-mo	
doo	'how'	doo-ka	'somehow'	(doo-mo)	

*The asterisk indicates non-existence. The bracketed expressions exist, but *nani-mo* is only used as a negative polarity item, and *doo-mo* does not have a universal quantifier reading, but rather a fixed meaning, something like 'it seems like…'.

Nishigauchi (1986, 1990) points out that the interpretive properties of Japanese wh-phrases are similar to those of indefinites in English. As it is shown in table 2, wh-phrases in Japanese cannot simply be viewed as interrogative pronouns, as they vary in their quantificational force. Nishigauchi argues that Japanese wh-phrases lack quantificational force. Instead, quantificational force of wh-phrases is determined by the Q-particle they occur with. Kuroda (1965) called wh-phrases in Japanese *indeterminate pronouns* for their varying interpretations. I will refer to wh-phrases in Japanese as *indeterminate phrases* hereafter.

With his insights with regard to the similarity between indefinites and indeterminate phrases, Nishigauchi observes a few important aspects in the relationship between the indeterminate phrase as a variable and the Q-particle. One of his important observations is that the association between the

indeterminate phrase and the Q-particle is subject to a locality condition.[39] This is exemplified in (41) for the Q-particle *KA* and (42) for the Q-particle *MO* (Nishigauchi, 1990, 148: (66)).

(41) Mary-wa [dare-ga nani-o katta-ka] siritagatteimasu-ka?
Mary-Top who-Nom what-Acc bought-KA wonder-KA
a. 'Does Mary wonder who bought what?'
b. *'For which x, x is a thing, Mary wonders who bought x?'
c. *'For which x, x is a person, Mary wonders what x bought?'
d. *'For which <x, y>, x is a person, y a thing, Mary wonders x bought y?'

(42) Kimi-wa [dare-ga kite-mo] ikimas-en-ka?
you-Top who-Nom come-MO go-Neg-KA
a. 'Are you not going, whoever may come?'
b. *'For which x, x a person, are you not going even if x is coming?'[40]

As in (41) and (42), if there is more than one Q-particle in the structure, the indeterminate phrase takes scope within the domain of the one closer to it.

The unavailability of the interpretations in (41b) through (41d) is taken as evidence for the presence of the wh-island effect in Japanese. Nishigauchi points out that island effects in Japanese seem to be a result of locality effects between the Q-particle and the indeterminate phrase. The comparison between (43) and (44) illustrates this point. When there is a Q-particle in the embedded clause, the indeterminate phrase is associated with it, taking embedded scope, as in (43). In

[39] The locality condition observed in Japanese wh-constructions is first suggested by Harada (1971).
[40] Nishigauchi (1990) notes that the interpretation in (42b) may be available for some speakers. He argues that this interpretation is only available in echo-question contexts (1990: 149).

(44), on the other hand, the indeterminate phrase is associated with the Q-particle in the matrix clause, taking matrix scope.

(43) Mary-wa [dare-ga nani-o katta-ka] iimasita-ka?
Mary-Top who-Nom what-Acc bought-KA said-KA
'Does Mary say who bought what?'

(44) Mary-wa [dare-ga nani-o katta-to] iimasita-ka?
Mary-Top who-Nom what-Acc bought-that said-KA
'Who does Mary say bought what?'

The analysis which Nishigauchi proposes assumes LF wh-movement of indeterminate phrases, following Huang (1982). Nishigauchi furthermore proposes that, in Japanese, indeterminate phrases move to the Spec position where they can be governed by a Q-particle, *KA* or *MO*. This is illustrated in (45) for a case with *KA* and in (46) for a case with *MO*.[41]

(45) a. John-wa [$_{CP}$ [$_{IP}$ dare$_1$-ga kutsu-o katta]-ka] sitteiru.
b. John-wa [$_{CP}$ dare$_1$-ga [$_{IP}$ t$_1$ kutsu-o katta]-ka] sitteiru. (LF)
John-Top who-Nom shoe-Acc bought-KA know
'John knows who bought shoes."

[41] Nishigauchi assumes that D-linked wh-phrases are interpreted in-situ, following Pesetsky (1987).

(46) a. [$_{XP}$ [$_{DP}$ Dare$_1$-ga katta hon]-mo] takakatta.[42]

b. [$_{XP}$ Dare$_1$-ga [$_{DP}$ t_1 katta hon]-mo] takakatta. (LF)

who-Nom bought book-MO was-expensive

'The books everyone bought were expensive.'

In the LF representations in (45b) and (46b), the particles *KA* and *MO* govern the indeterminate phrases, which have undergone LF wh-movement.

Nishigauchi argues that Japanese obeys wh-island effects because the quantificational force of indeterminate phrases is determined by a Q-particle under government. In (47), for example, the indeterminate phrase is moved to Spec CP at LF and it is governed by *KA* in the embedded clause. Because of this, the indeterminate phrase, *dare*, in (47) can no longer be associated with *KA* in the matrix clause. In other words, the government relation between the indeterminate phrase and the Q-particle induces a similar effect to the wh-island effect.

(47) John-wa [$_{CP}$ dare$_1$-ga [$_{IP}$ t_1 kutsu-o katta]-ka] sitteimasu-ka?

John-Top who-Nom shoe-Acc bought-KA know-KA

'Does John know who bought shoes?'

This analysis, however, encounters problems with the absence of CNP island effects. As shown in (48), the indeterminate phrase *dare* 'who' takes matrix scope. If the indeterminate phrase goes out of the CNP in LF, the representation for this is as shown in (49), which violates the CNP island constraint.

[42] The phrase which *MO* heads is unclear. It is not crucial to our discussion throughout the dissertation; thus I labeled it as *XP*.

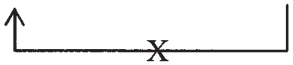
(48) Absence of CNP island

[$_{CP}$ Anata-wa [$_{CNP}$ dare-ga kaita hon-ga] sukidesu-ka]?

you-Top who-Nom wrote book-Nom like-KA

'For which x, x is a person, you like the book which x wrote?'

(49) [$_{CP}$ dare$_1$ [$_{IP}$ Anata-wa [$_{CNP}$ t_1 kaita hon-ga] sukidesu]-ka]?



To account for the absence of CNP island effects, Nishigauchi proposes a large-scale pied-piping analysis, in which he argues that the entire CNP undergoes LF wh-movement, as in (50) in LF. This movement does not violate the CNP island constraint as it crosses no bounding nodes (Chomsky, 1986).

(50) [$_{CP}$ [$_{CNP}$ dare kaita hon-ga]$_1$ [$_{IP}$ Anata-wa t_1 sukidesu]-ka]?

Nishigauchi' analysis, as described above, still requires special treatment for the absence of the CNP island constraint in Japanese. For this reason, I adopt a no-LF-wh-movement approach in Japanese, proposed by Shimoyama (1999, 2001), which accounts for the presence of wh-island effects and the absence of CNP island effects in Japanese more straightforwardly than Nishiguachi's analysis. Nishigauchi, however, made an important contribution to the typological aspect of indeterminate phrases in natural languages. As demonstrated in Haspelmath (1997), indeterminate phrases form a unified class in natural languages, and the non-quantificational nature of indeterminate phrases was adopted in many subsequent analyses of Japanese and other wh-in-situ languages (e.g. Watanabe, 1992a, 1992b; Li, 1992; Aoun & Li, 1993; Hagstrom, 1998; Shimoyama, 1999, 2001). In the following section, I present an alternative analysis of wh-in-situ,

which relinquishes the notion of LF wh-movement, but maintains Nishigauchi's insight on indeterminate phrases.

3.3.2.2. Japanese wh-constructions: Shimoyama (1999, 2001)

The approach that does not assume LF wh-movement incorporates the idea that wh-phrases in wh-in-situ languages lack quantificational force, and that an operator which associates with them is found somewhere higher in the structure (e.g. Aoun & Li, 1993; Tsai, 1994, 1999; Shimoyama, 1999, 2001; Simpson, 2000; Cheng & Rooryck, 2000). The analysis that is adopted for the Japanese wh-constructions is from Shimoyama (1999, 2001).[43] She argued that sentences involving *KA* and *MO* require a unified account as they show the same pattern for wh-island and CNP island effects. Some examples are given below. In addition to the examples in (41) and (42) in the last section regarding the island facts in Japanese, the following examples make the same point.

(51) [[pro$_1$ [John-ga nani-o nusunda-ka] sitteiru] hito$_1$-mo] damatteita.
John-Nom what-Acc stole-KA know person-MO was-silent

a. 'The person who also knew what John stole did not say anything.'

b. *'For all x, x a thing, a person who knows whether John stole x did not say anything.

[43] Shimoyama (2001, 2006), Kratzer & Shimoyama (2002), and Kratzer (2005) extend Shimoyama (1999, 2001) and adopt Hamblin semantics for the analysis of Japanese wh-constructions. Berman (1991) also adopts Hamblin semantics for English wh-questions. Since this approach is not fully extended for Chinese wh-constructions, for the purpose of this dissertation, I adopt Shimoyama (1999, 2001), as it is a more familiar approach and comparable to existing analyses for Chinese and English wh-constructions.

(52) [[[dare-ga pro$_1$ kaita] hon$_1$-o] yonde-mo] iidesu-yo.
who-Nom wrote book-Acc read-MO fine-Part
'For all x, x a person, it is fine that you read books x wrote.'

The sentence in (51) illustrates that the Q-particle, *MO*, cannot be associated with the indeterminate phrase blocked by the presence of another Q-particle *KA*, and thus the universal reading is impossible, like in (51b). In (52), on the other hand, the indeterminate phrase is in the CNP island, but it can be associated with *MO* outside the island, showing that the indeterminate phrase can take scope outside of the CNP.

The patterns observed for both *KA* and *MO* for the wh-island and the CNP island are schematized in (53). The indeterminate phrase must be associated with the local Q-particle, either *KA* or *MO*, as in (53a), and it cannot be associated with the non-local Q-particle, skipping the local one, as in (53b). When the indeterminate phrase is in a CNP island, it can be associated with the Q-particle outside the island, as schematized in (53c).

(53) a. [..... [..... indeterminate ..... ka/mo] ..... ka/mo]

b. *[..... [..... indeterminate ..... ka/mo] ..... ka/mo]

c. [..... [..... indeterminate .....]$_{CNP}$.....]-ka/mo

Shimoyama points out that the previous analysis, which assumes LF wh-movement, analogous to English wh-movement to account for wh-island effects, is problematic as it requires special treatment for CNP island effects. In

addition, as is clear from the data, the Q-particles, *KA* and *MO*, are subject to the same locality condition. This calls for a parallel analysis of these two Q-particles in both types of island.

Shimoyama proposes that the Q-particles directly quantify over their sister constituent as their domain of quantification, as schematized in (54) below.[44]

(54) [..... indeterminate .....] - mo / ka
domain ∀ / Q

In (55a), for example, the domain for *KA* is [who dances]. Shimoyama assumes that *KA* as an interrogative particle selects as its suitable argument a set of propositions, following Hamblin (1973) and Karttunen (1977). However, in (55a), the argument of *KA* is not a set of propositions, but an open sentence. Shimoyama (2001) proposes that indeterminate phrases introduce free variables, following Baker (1970), Petsetsky (1987) and Berman (1991) among others for wh-phrases in-situ in English, and Kuroda (1965) and Nishigauchi (1990) for indeterminate phrases in Japanese. An operator is then introduced for reasons of interpretability and is combined with the clause and forms a set of propositions, {that x is a person and x dances: x ∈ D}, in which the operator abstracts over the free variable. The LF representation for (55a) is shown in (55b).

(55) a. [dare-ga odorimasu] ka?
who-Nom dance KA
'Who dances?'

[44] Shimoyama terms this as the direct restrictor view, as opposed to the embedded restrictor view, proposed for the non-local association between the indeterminate phrase and *MO*. See Ohno (1989), von Stechow (1996), and Takahashi (2002).

b. [[dare$_1$-ga odorimasu] Op$_1$] ka
who-Nom dance KA

The domain of universal quantification for *MO* in (56a) is again not a suitable argument for *MO*, but an open sentence. A free variable is introduced by the indeterminate phrase and an operator is introduced to abstract over a set {σy[teacher(y) & person(x) & invite (y)(x)]: x ∈ D}. The LF representation is given in (56b).

(56) a. [Dare-ga shootaisita sensee]-mo kita.
who-Nom invited teacher-MO came
'The teacher(s) that everyone invited came.'
b. [Dare$_1$-ga shootaisita sensee Op$_1$]-mo kita.

The operator that is introduced is indexed with the c-commanding indeterminate phrases, as indicated in the rule in (57), along the line proposed in Heim (1982) (Shimoyama, 2001, 42: (57)).[45]

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[45] The variable assignment is indicated in (i), with g' $\approx^{1,\ldots,n}$ g meaning that assignment g' is like g, except values assigned to the variable 1, …, n

(i) $[\![\text{IP Op}_{1,\ldots,n}]\!]^g = \{[\![\text{IP}]\!]^{g'} : g' \approx^{1,\ldots,n} g\} = \{p: \exists g'[g' \approx^{1,\ldots,n} g \,\&\, p = [\![\text{IP}]\!]^{g'}]\}$

With the Op-indexing rule and the variable assignment g, we obtain denotations as follows for (57b) and (58b) in (ii) and (iii), respectively.

(ii) (57b) (Shimoyama, 2001, 42: 58)
$[\![$ [[dare$_1$-ga odorimasu] Op$_1$] $]\!]^g$
= {p: ∃g'[g' $\approx^1$ g & p = $[\![$ dare$_1$-ga odorimasu$]\!]^g$]}
= {p: ∃g'[g' $\approx^1$ g & p = $[\![$ dare$_1$-ga odorimasu$]\!]^g$]}
= {p: ∃x[p= that x is a person and x dances]

(iii) (58b) (Shimoyama, 2001, 44: 63)
$[\![$ [[Dare$_1$-ga shootaisita] sensee] Op$_1$ $]\!]^g$
= {$[\![$ [Dare$_1$-ga shootaisita] sensee$]\!]^g$: g$\approx^1$ g'}
= {$[\![$ [Dare$_1$ [t$_1$-ga shootaisita]] sensee$]\!]^g$: g$\approx^1$ g'}
= {σy[teacher(y) & person(x_1) & invite (y)(x_1)]: x_1 ∈ D}
= λz [∃x_1 [z =σy[teacher(y) & person(x_1) & invite (y)(x_1)]]]

(57) Op-indexing: Copy the index of each indeterminate phrase onto the c-commanding Op.

Shimoyama's analysis straightforwardly accounts for the island puzzle in Japanese. Since she assumes that LF wh-movement of an indeterminate phrase does not take place, either overtly or covertly, the CNP island constraint is not expected to be observed.[46] The pied-piping analysis proposed by Nishigauchi (1986, 1990) is unnecessary under Shimoyama's analysis. However, if movement does not take place, the presence of wh-island effects in Japanese must be accounted for.

Shimoyama argues that wh-island effects are observed in Japanese because of the locality condition for the rule of quantification, as it has been shown in Heim (1982). Extending Heim's quantifier indexing rule in (57), Shimoyama proposes (58) (Shimoyama 2001: 60, (105)).

(58) Quantifier Indexing: Copy the index of each indeterminate phrase onto the lowest c-commanding Op.

In cases where wh-island effects are observed, there is an intervening Q-particle in the embedded clause, as in (59) below. If (58) is respected, the Op in the

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Shimoyama defines the universal quantifier *MO* as follows in (iv), and it quantifies over the denotation above. This is given below in (v) (Shimoyama, 2001, 44: 64, 65):

(iv) $[\![\text{mo}]\!] = \lambda P \lambda Q \forall x[P(x) \rightarrow Q(x)]$

(v) $[\![[[\text{Dare}_1\text{-ga} \quad \text{shootaisita}] \text{ sensee}] \text{Op}_1] \text{ mo}] \text{ kita}]\!]^g$
$= [\![\text{mo}]\!]^g([\![\text{Dare}_1\text{-ga} \quad \text{shootaisita sensee Op}_1]\!]^g)([\![\text{kita}]\!]^g)$
$= \forall z [\exists x_1 [z = \sigma y[\text{teacher}(y) \& \text{person}(x_1) \& \text{invite}(y)(x_1)]]] \rightarrow *\text{come}(z)]$

[46] Shimoyama (2001) proposes, following Heim (1982), that indeterminate phrases adjoin to VP or IP to be interpreted. Thus it is not the case that, under her analysis, the indeterminate phrase is interpreted "in-situ." However, this is not a type of movement analogous to wh-movement.

embedded clause in (59) must bind all the indeterminate phrases in its c-commanding domain, as it is the lowest c-commanding Op. The LF representations in (59c) and (59d) fail to do this and become ungrammatical.

(59) a. [Mary-wa [dare-ga nani-o katta-ka] iimasita-ka]?
Mary-Top who-Nom what-Acc bought-KA said-KA
'Did Mary say who bought what?'

b. [..... [..... ind_1 ind_2..... $Op_{1/2}$ ka]$_{WH}$ ..... Op ka]

c. *[..... [..... ind_1 ind_2..... Op ka]$_{WH}$ ..... $Op_{1/2}$ ka]

d. *[..... [..... ind_1 ind_2..... Op_1 ka]$_{WH}$ ..... Op_2 ka]

In (60a) below, the indeterminate phrases in the embedded clause are picked up by the matrix Q-operator in (60b) as the embedded Comp is not occupied by the Q-particle. Since the Q-particle is in the matrix Op, both wh-phrases take scope at the matrix clause. The representation of (60a) is schematized in (60b).

(60) a. [John-wa [dare-ga nani-o katta-to] iimasita-ka]?
John-Top who-Nom what-Acc bought-that said-KA
'For which <x,y>, x a person, y a thing, John said x bought y?'

b. [..... [..... ind_1 ind_2 ..... to] ..... $Op_{1/2}$ ka]

The lack of CNP islands in Japanese is straightforwardly explained under Shimoyama's analysis. Since the operator is indexed with the indeterminate

phrase in its c-commanding domain, there is nothing violating (58).

(61) a. [[dare-ga syootaisita hito-ga] kaerimasita-ka]?
who-Nom invited person-Nom left-KA
'For which x, x a person, the person who x invited left?'

b. [[..... ind_1 .....]$_{CNP}$ Op_1 ka]

The rule in (58) is based on the locality condition and thus, in Shimoyama's analysis, the island facts in Japanese do not require a special mechanism such as Nishigauchi's pied-piping analysis.

3.3.3. Chinese wh-constructions: Analyses

3.3.3.1. Interrogative sentences

As discussed in the previous sections, the LF-movement approach encounters problems in explaining Japanese wh-constructions, particularly the presence of wh-island effects. For this reason, the non-LF-movement approach is adopted for this dissertation. In this section, I summarize analyses of Chinese wh-constructions from the non-movement approach.

As we saw in the last section, Japanese wh-constructions are considered to consist of indeterminate phrases and particles/operators which give quantificational force to indeterminate phrases. As we saw in §3.2.2, Chinese, like Japanese, has extensive use of wh-phrases as universal and existential quantifiers. Chinese wh-phrases are, therefore, considered to be indeterminate phrases.

Aoun & Li (1993) propose a non-LF-movement approach for Chinese

wh-constructions, extending the proposal made by Baker (1970).[47] They propose that a question operator, which they call the Qu-operator, is generated in Spec CP and that it unselectively binds an indeterminate phrase as a variable, as shown in (62). The selection requirements, which we saw in §3.3.1 from Huang (1982), apply to the generation of the Qu-operator. The Qu-operator can be generated in the embedded Spec CP, if the verb's subcategorization allows an interrogative embedded clause as in (62a). If it does not, the Qu-operator is generated in the matrix Spec CP, as in (62b).[48]

(62) a. [$_{CP}$ Ta wen wo [$_{CP}$ Qu$_1$ [$_{IP}$ shei$_1$ mail-le shu].
he asked me who buy-Asp book
'He asked me who bought books.'

b. [$_{CP}$ Qu$_1$ [$_{IP}$ Ta xiangxin [$_{CP}$ shei$_1$ mei-le shu] (ne)?
he believe who buy-Asp book (Q)
'Who does he believe bought books?'

Chinese, therefore, is like Japanese in the sense that wh-interrogatives are constructed by an association between the indeterminate phrase and the question operator, occurring non-locally.

As was shown for Japanese, the unselective binding analysis straightforwardly accounts for the lack of CNP island effects since it involves no wh-movement, either covertly or overtly. As shown in (63), where the indeterminate phrase is within a CNP island, the Qu-operator is generated in Spec CP of the matrix clause, binding the indeterminate phrase within the CNP island.

[47] Aoun & Li (1993) present data from Chinese which do not fit under the LF wh-movement account of Huang (1982). The data they present concerns the operator *only*. Also see Simpson (2000) for the summary of arguments against LF wh-movement.

[48] I restrict Aoun & Li's analysis to indeterminate phrases that are arguments. The case of adjunct indeterminate phrases is not considered, as it is not directly relevant to this study.

This representation involves no island violation, as the indeterminate phrase does not move out from the island.

(63) a. Ni xihuan she xie de shu?
you like who write DE book
'For which x, x a person, you like the book x wrote?'

b. [$_{CP}$ Qu$_1$ [$_{IP}$ ni xihuan [$_{NP}$ [$_{CP}$ shei$_1$ xie de] shu]]] (LF)

Aoun & Li furthermore argue that the lack of wh-island effects in Chinese is a natural consequence as wh-phrases are interpreted in-situ, and therefore, cross no island either overtly or covertly. The example in (64) shows a wh-question involving indeterminate phrases within a wh-island, and the representations assumed by Aoun & Li for (64) are in (65). For the representations from (a)-(c) in (64) correspond to the LF representations in (a)-(c) in (65).

(64) Wh-island
Ta xiang-zhidao shei mai-le shenme (?)
he wonder who buy-Asp what
a. 'What does he wonder who bought?'
b. 'Who does he wonder bought what?
c. 'He wonders who bought what.'

(65) a. [$_{CP}$ Qu$_2$ [$_{IP}$ Ta xiang-zhidao [$_{CP}$ Qu$_1$ [$_{IP}$ shei$_1$ mail-le shenme$_2$]
b. [$_{CP}$ Qu$_1$ [$_{IP}$ Ta xiang-zhidao [$_{CP}$ Qu$_2$ [$_{IP}$ shei$_1$ mail-le shenme$_2$]
c. [$_{CP}$ Ta xiang-zhidao [$_{CP}$ Qu$_{1[2]}$ [$_{IP}$ shei$_1$ mail-le shenme$_2$]

(Aoun & Li 1993: 220, (66))

As can be seen in the LF representations in (65), Qu-operators can be generated in the matrix Spec CP or the embedded Spec CP, binding one or both of indeterminate phrases in the embedded clause. The same Qu-operator does not have to bind all indeterminate phrases in its domain, according to Aoun & Li (1993). This contrasts with Japanese, as discussed in the last section. The differences between Chinese and Japanese, including this issue, are discussed in §3.3.4.

3.3.3.2. Existential and universal readings

In §3.2.2, we saw cases where Chinese indeterminate phrases are interpreted as existential or universal quantifiers. Huang (1982) noted that Chinese indeterminate phrases are like polarity items which require licensing conditions. Li (1992), following Huang, assumes that indeterminate phrases are polarity items which need a c-commanding licensor (see also Cheng (1991)).[49] Licensors are, as exemplified in §3.2.2, negation, the yes/no question particle *ma*, non-factive verbs, adverbs of uncertainty, and a conditional *ruguo* 'if'. In negation, for example, the indeterminate phrase in the subject position cannot be interpreted as an existential quantifier, while the one in the object position can. This is illustrated in the contrast in (66).

[49] As also mentioned in footnote 32 in §3.2.2, Li's (1992) analyses were criticized by Lin (1998), who argues that the licensing conditions of indeterminate phrases as existential quantifiers are not equivalent to the licensing conditions for polarity items. I only present Li's anaysis, as I believe it suffices for the purpose of this section; that is, to show the environment in which Chinese indeterminate phrases are interpreted as existential and universal quantifiers. See Lin (1998, 2004) for the details of his proposal.

(66) Negation

a. Ta bu xihun shenme.
he not like what
'He does not like anything.' (Li 1992: 135, (23a))

b. *Shenme ren bu xihuan ta.[50]
what person not like him
'Someone does not like him.' (Li 1992: 135, (23c))

Assuming the negation is adjoined to the VP, Li claims that the negation only c-commands the object NP, which makes it impossible for the indeterminate phrase in the subject position to be interpreted as an existential quantifier in (66b).

In yes/no questions, Li assumes that *ma* is in the complementizer position, following Lee (1986), and thus it can c-command the indeterminate phrase both in the subject position as well as in the object position, licensing an existential quantifier reading, as shown in (67).

(67) a. Shei/Shenme ren xihuan ta ma?
who/what person like him Qyn
'Does anyone like him?' (Li 1992: 128, (6a))

b. Ta xihun shenme ma?
He like what Qyn
'Did he like something (anything)?' (Li 1992: 128, (6b))

Universal interpretations of indeterminate phrases appear to have different licensing conditions from existential readings of indeterminate phrases. As discussed in §3.2.2, indeterminate phrases are interpreted as universal quantifiers

[50] Sentence (66b) is grammatical as a wh-question, with a rising intonation.

when they occur with the adverb *dou*, 'all', as shown in (68) and they are used in bare conditionals as in (69).[51,52]

(68) a. Shei dou hui lai.
who all will come
'Everyone will come.' (Cheng, 1995: 202, (15a))

b. [shei xie de shu] wo *dou* kan.
who write DE book I all read
Lit. 'I read books that whoever wrote.'
'For all x, x wrote books, I read them.' (Cheng, 1995: 204, (19)

(69) a. shei lai, shei chi.
who come who eat
'If x comes, x eats (it).'

b. shei xian lai, shei (jiu) xian chi.
who first come who then first eat
'If x comes first, x eats first.' (Tsai 1999: 15, (28))

In Cheng (1995), it is proposed that, in universal quantification with *dou*,

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[51] *Dou* has been argued to be an adverb by, among others, Chao (1968), Lü (1980), Lee (1986), and Cheng (1995).

[52] As noted in Cheng & Huang (1993), there are other types of conditionals, *dou*-conditionals and *ruguo*-conditionals, in which the indeterminate phrases are able to acquire universal force. Unlike the bare conditionals in (69), in these conditionals, the element which refers back to the indeterminate phrase must be a pronoun.

(i) ni jiao **shei** jin-lai, wo dou jian **ta**.
you ask who enter I all see him/her
'Whoever you ask to come in, I'll see him/her.' (Cheng & Huang, 1993: 130, (22b))

(ii) rugou ni kandao **shei**, quin jiao **ta** lai jian wo.
if you see who please tell him/her come see me
'If you see someone, please ask him/her to come see me.'
(Cheng & Huang, 1993: 131, (23b))

indeterminate phrases must be c-commanded or m-commanded by *dou* in order to receive universal force. In (68a), the indeterminate phrase is m-commanded by *dou* and in (68b), it is c-commanded by *dou*.[53]

As for the cases with conditionals, in light of their resemblance to the classical donkey sentences (Heim 1982), Cheng & Huang (1996) propose that this type of sentence involves insertion of a null universal quantification operator, which unselectively binds indeterminate phrases, as shown in (70) (Tsai 1999: 16, (29)).

(70) a. $\forall_x$ (x comes → x eats it)

b. $\forall_x$ (x comes first → x eats first)

3.3.4. Differences between Chinese and Japanese wh-constructions

Chinese and Japanese wh-constructions are similar as both are wh-in-situ languages and have an extensive use of indeterminate phrases as existential and universal quantifiers. However, as we will see in this section, the environments in which indeterminate phrases are interpreted as interrogative, existential, and universal quantifiers differ in the two languages. The differences in the interpretations of indeterminate phrases largely depend on the fact that Japanese has the quantificational particles *KA* and *MO*, which determine the quantificational force of indeterminate phrases. In Chinese, on the other hand, such quantificational particles do not exist, with the exception of the wh-question (Qwh) particle *ne* and the yes/no question (Qyn) particle, which appear only in the matrix C^0. These morphosyntactic differences seem to contribute to the

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[53] The definition of m-command is as follows (Chomsky, 1986):

(i) The domain of α is the least maximal projection containing α.
(ii) α m-commands every element of its domain that is not contained within α.

differences in the interpretation of indeterminate phrases between the two languages and thus, although both are wh-in-situ languages, Chinese and Japanese adopt different parametric values. This becomes relevant in our investigation of the resetting of the wh-construal parameter.

In §3.3.4.1, indeterminate phrases used as wh-interrogative phrases in Chinese and Japanese are compared, and then indeterminate phrases used as existential and universal quantifiers are discussed in §3.3.4.2.

3.3.4.1. Wh-interrogative sentences

As has been discussed, one of differences between Chinese and Japanese wh-constructions is that Chinese violates both the wh-island constraint and the CNP island constraint, while Japanese respects the former. The relevant examples from Chinese and Japanese for the wh-island constraint are repeated in (71) and (72).

(71) Chinese

Ta xiang-zhidao shei mai-le shenme (?)

he wonder who bought what

a. 'What does he wonder who bought?'

b. 'Who does he wonder bought what?

c. 'He wonders who bought what.'

(72) Japanese

kare-wa [dare-ga nani-o katta-ka] siritagatteimasu-ka?

he-Top who-Nom what-Acc bought-KA wonder-KA

a. 'Does he wonder who bought what?'

b. *'For which x, x a person, he wonders what x bought?'

c. *'For which x, x a thing, he wonders who bought x?'

In Chinese, one of the indeterminate phrases in the embedded clause can take matrix scope. That is not the case in Japanese, as shown in (72). Rather, they must both take scope over the embedded clause. The LF representations for (71) and (72) are given in (73) and (74), respectively.

(73) a. $[_{CP}$ Op_2 $[_{IP}$ Ta xiang-zhidao $[_{CP}$ Op_1 $[_{IP}$ $shei_1$ mail-le $shenme_2]$

b. $[_{CP}$ Op_1 $[_{IP}$ Ta xiang-zhidao $[_{CP}$ Op_2 $[_{IP}$ $shei_1$ mail-le $shenme_2]$

c. $[_{CP}$ Ta xiang-zhidao $[_{CP}$ $Op_{1[2]}$ $[_{IP}$ $shei_1$ mail-le $shenme_2]$

(Aoun & Li 1993: 220, (66))

(74) a. [kare-wa [dare-ga_1 nani-o_2 katta ka-$Op_{1[2]}$] siritagatteimasu ka]

b. * [kare-wa [dare-ga_1 nani-o_2 katta ka-Op_2] siritagatteimasu ka-Op_1]

c. * [kare-wa [dare-ga_1 nani-o_2 katta ka-Op_1] siritagatteimasu ka-Op_2]

Japanese data show that the operator introduced in the embedded clause must bind all the indeterminate phrases in its local domain. In Chinese, on the other hand, the operator in the embedded clause in (73a) and (73b) does not bind all the indeterminate phrases in the embedded clause, as one of the indeterminate phrases are bound by the matrix Qu-operator. Shimoyama (1999, 2001) argues that a locality constraint, such as the quantifier indexing rule in (58), repeated below in

(75), rules out the interpretations in (74b) and (74c).

(75) Quantifier Indexing: Copy the index of each indeterminate phrase onto the lowest c-commanding Op.

As can be seen in (73), the rule in (75) does not seem to apply in Chinese wh-interrogatives. If the Quantifier Indexing rule comes from a general principle of locality, it is not clear why Chinese should violate this rule.

The wh-island effect in Japanese, as discussed in the preceding section, arises when there is an intervening particle.

(76) John-wa [[$dare_1$-ga $nani_2$-o katta] $Op_{1/2}$ ka] tazunemasita-ka?
John-TOP who-Nom what-Acc bought KA asked-KA
a. 'Did John ask who bought what?'
b. *'For which x, x a thing, John ask who bought x?'

(77) [[$dare_1$-ga syootaisita hito] Op_1 mo] kaerimasita-ka?
who-Nom invited person MO left-KA
a. 'For all x, x a person, the person who x invited left?'
b. *'For which x, x a person, the person who x invited *also* left?'

As can be observed in (73) from Chinese, the interrogative particle is absent in the embedded C^0 in Chinese wh-questions. Although a unified account for the operator indexing rule for both Chinese and Japanese remains to be worked out, for the purposes of this dissertation, I will assume that the overt presence of the intervening particle induces the wh-island effect.[54] Japanese has one in (74),

[54] Korean is another language, like Japanese, which has overt question-particles and wh-island

resulting in the wh-island effect, while Chinese does not in (73), so no wh-island effect is observed.

Chinese and Japanese differ in their scope-marking strategies, which seem to arise from the differences in their use of particles. In Japanese, the scope of indeterminate phrases is determined by the position of the Q-particle, rather than by the position of the indeterminate phrase (Nishigauchi 1990). As shown in (78), the indeterminate phrase is in the embedded clause, but it takes scope over the matrix clause, where the Q-particle is. (79), on the other hand, takes embedded scope as the Q-particle is in the embedded clause.

(78) [Mary-wa [John-ga nani$_1$-o katta-to] iimasita Op$_1$ ka]?
Mary-Top John-Nom what-Acc bought-that said-KA
'What did Mary say that John bought?'

(79) [Mary-wa [John-ga nani$_1$-o katta Op$_1$ ka] iimasita].
Mary-Top John-Nom what-Acc bought-KA said
'Mary said what John bought.'

As mentioned in previous sections, the Qwh-particle *ne* in Chinese is optional in the matrix clause and prohibited in the embedded clause. In Chinese, in most cases, therefore, the *overt* Qwh-particle does not determine the scope of the indeterminate phrase. Rather, it is the (phonetically null) Qu-operator that determines scope.

To summarize, although sentential interrogative particles are used in both languages, their uses differ in Chinese and Japanese. In Japanese, the overt question-particle must be in C^0 in order for the indeterminate phrase to give

effects (Lee, 1982; Nishigauchi, 1990).

quantificational force and determine the scope of the indeterminate phrase.[55] In Chinese, on the other hand, the overt presence of the question particle is not required.

3.3.4.2. Existential and universal readings

The interpretations of indeterminate phrases as existential and universal quantifiers also differ in Chinese and Japanese.[56] In §3.3.2, we saw that, in Japanese, existential *KA* and universal *MO* determine the quantificational force of indeterminate phrases. In Chinese, on the other hand, both existential and universal readings of the indeterminate phrase come about through c-command or m-command by a licensor, as discussed in §3.3.3.2.

As for the universal quantifier, *dou*, in Chinese, and the universal quantifier, *MO*, in Japanese, *dou* is generally considered as an adverb, while *MO* is not, as its distribution is different from that of adverbs. *MO* rather seems to be suffixed to a constituent that it quantifies over. *MO* seems to be the head of a phrase as assumed by Nishigauchi (1990) and Watanabe (1992a, 1992b), among others.

MO furthermore differs from *dou* as the former cannot quantify over non-indeterminate phrases, but the latter can, as shown in (80) and (81).

(80) tamen *dou* lai-le.
they all come-Asp
'They all came.'

[55] The exception for this is when the rising intonation is used for matrix questions.
[56] Although, in this dissertation, indeterminate phrases as existential are not tested, to illustrate the differences between Chinese and Japanese wh-constructions, I include the existential reading of the indeterminate phrase.

(81) karera-*mo* kita.
they-MO came
'They also came.'
*'They all came.'

When *MO* is associated with an NP which is not an indeterminate phrase, as in (81), it is interpreted as *also*.

Further, as shown in (82), only one *dou* per clause is allowed in Chinese. However, such a restriction does not apply in Japanese *MO*, as illustrated in (83).

(82) *women *dou* ba zhexie xuesheng *dou* ma-ku-le.
we all BA these student all scold-cry-ASP
'We all scolded all of these students, and that made them cry.'
(Cheng, 1995, 198, (3))

(83) dare-mo-ga dono-hon-mo yomimasita.
who-MO-Nom which-book-MO read
'Everyone read every book.'

Finally, bare conditionals, shown in the previous section, repeated below in (84), are not at all possible in Japanese, suggesting that this type of abstract universal quantification operator is absent in this language.

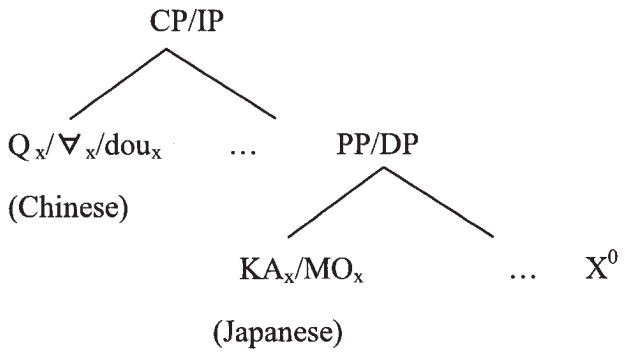
(84) a. shei lai, shei chi.
Who come who eat
'If x comes, x eats (it).'

b. shei xian lai, shei (jiu) xian chi.
Who first come who then first eat
'If x comes first, x eats first.' (Tsai 1999: 15, (28))

As is clear from the above data, indeterminate phrases in both languages are interpreted as existential and universal quantifiers, but how indeterminate phrases acquire their quantificational force differs significantly.

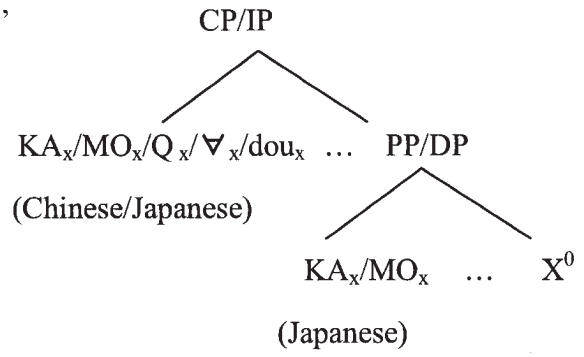
Tsai (1999) proposes a typological account to address the differences between Chinese and Japanese. Following Aoun & Li (1993), Tsai assumes that the question operator is generated in Spec CP. He extends this idea and argues that the universal quantification operator is also generated at the sentential level in Chinese; in Japanese *MO* and (the existential) *KA* are associated with PP or DP, adopting the analysis put forward by Watanabe (1992a, 1992b). This is schematically shown in (85) (ignoring linear order).

(85)



Under the assumptions for the Japanese wh-constructions adopted in this dissertation, the structure in (85) must be revised since the Q-particle *KA* and *MO* are assumed to be able to occur at the sentential level as well as phrasal levels. The revision is given below as (85)'.

(85)'



3.3.4.3. Summary: Chinese and Japanese wh-constructions

Both Chinese and Japanese are wh-in-situ languages, and wh-phrases can best be characterized as indeterminate phrases. Chinese and Japanese, however, differ with respect to their morphosyntactic properties in their wh-constructions. Japanese wh-constructions crucially depend on the Q-particles. Without them, sentences containing an indeterminate phrase are ungrammatical. Chinese, on the other hand, does not have a dependency between the indeterminate phrase and the Q-particle. Rather, the quantificational force of the indeterminate phrase is determined, in most cases, by a null operator, generated higher in the structure.

3.3.5. English wh-constructions

One of the differences between English wh-constructions and Japanese wh-constructions is that, as mentioned previously, the former is a wh-movement language and the latter is a wh-in-situ language. English, therefore, differs parameterically from Chinese and Japanese. In this section, assumptions on typological differences between wh-movement and wh-in-situ languages are presented. These typological differences become relevant in the investigation of the wh-construal parameter.

There have been a number of proposals for the typology of wh-constructions in natural languages. In the Minimalist Program (Chomsky 1993, 1995), it is

assumed that wh-movement is triggered by the strong Q-feature of the functional head C^0. The strong Q-feature in C triggers movement of the phrase with the matching feature into a domain of C (e.g. Spec CP). The wh-phrase in English, which is assumed to have the Q-feature (or the wh-feature), moves to the checking domain of C before spell-out.

In multiple wh-questions, some wh-phrases remain in-situ in wh-movement languages, as we saw in §3.2.3. It is assumed that the wh-phrase in-situ *what* in (86), for example, does not need to undergo overt wh-movement because the Q-feature in C is checked by the already moved wh-phrase *who*. Instead, the wh-in-situ *what* moves to its scope position at LF.

(86) Who bought what?

In Chomsky (1993, 1995), it is proposed that the operator feature in C is weak in wh-in-situ languages, and that movement is therefore postponed until LF. Alternative approaches to this have been proposed. For example, Cheng & Rooryck (2000) propose that the question particle, which may or may not have an overt phonological realization, merges to C, and checks off the Q-feature in C.[57] Because the Q-feature is checked by a Q-particle, wh-phrases (indeterminate phrases) do not undergo wh-movement, just as the wh-in-situ, *what*, in (86) does not need to. Under this approach, LF wh-movement is not assumed to take place.

Another related approach proposed, for example, by Watanabe (1992a, 1992b), Aoun & Li (1993), Tsai (1994, 1999), and Cole & Hermon (1998) claims

[57] Cheng (1991) found that all wh-in-situ languages have question particles. Some languages lack a wh-question particle, but wh-in-situ languages have at least a yes/no question particle. Cheng proposes that, even if a language does not have an overt wh-question particle, there is a null wh-question particle. The presence of a null wh-question particle was postulated because, even in some languages that have an overt wh-question particle, the presence of the wh-question particle is optional, e.g. Chinese.

that, cross-linguistically, wh-questions in natural languages are constructed on the indeterminate phrase and the question-operator pair. They argue that, in some languages, the indeterminate phrase and the operator are separated, while in others, they are fused into the same lexical item. Under the discussions on Japanese and Chinese wh-constructions so far, Chinese and Japanese should fall into the former type, whereas English is considered to be the latter. In Tsai (1999), for example, comparing wh-phrases and pronominals shown in (87), it is argued that English wh-phrases are also built up from a pair consisting of an indeterminate element and a quantificational operator.

(87) a. wh-phrases

wh-o	wh-en
wh-om	wh-ere
wh-at	

b. pronominals

th-ey	th-en
th-em	th-ere
th-at	

Tsai assumes that the *th-* is a prefix and a reduced form of the definite article *the*, which attaches to indefinite morphemes, *ey*, *en*, *em*, *ere* and *at*. In light of the free relative *wh*'s shown in (88), he further assumes that the prefix *wh-*, on the other hand, does not have its quantificational force determined. When the suffix *-ever* attaches to the wh-phrase, it acquires a universal quantification reading, which is impossible for pronominals, as shown by (88b).

(88) a. free relative *wh*'s

wh-o-ever	wh-en-ever
wh-om-ever	wh-ere-ever
wh-at -ever	

b. pronominals

*th-ey-ever	*th-en-ever
*th-em-ever	*th-ere-ever
*th-at-ever	

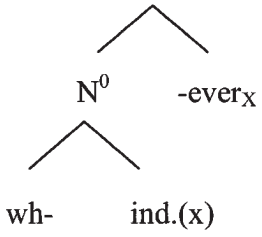
A similar pattern appears with wh-adverbials, shown in (89). The existential operator *some* can attach to certain wh-phrases, creating an existential quantifier. Such an operation is prohibited for pronominals, as shown in (89b).

(89) a. wh-adverbials
some-wh-at
some-wh-ere

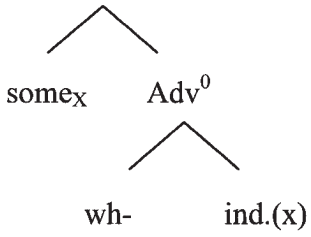
b. pronominals
*some-th-at
*some-th-ere

Tsai argues that the data in (88) and (89) are similar to the operator-variable relation which we saw in Chinese and Japanese wh-constructions, where the question operator binds the indeterminate phrase in-situ as a variable. The structures he suggests for (88a) and (89a) are shown in (90a) and (90b), respectively.

(90) a.



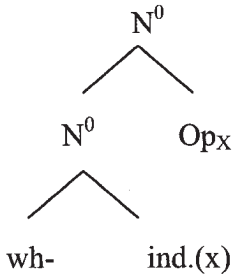
b.



In (90a), *-ever* binds the wh-indefinite pair, yielding universal quantificational force and in (90b), *some-* binds the wh-indefinite pair, giving it an existential quantifier reading.

Following the morphological make-up of wh-phrases shown in (90), Tsai proposes that bare wh-indefinites have a question operator as a binder, as in (91), instead of *–ever* and *some-*.

(91)



According to Tsai (see also Watanabe 1992a, 1992b, Cole & Hermon 1998) in languages like English, the question operator feature in (91) checks off the Q-feature in C, when it moves to Spec CP. The difference between the English-type languages and the Japanese-type languages is that, in the former, the Q-operator feature and the wh-element cannot be separated, and therefore, the entire phrase moves to check off the Q-feature of C. In the latter, on the other hand, the Q-feature is checked by merging the question operator in Spec CP, as the indeterminate phrase and the question operator are morphologically separated.[58]

The last approach is most compatible with the Japanese and Chinese data we have examined so far, and therefore, it is the assumption I take for this dissertation. Chinese and Japanese indeterminate phrases are not only interpreted as

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[58] Many languages which have indeterminate phrases are wh-in-situ languages and therefore, there are researchers who speculate that there is a connection between indeterminate phrases and wh-in-situ (e.g. Watanabe, 1992a, 1992b; Cole & Hermon, 1998). Bruening (2007) argues against such a typological account. His argument against the typology is based on his assumption that the following implication should hold:

(i) A language has indeterminate phrases → it is a wh-in-situ language.

He points out that there are languages that seem to be exceptions for (i), e.g. German and Passamaquoddy, which have indeterminate phrases and are not wh-in-situ languages. The assumption in (i) is not what is assumed in many studies mentioned so far and for this dissertation. What is assumed here, however, is that wh-elements are universally indeterminate phrases and that language variation comes from how non-quantificational wh-elements associate with the quantificational element. From this point of view, all languages have indeterminate phrases. It is even possible that, depending on how an indeterminate phrase is associated with a quantificational element, both wh-movement and wh-in-situ strategies may be possible in the same language.

wh-interrogative phrases, but also as universal and existential quantifiers. This is, according to Shimoyama (1999, 2001) and Tsai (1999) among others, due to what operator the indeterminate phrase associates with. When it is associated with a question operator, it is interpreted as an interrogative phrase, and when it is associated with the universal quantification operator, it is interpreted as a universal quantifier, and so on. The question operator in English, on the other hand, is part of (bare) wh-phrases, and thus wh-phrases are associated with interrogative force and wh-movement is triggered for feature-checking.

3.3.6. Summary: Japanese and English wh-constructions

English is a wh-movement language, while Japanese is a wh-in-situ language. As just mentioned, the differences between English and Japanese were argued to come from whether or not the operator can be generated separately from an indeterminate phrase. In English, it cannot; therefore, a wh-phrase, which consists of both an indeterminate phrase and a question operator, undergoes movement to its scope position in English. In Japanese, on the other hand, the question operator can be generated in its scope position separately from the indeterminate phrase. Therefore, the indeterminate phrase is permitted to stay in-situ.

This is not to say, however, that English wh-phrases are always interrogative. Wh-phrases in English can also be interpreted as existential and universal quantifiers, in the restricted cases, such as *whoever* and *somewhere*. The quantificational force of wh-phrases in English, therefore, has been argued to be determined at the word-level. In Japanese, on the other hand, quantificational force is determined by Q-particles, which appear at phrasal levels (DP, PP, and CP).

3.4. Wh-construal parameter and issues in L2 acquisition

It is assumed that the difference between the wh-construction types displayed by Chinese and Japanese on one hand and by English on the other, comes from whether or not the non-local association of the indeterminate phrase and the operator is possible. Chinese and Japanese allow the non-local association between an indeterminate phrase and an operator; that is, an operator occurs in the c-commanding (or m-commanding) position, allowing it to bind an indeterminate phrase in-situ. In English, on the other hand, the non-local association between the indeterminate phrase and an operator is impossible. Instead, an operator has to be the part of a wh-phrase. Bare wh-phrases are associated with a question operator feature, and they are associated with universal force when *every-* or *–ever* attaches to wh-phrases in English. The difference between wh-in-situ and wh-movement, therefore, is reduced to whether the non-local association between the indeterminate phrase and the operator is possible.

Although there are similarities between Chinese and Japanese wh-constructions, there are differences in their morphosyntactic properties. Japanese has Q-particles *KA* and *MO* which give quantificational force to indeterminate phrases. Chinese, on the other hand, lacks the same range of Q-particles. This gives rise to the differences in how indeterminate phrases are interpreted in the two languages.

The three languages in question, therefore, each employ a different strategy for establishing a relationship between an indeterminate phrase and an operator. In Japanese, it is between an indeterminate phrase and a Q-particle. Chinese establishes the association between an indeterminate phrase and a sentential null operator. In English, it is between an indeterminate phrase and a null or overt operator, and the relation between them is established at the word-level. The wh-construal parameter, thus, refers to the strategy a language adopts to

determine the quantificational force of indeterminate phrases (Watanabe, 1992a, 1992b; Aoun & Li, 1993; Cole & Hermon, 1998; and Tsai, 1999). All three languages are assumed to adopt a different parametric value with regard to wh-construal.

L2 learners of Japanese whose L1 is either Chinese or English must reset this parameter in order to be successful at interpreting indeterminate phrases used in Japanese wh-constructions. The resetting of the wh-construal parameter for these learners involves acquiring relevant features for newly acquired lexical items, namely *KA* and *MO*. All three languages have linguistic means to express wh-interrogative clauses and universal quantification, which means that the three languages select features [±Q] and [±∀]. However, since, as discussed in this chapter, particles equivalent to *KA* and *MO* are absent in Chinese and English, learners must re-associate, or reassemble, the features [±Q] and [±∀] to *KA* and *MO*, respectively. Since the acquisition of Japanese wh-constructions involves reassembling formal features for Chinese- and English-speaking learners, parameter resetting would be consistent with the feature reassembly approach (Lardiere, 2005, 2007a), discussed in §2.2. The way these features are assembled in the three languages are summarized in table 3.

Table 3: Wh-construal parameter: Feature assembly

Properties	Japanese	Chinese	English
[+Q]-feature	*KA*	*ne*, Ø	Ø
[+∀]-feature	*MO*	*dou*, Ø	*every-*, *-ever*
Operators	Ø	Ø, *dou*	Wh-phrases, *every-*, *-ever*
Variable	Ind. phrases	Ind. phrases	trace/copy of the wh-phase

In Japanese, *KA* has the [+Q]-feature and *MO* has the [+∀]-feature and

indeterminate phrases are non-quantificational variables. In Chinese, the [+Q]-feature is associated with *ne*,[59,60] and in the embedded clause, it has to be null. The [+∀]-feature is associated with *dou* 'all' or has no phonological features. In English, the [+Q]-feature is null. The operator feature is assembled into the bare wh-phrases and the [+∀]-feature is associated with universal quantifiers such as *every-* and *-ever*. The task for L2 learners is (a) to find out that wh-phrases in Japanese lack an operator feature, and (b) to associate these features to the newly acquired Q-particles, *KA* and *MO*. English speakers must acquire both (a) and (b), while Chinese speakers have to acquire only the latter, as Chinese wh-phrases are also non-quantificational. The association between the indeterminate phrase and these Q-particles is expected to be guided by the locality condition, if UG is involved in L2 acquisition. The issues pertaining to the acquisition of Japanese wh-constructions are presented in detail in chapter 5.

[59] Both *ne* and *ma* must have the [+Q]-feature, as they are used in interrogative sentences. However, since they are different types of Q-particles, used in different contexts, there must be a feature distinguishing the two particles. It may be possible that there are two kinds of [+Q]-features, the [+Qwh]-feature and the [+Qyn]-feature. At this point, however, it is not clear to me what features distinguish the two particles and I will therefore leave this as an open question.

[60] Chinese *ma* and English *whether* and *if* also have the [+Q]-feature, as they are used in interrogative sentences or clauses. I did not include them in the table as they are not directly related to the interpretations of indeterminate phrases.

Chapter 4: Previous research

In this chapter, I present previous studies which are related to the resetting of the wh-construal parameter. First, I discuss previous studies investigating the syntax-semantics interface in interlanguage grammars; in particular, the studies by Dekydtspotter & Sprouse (2001) and Montrul & Slabakova (2002). In §4.2, previous studies on the L2 acquisition of wh-movement are discussed. I present Hawkins & Hattori (2006) and Umeda (2005, 2006) in detail as these studies seem most relevant to the present study. In §4.3, Choi & Lardiere's (2006a, 2006b) study, which investigated the interpretations of indeterminate phrases in Korean by English-speaking learners, and Yuan's (to appear) study, which investigated the acquisition of Chinese indeterminate phrases, are presented. In §4.4, I discuss a study investigating the processing of wh-questions in Japanese by Lieberman, Aoshima, and Phillips (2006). A summary of this chapter is given in §4.5.

4.1. L2 research on the syntax-semantics interface

The question of whether L2 learners have targetlike form-to-meaning mappings has recently been investigated in many studies, following pioneering work by Dekydtspotter, Sprouse, and their colleagues (e.g. Dekydtspotter, Sprouse, & Anderson, 1997; Dekydtspotter, Sprouse, & Thyre, 1999; Dekydtspotter & Sprouse, 2001). The present study is related to the syntax-semantics interface, as it investigates whether or not the resetting of the wh-construal parameter brings about targetlike interpretations of wh-constructions in Japanese. In this section, I present two studies, Dekydtspotter & Sprouse (2001), in which they investigated the interpretation of adjectival restrictions on interrogative expressions in English-French interlanguage, and Montrul & Slabakova (2002) on the

interpretation of aspect in English-Spanish interlanguage. These studies are chosen from the body of work on the syntax-semantics interface since they share certain similarities with the present study. Additional discussion of these two studies and their relevance to this dissertation is given in §4.1.3.

4.1.1. Dekydtspotter & Sprouse (2001)

Dekydtspotter & Sprouse (D&S) (2001) examined the interpretation of adjectival restrictions on interrogative expressions in English-French interlanguage grammars. The sentences which they investigated are provided in (1) (Dekydtspotter & Sprouse, 2001: 3, (1) & (2)).

(1) a. Qui de célèbre fumait au bistro dans les années 60?
who of famous smoked in-the bar in the '60s
'Which famous person smoked in bars in the '60s?'

b. Qui fumait de célèbre au bistro dans les années 60?
who smoked of famous in-the bar in the '60s
'Which famous person smoked in bars in the '60s?'

In French, the adjectival restriction (*de célèbre*) can be moved with the wh-phrase, as in (1a), or it can stay in-situ, as in (1b). Following D&S, I refer to (1a) as a continuous interrogative and (1b) as a discontinuous interrogative. The continuous and discontinuous interrogatives are not equivalent semantically, however. (1a) is ambiguous between the *célèbre* being a set of individuals who are famous at the speech time and a set of individuals being famous at the past-time (in the '60s). In (1b), on the other hand, the *célèbre* only allows the past-time interpretation, and disallows the present-time interpretation. In other words, *célèbre* is interpreted as a set of individuals who are famous in the '60s, but not at the present time.

D&S assume that the wh-expression *qui* 'who' is moved to Spec CP. LF representations assumed by D&S for (1a) and (1b) are represented in (2) and (3) respectively (Dekydtspotter & Sprouse, 2001: 4-5, (3) & (4)).

(2) [$_{CP}$ Qui de célèbre [$_{C}$ [$_{TP}$*t*$_{qui\ de\ célèbre}$ fumait [$_{VP}$*t*$_{qui\ de\ célèbre}$ [$_{V'}$ *t*$_{fumait}$]
who of famous smoked
au bistro]]]]?
at-the bar
'Which famous person smoked in bars?'

(3) [$_{CP}$ Qui [$_{C}$ [$_{TP}$*t*$_{qui}$ fumait [$_{VP}$*t* de célèbre [$_{V'}$ *t*$_{fumait}$] au bistro]]]]?
who smoked of famous at-the bar
'Which famous person smoked in bars?'

In both (2) and (3), the moved wh-phrase leaves copies at Spec VP and Spec TP. Following Epstein, Groat, Kawashima, & Kitahara (1998), D&S assume that *qui de célèbre* is interpreted at all the derivational stages. The ambiguity between the present-time and the past-time interpretations in the continuous interrogative in (2) comes from the fact that *qui de célèbre* can be interpreted within or out of the scope of the tense operator in TP. In (3), on the other hand, the adjectival restriction *de célèbre* is always within the scope of the tense operator and thus, it is always under the past-time interpretation.

Wh-movement of *qui de célèbre* in (2) and *qui* in (3) is assumed to be triggered by the functional feature [wh]. French allows left-branching extraction and thus the derivation in (3) is possible. D&S argue that the interpretations of (2) and (3) are derived by a universal computational system (Chomsky, 1995). Unlike in (2), *de célèbre* cannot be raised to Spec CP once *qui* checks the [wh]-feature;

otherwise, it would violate Last Resort, as its movement is not motivated by feature-checking. For this reason, *de célèbre* cannot escape the scope of the tense operator in (3), and thus, the discontinuous interrogative only allows the past-time interpretation.

D&S tested whether English-speaking learners of French are able to acquire the appropriate scope interpretations of continuous and discontinuous interrogatives. They note that the existence of discontinuous interrogatives is not taught in classroom. In addition, the interpretative properties of continuous and discontinuous interrogatives are also not taught. Furthermore, since English does not have discontinuous interrogatives, knowledge of the interpretation of the discontinuous interrogative cannot be attributed to their L1. D&S argue that in order for L2 learners to know the contrast between continuous and discontinuous interrogatives in French, they must be able to utilize the universal computational system, thereby showing that interlanguage grammars are constrained by the same mental design of language as L1 acquisition.

Forty-seven intermediate and 11 advanced English-speaking learners of French were tested using a question-answer (Q/A) pair judgment task. Each Q/A pair was preceded by a context and followed by the question, *is this a correct answer to the question*? Participants were asked to answer *yes* or *no* to this question. A sample context and four Q/A pairs are shown in (4) and (5), respectively.

(4) Attitudes toward smoking have changed drastically since the 1960s. In the 1960s many people would go to bars and smoke every night. For example, Herman the Hermit was a famous rock star in those days and was often seen at bars smoking with Linda Tripp, who was then totally unknown. How times have changed! It is Linda Tripp who is famous, and neither of them smokes any more.

(5) a. Past time answer paired with continuous interrogative

Mme Goyette: Qui de célèbre fumait au bistro pendant les années 60?

Élève: Herman the Hermit

b. Past time answer paired with discontinuous interrogative

Mme Goyette: Qui fumait de célèbre au bistro pendant les années 60?

Élève: Herman the Hermit

c. Speech time answer paired with continuous interrogative

Mme Goyette: Qui de célèbre fumait au bistro pendant les années 60?

Élève: Linda Tripp

d. Speech time answer paired with discontinuous interrogative

Mme Goyette: Qui fumait de célèbre au bistro pendant les années 60?

Élève: Linda Tripp

The results are shown in table 4. Both intermediate and advanced learners of French made a significant distinction between the speech time and past time interpretations for the continuous and discontinuous interrogatives. Native controls did not, however, show such a distinction.[61]

Table 4: Dekydtspotter & Sprouse (2001): Results (% of *yes* responses)*

	L2 intermediate		L2 advanced		native speakers	
	speech	past	speech	past	speech	past
Continuous	41.22 *	90.69	46.59 *	79.55	12.50	88.75 *
Discontinuous	25.00	90.69	15.90	90.90	5.00	96.25

*Asterisks between mean scores indicate statistically significant differences.

[61] D&S suggest that the results from the control group may have been influenced by their preference for the past time interpretation over the present time interpretation in ambiguous continuous interrogatives.

Although the results from the control group were unexpected, the results from the L2 learners showed that they have knowledge of the contrast, suggesting that the interlanguage interpretations are also derived by the computational mechanisms that are the reflex of the language faculty.

4.1.2. Montrul & Slabakova (2002)

A series of studies by Montrul and Slabakova (M&S) (e.g. Montrul & Slabakova, 2002, 2003; Slabakova & Montrul, 2002, 2003) investigated the interpretation of aspect in English-Spanish interlanguage. In M&S (2002), they focus on the acquisition of aspectual morphology and the interpretations which are brought about by the morphology.

In English, past morphology (perfective) encodes both habitual and one-time events, as in (6), and the past progressive (imperfective) encodes an ongoing event. Spanish has two past tense morphemes, Preterite (perfective) and Imperfect (imperfective). Preterite expresses one-time events, and Imperfect encodes both habitual and ongoing events. Examples are given in (7) (adapted from Slabakova, 2006: 321, (13) & (14)).

(6) a. Felix robbed (people) in the street. (= habitual)

b. Felix robbed a person in the street. (= one-time event)

(7) a. Guillermo robaba en la calle. (= habitual)
Guillermo rob-Imp in the street
'Guillermo habitually robbed (people) in the street.'

b. Guillermo robó en la calle. (= one-time event)
Guillermo rob-Pret in the street
'Guillermo robbed (someone) in the street.'

In both English and Spanish, perfective morphology marks one-time events, and the imperfective morphology marks on-going events. The difference between English and Spanish is found in how habituality is encoded. In English, perfective encodes habitual aspect, but in Spanish, habituality is encoded with imperfective morphology. Thus, English speakers must learn that habituality is associated with Imperfect morphology when acquiring Preterite and Imperfect distinctions in Spanish, which are non-existent in English.

M&S assume, following Giorgi & Pianesi (1997), that the functional feature [+perfective] is encoded in Preterite morphology and [-perfective] is encoded in Imperfective morphology, and these features are checked at the AspP in Spanish. M&S investigated whether English speakers come to know the semantic implications of the morphemes when acquiring these aspectual morphemes.

Participants were 71 English-speaking learners of Spanish. Learners took a test examining their knowledge of aspectual morphology in Spanish and a sentence conjunction judgment task. In the latter task, participants read a list of sentences involving two conjoined clauses. They were asked to judge whether the sentence made sense. A scale from -2 to 2 was provided, where -2 meant illogical and 2 meant logical. Three verb classes were included: accomplishment, achievement, and state. Examples are given below in (8) (from Slabakova, 2006: 323, (15))

(8) a. Joaquín corría (imperf) la carrera de fórmula 1 pero no participó.
'Joaquín was going to participate in the Formula One race but he didn't take part in it.'

-2 -1 0 1 (2)

b. Pedro corrió (pret) la maratón de Barcelona pero no participó.

'Pedro ran the Barcelona marathon but he didn't take part in it.'

(-2) -1 0 1 2

Table 5 summarizes their results. The results show that those who had acquired the morphology have the knowledge of semantic implications of the morphology. However, the acquisition of the morphology does not guarantee the acquisition of semantic contrasts.

Table 5: Montrul & Slabakova (2002): Results*

	Yes morphology	No morphology
Accomplishment (unclear n=5)		
Yes semantics	21	2
No semantics	21	22
Achievement (unclear n=4)		
Yes semantics	20	1
No semantics	21	25
States (unclear n=5)		
Yes semantics	21	2
No semantics	21	22

*Learners are deemed as successful if they were 80% or more accurate on the morphology test. The acquisition of semantics was determined to be successful if they were targetlike in five out of seven tokens. Unclear cases were when learners were accurate four out of seven tokens in one tense and five out of seven in the other.

M&S's study shows that L2 learners are able to acquire knowledge of semantic implications of the perfect and imperfect morphology as a result of

acquiring the morphology. The results also show that knowledge of morphology precedes knowledge of semantics and that the development of semantics is a gradual process, after having acquired the morphology.

4.1.3. Summary and implications for this study

The D&S study found that, as a result of acquiring the possibility of left-branching extraction in French, English speakers showed the interpretation of discontinuous interrogatives in a way constrained by the universal computation system. In M&S's study, L2 learners were also found to arrive at targetlike semantics after acquiring the Preterite and Imperfect morphology. In both studies, it was found that L2 learners were able to acquire targetlike semantics despite morphosyntactic differences between the learners' L1 and L2. Successful acquisition of properties at the syntax-semantics interface, therefore, seems possible, at least for the aspects being tested by the two studies exemplified above.

The findings from these two studies have implications for the present study. Here we seek to investigate whether or not acquiring morphosyntactic properties of Japanese wh-constructions (i.e. non-quantificational wh-elements and Q-particles) leads L2 learners to targetlike interpretations. D&S's and M&S's studies have shown that morphological and/or syntactic changes have consequences for subtle interpretative properties in interlanguage grammars. This dissertation investigates whether the same results are found in the L2 acquisition of wh-in-situ.

4.2. L2 acquisition of wh-movement

4.2.1. Previous studies: Introduction

Under the assumption that wh-construal is parameterized, for L2 learners whose L1 is a wh-in-situ language, resetting of the wh-construal parameter is required when they acquire a wh-movement language. What L2 learners must do is learn that wh-elements in wh-movement languages are quantificational, associated with a question operator feature, unlike wh-elements in wh-in-situ languages. The research question in this case is whether L2 learners are able to acquire this property of wh-elements in wh-movement languages, and whether, as a result of acquiring this property, wh-elements obligatorily undergo operator movement in interlanguage grammars.

The L2 acquisition of wh-movement has been the focus of many studies since the late 1980's. In most studies, learners' knowledge of Subjacency effects was tested. Subjacency was tested in order to examine whether L2 learners have access to a UG principle. Learners whose L1 is wh-in-situ were chosen as experimental subjects because the effects of Subjacency are presumed to be absent in their L1; thus it was assumed that knowledge of Subjacency cannot be attributed to their L1 knowledge.[62] Studies such as Bley-Vroman, et al. (1988)[63], Martohardjono (1993), White & Juffs (1998), and Ojima (2005) have shown that L2 learners whose L1 does not have wh-movement are sensitive to Subjacency effects.

There are studies which found the opposite. Studies such as Johnson & Newport (1989, 1991), Schachter (1990), Hawkins & Chan (1997), and Hawkins

[62] This may not be an accurate assessment. Although Subjacency does not operate, since wh-in-situ languages lack wh-movement, the effects of Subjacency seem to be available in wh-in-situ languages as well. In Japanese and Korean, for example, phrases can undergo overt movement with the scrambling operation. As shown by Saito (1985) for Japanese and Kim (1989) for Korean, scrambling is subject to Subjacency (see (19)). Therefore, Subjacency operates in some wh-in-situ languages.

[63] Bley-Vroman, et al. (1988) found that Subjacency effects were "weak" but present.

& Hattori (2006), found that L2 learners whose L1 is a wh-in-situ language have difficulties detecting Subjacency violations.[64]

The connection between the wh-construal parameter and Subjacency effects is, however, only indirect: even if learners are able to detect Subjacency violations, it does not necessarily demonstrate that L2 learners have reset the wh-construal parameter. As pointed out by Hawkins (2001), L2 learners may represent wh-movement as wh-scrambling. Since scrambling is also subject to the Subjacency constraint (Saito, 1985), knowledge of Subjacency effects alone does not distinguish genuine wh-movement from wh-scrambling. If, on the other hand, L2 learners fail to detect Subjacency effects, this suggests that the wh-construal parameter has not been reset. However, as has been pointed out by Sportiche (1981), Reinhart (1981), and Rizzi (1982), it is not the case that all islands are universally illicit. Martohardjono (1993), for example, argued that islands such as wh-islands and noun complement islands are weak islands, subject to parameterization, while CNP and adjunct islands are strong islands. Extraction from strong islands is universally illicit, and therefore, once wh-movement is acquired, learners must obey strong islands. For weak islands, since they are parameterized, obeying these islands may not be directly related to the acquisition of wh-movement. Even after wh-movement is acquired, learners may still need to discover which weak islands, if any, are obeyed in their L2. Therefore, although many previous studies have tested weak islands and reported that L2 learners failed to detect weak island violations, these results do not necessarily demonstrate a lack of parameter resetting.

In the next section, we consider two recent studies on the L2 acquisition of

[64] Hawkins & Chan (1997) tested Subjacency as well as properties associated with operator movement, such as the prohibition of presumptive pronouns and doubly-filled Comp, using a grammaticality judgment task. Hawkins & Hattori (2006) tested L2 learners' knowledge of Superiority effects, as well as Subjacency.

wh-movement. These studies utilize tests which targeted properties other than Subjacency. In Hawkins & Hattori (2006), although Subjacency is one of the tests used to determine the acquisition of wh-movement, they also tested learners' knowledge of Superiority effects. In Umeda (2005, 2006), I tested learners' knowledge of scope freezing effects. These two studies are presented in the following sections.

4.2.2. Hawkins & Hattori (2006)

Hawkins & Hattori (2006) investigated whether Japanese-speaking learners of English are able to acquire genuine wh-movement in English by examining the *Attract Closest Principle* (Chomsky, 1995), given below:

(9) Attract Closest Principle: A head which attracts a given kind of constituent attracts the closest constituent of the relevant kind.

(Hawkins & Hattori, 2006: 277, (11))

Under the Minimalist Program, the Superiority Condition (Chomsky, 1973) is now explained by this principle. In (10), the wh-phrase *who* must be attracted by the uninterpretable feature [wh] in C^0 to move to Spec CP because it is closer to this position than the wh-phrase, *what*, is.[65] The ungrammaticality of (10b) has been attributed to the violation of the Attract Closest Principle, because the wh-phrase *what* is attracted by C^0, even though *who* is closer.

[65] For simplicity, I have labelled the feature responsible for wh-phrases to be moved to Spec CP as the uninterpretable feature [wh], but this is not what Hawkins & Hattori (2006) had in mind. Hawkins & Hattori assume, following Adger (2003), that the uninterpretable feature, [uwh*:], is responsible for moving the wh-phrase to the domain of C in wh-movement languages. In Adger's analysis, the asterisk attached to [uwh:] is the feature responsible for the requirement in wh-movement languages that the wh-phrase must be in the immediate domain of C. Hawkins & Hattori take this to be essentially the same as Chomsky's (1998) uninterpretable EPP feature, by which the wh-phrase is required to move to Spec CP.

(10) a. Who t_i bought what?

b. *What did who buy t_i?

Unlike English wh-movement, however, scrambling of wh-phrases in Japanese does not seem to be subject to this condition. As shown in (11b), scrambling of the wh-phrase *nani* 'what' over another wh-phrase *dare* 'who', which is closer to C^0, is possible. Hawkins & Hattori assume that this is because scrambling is driven by a different type of feature, to which the Attract Closest Principle does not apply.[66] Therefore, Hawkins & Hattori argue that the Attract Closest Principle can distinguish wh-movement from wh-scrambling.

(11) a. Dare-ga nani-o kaimasita-ka?
who-Nom what-Acc bought-KA
'Who bought what?'

b. Nani$_i$-o dare-ga t_i kaimasita-ka?
what-Acc who-Nom bought-KA
'Who bought what?'

Hawkins & Hattori tested 19 advanced Japanese-speaking learners of English and 11 native speakers of English to examine whether Japanese-English interlanguage grammars contain an uninterpretable [wh] feature. Examples of the test sentence types used in their experiment are shown in (12).[67]

[66] Scrambling in Japanese and other languages has been argued to be a type of focus movement (Kobayashi, 2000, and Bailyn, 2001, etc.). Hawkins & Hattori (2006) adopt this view.

[67] There was a fifth type of test item, but I exclude it here since only one token for this type was included in the experiment.

(12) a. Who did the headteacher suspect [<who> had taken what]? (n=3)

b. When did Henry remember <when$_1$> [Louise had lost what <when$_2$>]? (n=4)

c. Who did Sophie's brother warn <who$_1$> [Sophie would phone *<who$_2$> when]? (n=3)

d. When did Rupert discover <when$_1$> [who Nora had met <who> *<when$_2$>]? (n=3)

In (12a), the fronted wh-phrase *who* can only originate in the embedded clause. In (12b), on the other hand, the wh-phrase can either originate in the matrix or the embedded clauses. (12c) presents, according to Hawkins & Hattori, what is known as a superiority effect, and (12d) contains a Subjacency effect. In both (12c) and (12d), the wh-phrase in the matrix clause cannot have originated in the embedded clause.

In the experiment, a question-answer pair acceptability judgment task with multiple choice answers was used. Each test item was preceded by a story and followed by three possible answers to the test item. Participants were asked to choose possible answer(s) to the question. An example with a type (12c) question is given in (13).

(13) [Story]

Sophie was angry. Her holiday had been ruined because the hotel she had booked through a travel agency was full, and she had to sleep in a tent. Sophie's brother was a friend of Norman who owned the travel agency. He spoke to Norman on Thursday and told him that Sophie would be phoning his manager, Mrs. Smith, the following day to ask for her money back.

Question: Who did Sophie's brother warn Sophie would phone when?

Answer 1: He warned Norman that Sophie would phone on Friday.

Answer 2: He warned that Sophie would phone Mrs. Smith on Friday.

Answer 3: He warned Norman on Thursday that Sophie would phone.

Since the question in (13) only allows *who* to originate in the matrix clause, only answer 1 is appropriate.

The results from Hawkins & Hattori are shown in table 6. The scores indicate the frequency with which participants chose the fronted wh-phrase in the matrix CP to originate in the embedded or matrix clause. The crucial results for Hawkins & Hattori is the comparison between (12b) on the one hand and (12c) and (12d) on the other. The results from (12b) provide a baseline for ambiguous cases between the embedded and the matrix scope readings. As can be seen from the table, both the Japanese and control groups seem to know that questions like (12b) are ambiguous. There were no statistical differences between the Japanese group and the control group. The control group did not accept the embedded reading for the wh-phrase for (12c) and (12d) as frequently as for (12b): the results from both (12c) and (12d) were significantly different from those from (12b). The results from the Japanese group, on the other hand, showed no statistical differences between (12b) and (12c) ($p = 0.26$) and between (12b) and (12d) ($p = 0.08$). Hawkins & Hattori conclude that Japanese speakers were insensitive to the Attract Closest Principle.

Table 6: Hawkins & Hattori (2006): Results

Question Type	Embedded		Matrix	
	Japanese	Control	Japanese	Control
(12a)	0.96 (0.11)	0.97 (0.10)		
(12b)	0.78 (0.26)	0.75 (0.19)	0.92 (0.12)	0.91 (0.17)
(12c)	0.75 (0.29)	0.33 (0.30)	0.88 (0.17)	0.85 (0.27)
(12d)	0.58 (0.37)	0.21 (0.31)	0.93 (0.14)	1.00 (0.00)

Hawkins & Hattori claim, following Tsimpli (2003) and Tsimpli & Dimitrakopoulou (2007), that uninterpretable features become inaccessible to language learners after the critical period. Japanese-speaking learners who acquire English post-puberty are argued to be incapable of selecting the uninterpretable [wh], the feature responsible for wh-movement, from the feature inventory in UG, resulting in their insensitivity to the Attract Closest Principle. Because this uninterpretable feature is no longer acquirable as a new feature for L2 learners, Hawkins & Hattori claim that adult Japanese-speaking learners are incapable of acquiring the genuine wh-movement operation. Instead, Hawkins & Hattori propose that Japanese-speaking learners of English represent wh-movement as wh-scrambling, a type of focus movement (Kobayashi, 2000; Bailyn, 2001).

Their conclusions, however, do not seem to be warranted since the test items they used are not reliable for what they intended to test. What is crucial for them are question types (12c) and (12d). First, for (12c), it is not clear that the fact that the fronted wh-phrase in the matrix clause cannot originate in the embedded clause is due to the Attract Closest Principle. As shown in (14), either *who* or *when* can be fronted, unlike the typical Superiority violation exemplified in (10). If the Attract Closest Principle prevents the embedded wh-phrase, *who*, in (12c) to

be fronted over another wh-phrase, *when*, it is not clear why (14a) is grammatical.

(14) a. [Who would [Sophie phone <who> when]]?

b. [When would [Sophie phone who <when>]]?

Since (14a) is grammatical, it is not clear why the wh-phrase *who* in (12c) cannot be fronted over *when*, leaving copies/traces in its base position as well as the embedded Spec CP through successive cyclic movement, as shown in (15).

(15) *[Who did Sophie's brother warn [<who> [Sophie would phone <who> when]]?

For whatever reason, (15) is not a possible interpretation, but the example in (14a) suggests that it is not likely to be due to the Attract Closest Principle. Thus, although the results from the Japanese group were statistically different from the control group, it is not clear whether this is due to the feature [wh].

As for question type (12d), as discussed above, the wh-island constraint tested in Hawkins & Hattori is a wh-island, a weak island, which is subject to parameterization. Learners may have not yet set the parameter for wh-islands, while having already acquired the [wh] feature. As pointed out by Sorace & Filiaci (2006), in order to determine whether it is indeed impossible for adult L2 learners to acquire new formal features, near-native speakers should be tested. The arguments which Hawkins & Hattori make, therefore, seem to be inconclusive.

4.2.3. Umeda (2005, 2006)

In Umeda (2005, 2006), I investigated, among other properties, whether Japanese-speaking learners of English are able to learn the scope-marking strategy employed in English.[68] If, as Hawkins & Hattori (2006) claim, wh-movement is represented as wh-scrambling in Japanese-English interlanguage grammars, we do not expect that they will show knowledge of the scope-marking strategy in English.

As discussed in the last chapter, the scope of wh-phrases in English is determined by the position to which the wh-phrase moves overtly. This phenomenon is called scope freezing (Baker 1970). The sentences I investigated are shown in (16). The wh-phrase in (16a) is in the embedded clause, taking embedded scope, and the one in (16b) is in the matrix clause, taking matrix scope. In (16c), the wh-phrase, *where*, is in the embedded clause, also taking embedded scope.

(16) a. Did Mary say [what John bought]?

b. [What did Mary say [that John bought]]?

c. Who said [where John bought the camera]?

In Japanese, indeterminate phrases stay in-situ, and the scope of indeterminate phrases is determined by the position of the question-particle, *KA*, as mentioned earlier. Examples of Japanese wh-constructions are given in (17).

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[68] Umeda (2005, 2006) was a study to investigate whether L2 learners whose L1 is not a wh-movement language can have genuine movement representation, responding to claims that they cannot (Hawkins 2001; Hawkins & Hattori 2002). In addition to scope interpretations, I tested learners' knowledge of reconstruction and weak crossover effects involving wh-phrases. Overall, as reported in Umeda (2006), it was found that Japanese-speaking learners showed targetlike interpretations/judgments on the constructions tested. Therefore, I concluded that acquiring genuine wh-movement is possible.

(17) a. Mary-wa [John-ga nani-o katta-to] iimasita-ka?
Mary-Top John-Nom what-Acc bought-that said-KA
'What did Mary say that John bought?'

b. [Nani$_1$-o [Mary-wa [John-ga t_1 katta-to] iimasita-ka]]?
what-Acc Mary-Top John-Nom bought-that said-KA
'What did Mary say that John bought?'

As the contrast in (17) shows, in Japanese, the position in which the indeterminate phrases occur is irrelevant. In (17a), the indeterminate phrase occurs in-situ. In (17b), on the other hand, the indeterminate phrase undergoes wh-scrambling to sentence-initial position. Although the indeterminate phrase appears in the embedded clause in (17a) and in the matrix clause in (17b), both are matrix wh-questions. This is because in both sentences in (17), *KA* is only in the matrix clause. Japanese wh-scrambling, therefore, lacks scope freezing effects.

Japanese-speaking learners thus have no prior knowledge of the scope-marking strategy in English from their L1. Learners may be taught that (16a) is a yes/no question and (16b) is a content question. Therefore, there is a possibility that L2 learners rely on the instruction they may have received. However, such instruction is not relevant to the scope interpretation in (16c).

Participants were 19 high-intermediate and advanced Japanese-speaking learners of English and 16 native speakers of English as control subjects. The test was a question-answer (Q/A) pair acceptability judgment task. In the task, participants read a context, followed by a question-answer pair. Each question type (16a)-(16c) was followed either by an appropriate answer or an inappropriate answer. Learners were asked to judge each pair on a scale of 1-5, 5 being a natural answer to the question and 1 being a very odd answer. Examples are given in (18)-(20). There were 6 tokens for each type.

(18) Type 1: Yes/No questions

[Context] John went shopping yesterday. Afterwards, he told Susan that he had bought a CD. He told Mary that he had bought a book. But the next day they couldn't remember what he said.

A. Appropriate Q/A pair

Question: Did Mary forget what John bought?

Answer: Yes, she did.

B. Inappropriate Q/A pair

(Context same as above)

Question: Did Mary forget what John bought?

Answer: A book.

(19) Type 2: Matrix Question

Context same as (18)

A. Appropriate Q/A pair

Question: What did Mary forget John bought?

Answer: A book.

B. Inappropriate Q/A pair

Question: What did Mary forget John bought?

Answer: Yes, she did.

(20) Type 3: Wh-phrase in both matrix and embedded CPs

[Context] Brian said that he had too much coffee today. Susan asked Brian if he had coffee at home. Carla asked Brian if he had coffee at a coffee shop. Kate asked Brian if he had coffee at the office.

A. Appropriate Q/A pair

Question: Who asked Brian where he drank coffee?

Answer: Carla, Kate, and Susan did.

B. Inappropriate Q/A pair

Question: Who asked Brian where he drank coffee?

Answer: Susan asked Brian if he had coffee at home. Carla asked Brian if he had coffee at a coffee shop. Kate asked Brian if he had coffee at the office.

The group results are shown in table 7. For all types, *A* pairs were appropriate Q/A pairs and *B* pairs were inappropriate. The results show that both the Japanese group and the control group found *A* pairs to be more appropriate than B pairs. The differences between *A*s and *B*s were statistically significant for all types.

Table 7: Task1 Group results (Mean scores)

	Type 1		Type 2		Type 3	
	A	B	A	B	A	B
Japanese	4.94	1.29	4.54	1.18	4.76	2.66
Control	4.96	2.01	4.9	1.03	4.8	3.56

The results from this study show that Japanese speakers have knowledge of scope freezing associated with English wh-movement. This suggests that the representation Japanese speakers have is not similar to wh-scrambling; rather, it is a form of movement triggered by an operator feature.

The results from this study have implications for the wh-construal parameter investigated here. If genuine wh-movement is acquired by Japanese-speakers, this

means that wh-phrases associated with the operator feature are attracted by the matching feature in C^0. Since Japanese indeterminate phrases are not associated with the operator feature, the wh-construal parameter must have been reset from the Japanese value to the English value.[69]

4.2.4. Summary and implications for this study

Most previous studies in L2 acquisition of wh-movement concentrated on whether or not L2 learners were able to detect Subjacency violations. As pointed out in §4.2.1, since Subjacency is a constraint on movement, not just on wh-movement, it is not a reliable test for an investigation of the acquisition of wh-movement.

I examined Hawkins & Hattori's (2006) and Umeda's (2005, 2006) studies on the L2 acquisition of wh-movement, which resulted in opposing conclusions. It was argued that Hawkins & Hattori's conclusions should be reexamined, as the properties tested in their study, Superiority effects and Subjacency effects, might not be related to the feature [wh], as Hawkins & Hattori had intended. The results from Umeda (2005, 2006) suggest that Japanese speakers are able to acquire the quantificational nature of wh-phrases in English, suggesting that the wh-construal parameter is reset from wh-in-situ to wh-movement.

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[69]The question that remains is what type of evidence triggers parameter resetting from Japanese to English. L2 learners of English are exposed to positive evidence with fronted wh-phrases, which can potentially provide the triggering evidence. However, as we saw in (17), Japanese allows fronting of wh-phrases (indeterminate phrases) through wh-scrambling. Therefore, fronted wh-phrases alone may not be enough evidence to motivate that English has wh-movement, not wh-scrambling. For Japanese-speaking learners, I believe that the loss of scrambling in Japanese-English interlanguage must precede the acquisition of wh-movement. Generally, the presence of scrambling is considered to be tied to overt morphological case (e.g. Haider, 1988; Roberts, 1997; Weerman, 1997; Bošković, 2004). Japanese-speaking learners are expected to lose scrambling, including wh-scrambling, since English has no morphological case. Without scrambling, positive evidence such as (16) can be the triggering evidence for wh-movement for Japanese-speaking learners.

4.3. L2 acquisition of wh-in-situ

4.3.1. Choi & Lardiere (2006a, 2006b)

Choi & Lardiere (2006a, 2006b) investigated the interpretation of Korean indeterminate phrases by English-speaking learners. As discussed in previous sections, English bare wh-phrases are always interrogative. However, like Japanese and Chinese, Korean bare indeterminate phrases can be interpreted as existential and universal quantifiers, as well as interrogative phrases. Choi & Lardiere tested whether English-speaking learners are able to acquire the non-quantificational nature of Korean wh-elements. Examples of the items they tested are shown below:

(21) a. John-un [Mary-ka mues$_1$-ul sassnun-ci$_1$] an-ta.
John-Top Mary-Nom what-Acc bought-Q know-Decl
'John knows what Mary bought.'

b. John-un [Mary-ka mues-ul sassnun-ta(-ko)] an-ta.
John-Top Mary-Nom what-Acc bought-that know-Decl
'John knows that Mary bought something.'

In (21a), the indeterminate phrase is interpreted as an interrogative phrase, bound by a question operator in the embedded C^0. In (21b), on the other hand, the indeterminate phrase is interpreted as an existential quantifier, as the embedded C^0 lacks the question operator. When the indeterminate phrase is not bound by a question operator, it is interpreted as an existential quantifier.

Choi & Lardiere argue that English-speaking learners must learn that an operator feature is not associated with the wh-element in Korean, and that the Q-particle *–ci* (the equivalent of the interrogative particle *KA* in Japanese) is associated with the [+Q]-feature. The differences in the features pertaining to

wh-constructions in Korean and in English which Choi & Lardiere assume are relevant are shown in table 8 (from Choi & Lardiere, 2006a: table 1). Assuming L1 transfer in the initial state of L2 acquisition, English-speaking learners start out with English wh-constructions and they need to 'reassemble' features associated with wh-phrases and C^0 to match the Korean wh-constructions. Their study, then, tested whether learners are successful at reassembling these features.

Table 8: Korean-English differences

Properties	Korean	English
C [uwh]	Weak (no movement)	Strong (movement)
C [+Q]	Question particle (*-ci*)	Null
[wh-operator]	Null (Spec of C)	Part of wh-phrase
D [variable]	Wh-expression	A copy of the wh-phrase

Choi & Lardiere (2006a) tested 79 intermediate and 24 advanced English-speaking learners of Korean and 25 native speakers of Korean. The tasks they used were a translation task and a truth value judgment task. In the translation task, the participants were asked to translate sentences containing an indeterminate phrase. The types of sentences included in the translation task were the same as those in (21). In (21a), participants were expected to translate the indeterminate phrase as an interrogative phrase and in (21b), they were expected to translate it as an existential quantifier. In the truth value judgment task, participants read a story, followed by a test sentence. They were then asked to judge whether the test sentence correctly described what is depicted in the story. An example is given in (22).

(22) [Story]

John and Mary are close co-workers working in the financial division. One day John saw a large and beautiful flower basket delivered to Mary. Mary was not there at the time. John was so curious about it, and then opened a card attached to the flower basket. A love message was written on the card. But there was no name of the sender on the card.

a. John-un nu(ku)-ka Mary-lul cohahan-ta-ko] an-ta.
John-Top who-Nom Mary-Acc like-that know-Decl
'John knows that somebody likes Mary.'
True [X] False [ ] Don't know [ ]

b. John-un nu(ku)-ka Mary-lul cohahan-ci] an-ta.
John-Top who-Nom Mary-Acc like-Q know-Decl
'John knows who likes Mary.'
True [ ] False [X] Don't know [ ]

The results from the translation task and the truth value judgment task are shown in table 9 and table 10, respectively.

Table 9: Accuracy on interpretation of indeterminate phrases: Translation task

	Wh-Q (21a)	Wh-Decl (21b)
Intermediate	69% (325/432)	32% (135/422)
Advanced	85% (122/144)	58% (83/144)
Control	100% (60/60)	100% (60/60)

Table 10: Mean of judgments in the interpretation of indeterminate phrases: Truth value judgment task (=(22))

	Wh-Q (F: -1)	Wh-Decl (T: +1)
Intermediate	-0.09	-0.34
Advanced	-0.78	+0.58
Control	-0.98	+0.84

As can be seen from the tables, the native control group performed as expected. English speakers, however, were less accurate on the interpretations of indeterminate phrases in Korean. Learners in both groups had problems, especially with indeterminate phrases interpreted as existential quantifiers, where they had a tendency to interpret indeterminate phrases as interrogative phrases. This was true even for learners in the advanced group, although some improvement was found compared to the intermediate group. It is reported in Lardiere (2007b) that 4 out of 24 advanced learners showed targetlike responses both from the translation task and the truth value judgment task, suggesting that it is possible for learners to eventually acquire wh-constructions in Korean.

The feature reassembly approach claims that feature reassembly is difficult, due to the complexity involved in reassembling features that already exist in the learners' L1 and thus it takes a long time for learners to achieve a targetlike configuration of features for certain lexical items. Choi & Lardiere argue that these results support the feature reassembly approach.

4.3.2. Yuan (to appear)

Yuan (to appear) tested whether English-speaking learners of Chinese have knowledge of indeterminate phrases interpreted as existential quantifiers. As discussed in §3.2.2, Chinese has a number of conditions in which indeterminate

phrases can be interpreted as existential quantifiers. Yuan investigated whether English speakers have knowledge of these conditions. Yuan follows Li's (1991) proposal by assuming that indeterminate phrases have to be c-commanded by a licensor, exemplified in (23)-(29), in order for indeterminate phrases to be interpreted as existential quantifiers.

(23) Negator *bu* 'not'/*meiyou* 'did not'

a. women meiyou kanjian shenme ren.
we did-not see what person
'We didn't see anyone.'

b. *shenme ren meiyou kanjian women.
what person did-not see us
'No one saw us.'

(24) Conditional *ruguo* 'if'

a. Ruguo women nonghuai-le shenme dongxi, laoshi hui hen
if we damage-Asp what thing teacher will very
shengqi.
angry
'If we damage something, the teacher would be very angry.'

b. *Ruguo women nonghuai-le jisuanji, shenme ren hui hen
if we damage-Asp computer what person will very
shengqi.
angry
'If we damage the computer, someone would be very angry.'

(25) Yes/no question particle *ma*

a. Ni xihuan shei ma?
you like who Qyn
'Do you like anyone?'

b. Shei xihuan ni ma?
who like you Qyn
'Does someone like you?'

(26) A-not-A construction

a. Ni ren-bu-renshi shei?
you know-not-know who
'Do you know anyone?'

b. *Shei ren-bu-renshi ni?
who know-not-know you
(intended) 'Does someone know you?'

c. Shi-bu-shi shei renshi ni?
be-not-be who know you?
'Does someone know you?'

(27) Adverb of uncertainty

a. Li Ming keneng diu le shenm.
Li Ming possibly lose ASP what
'Li Ming has probably lost something.'

b. *Shenme-ren keneng lai le.
someone possibly come Asp
'Someone has probably arrived.'

(28) Inference *le*[70]

a. Zhang Hong aishang shenme-ren le.
Zhang Hong fall-in-love what-person Asp
'Zhang Hong seems to have fallen in love with someone.'

b. Shenme-ren aishang Zhan Hong le.
what-person fall-in-love Zhang Hong Asp
'Someone seems to have fallen in love with Zhang Hong.'

(29) Non-factive verbs

a. Wo renwei ta tou le shenme dongxi.
I think he steal Asp what thing
'I think he stole something.'

b. Ta hai yiwei shenme-ren diu le shoubiao.
He still thought what-person lose Asp watch
'He thought someone had lost his/her watch.'

In all the grammatical examples from (23) to (29), the indeterminate phrase is c-commanded by a licensor, while in the ungrammatical cases it is not, and thus the existential readings of these indeterminate phrases are impossible.

Yuan tested whether L2 learners know the licensing conditions for the existential reading of indeterminate phrases. Participants were English-speaking learners of Chinese whose proficiency levels were beginner (EB) (n=20),

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[70] Li (1992) claims that the existential reading of the indeterminate phrase is possible in Chinese with the inference *le*, assuming the VP internal subject hypothesis and that *le* is in the INFL position. The clausal structure assumed is the following, adopting Aoun and Li's (1989) proposal concerning the constituent structure of Chinese:

(i) $[_{IP}\ [_{VP}$ NP1 $[_{VP}$ V NP2]] *le*]

Both the subject NP (NP1) and the object NP (NP2) are c-commanded by *le* in (i).

post-beginner (EPB) (n=20), intermediate (EI) (n=28), post-intermediate (EPI) (n=25) and advanced (EA) (n=14). Twenty native speakers of Chinese also participated as controls (NS).

Seven conditions exemplified in (23) through (29) were tested using an acceptability judgment task. Grammatical, ungrammatical and control sentences were included to see whether L2 learners distinguish cases in which existential readings of indeterminate phrases are licensed from cases in which they are not.[71] The following scale was provided for participants to rate their judgments:

(30)

-3	-2	-1	0	+1	+2	+3
completely unacceptable	likely to be unacceptable	possibly unacceptable	I don't know	possibly acceptable	likely to be acceptable	completely acceptable

Table 11 summarizes the results. It shows that most learner groups were found to be significantly different from the control group for grammatical and/or ungrammatical sentences. At the advanced level, the results were not significantly different from the control group for four out of seven conditions.

[71] Yuan (to appear) does not provide examples of control sentences, but he states that they are the same as their experimental counterparts in terms of their sentence structure and the vocabulary used. The only difference is that the control sentences lacked an indeterminate phrase.

Table 11: Results – statistical results compared to the control group

Licensors	EB	EPB	EI	EPI	EA
Negator	sig	sig	sig	**not sig**	**not sig**
Conditional *ruguo* 'if'	sig	sig	sig	sig	**not sig**
Yes/no question particle *ma*	sig	sig	sig	sig	sig
A-not-A construction	sig	sig	sig	sig	sig
Adverb of uncertainty	sig	sig	sig	sig	**not sig**
Inference *le*	sig	sig	sig	sig	sig
Non-factive verb	sig	sig	sig	sig	**not sig**

The advanced learners, however, were not able to fully reach the native speaker level.[72] Yuan proposes that the difficulties learners face with the yes/no question particle *ma*, the A-not-A construction, and inference *le* as licensors for indeterminate phrases are caused by the fact that English does not have lexical items or constructions equivalent to these. Other licensors, on the other hand, are used as licensors in English for NPIs, as shown in (31).

(31) a. Jane does <u>not</u> like **anyone**. (negator)

b. I <u>doubt</u> that Jane likes **anyone**. (non-factive verb)

c. Jane <u>hardly</u> likes **anyone**. (adverb)

d. <u>If</u> Jane likes **anyone**, she will tell her mother. (conditional *if*)

Yuan speculates that L2 learners may not be able to establish the licensor-licensee

[72] Except for the case with the yes/no question particle *ma*, experimental items had grammatical and ungrammatical pairs. Yuan gives statistical analyses for these pairs. He found that the advanced learner group made a significant distinction between the grammatical and ungrammatical pairs in all conditions, except for the condition with the inference *le*. This implies that learners made targetlike distinctions between possible sentences and impossible sentences, suggesting that knowledge of dependency between an indeterminate phrase and the licensor may be in place.

relationship if the licensor does not exist in the learners' L1.

In his study, Yuan sets out to investigate the validity of the Interface Hypothesis (e.g. Sorace, 2000, 2004), which claims that interfaces are vulnerable areas in interlanguage grammars. Given the results, he then concludes that syntax-semantics is "partially" impaired in interlanguage grammars.[73] However, this conclusion is not warranted since he did not, in fact, test the interpretations of indeterminate phrases in Chinese. We do not know why learners accepted or rejected these sentences, and whether it is indeed the case that those who showed targetlike judgments interpreted the indeterminate phrases as existential quantifiers. To investigate the syntax-semantics interface, there must be a test targeting learners' interpretations of indeterminate phrases.

Another point which should be mentioned is that, assuming that advanced learners are unable to acquire some licensors for indeterminate phrases, it is still premature to conclude that these licensors cannot be acquired. As Yuan argues, licensors which are problematic to L2 learners (the yes/no question particle *ma*, the A-not-A construction, and inference *le*) are absent in learners' L1. English speakers, thus, must first acquire these lexical items/constructions and their semantic contributions to indeterminate phrases. This may require a lot of time and exposure. In order to argue that some properties are impaired in interlanguage grammars, I believe, as previously mentioned for Hawkins and Hattori (2006), near-native speakers should be tested to determine whether these licensors are permanently problematic for L2 learners of Chinese.

[73] Antonella Sorace (p.c, November 2006) pointed out to me that the Interface Hypothesis has claimed that the syntax-pragmatics interface is a vulnerable domain in interlanguage grammars, but that it does not predict that the syntax-semantics interface exemplified in wh-constructions is also a vulnerable domain in L2 acquisition. See also Tsimpli & Sorace (2006).

4.3.3. Summary and implications for this study

In both Choi & Lardiere's and Yuan's studies, the non-quantificational nature of indeterminate phrases in Korean and Chinese was tested. Although, as mentioned above, there are some questions about Yuan's conclusions, it seems from both studies that this property of indeterminate phrases is problematic for L2 learners. In Choi & Lardiere's study, L2 learners of Korean tended to interpret wh-elements in Korean as wh-interrogative phrases, even when the target interpretation should be existential. In Yuan's study, learners were unaware of some licensing conditions of existential readings of indeterminate phrases in Chinese.

Choi & Lardiere's and Yuan's studies are directly relevant to the present study. In terms of the wh-construal parameter, L2 learners of Chinese and Korean must acquire the property that wh-elements in these languages are indeterminate phrases, lacking quantificational force. Quantificational force is determined by other elements in the sentence, and elements which determine quantificational force are subject to parameterization. Chinese, Korean, and Japanese all differ, at least partially, with regard to how quantificational force is determined. In Choi & Lardiere, it was found that English speakers have difficulties acquiring the conditions which license the existential readings of indeterminate phrases, but some advanced learners were able to acquire targetlike interpretations. In Yuan's study, on the other hand, learners had difficulties acquiring some conditions which license existential readings, and he concludes that acquiring the targetlike interpretations of Chinese indeterminate phrases is impossible.

It should be pointed out that Choi & Lardiere's study does not pertain to underdetermination, since the interpretations of the test items they incorporated in their experiments can potentially be derived from the L2 input. For example, on test items used in Choi & Lardiere's study such as the one repeated below in (32), some advanced learners managed to show targetlike interpretations.

(32) John-un [nu(ku)-ka Mary-lul cohahan-ko] an-ta.
John-Top who-Nom Mary-Acc like-that know-Decl
'John knows someone likes Mary.'

Sentences like (32) do not present underdetermination because it is possible that learners are exposed to sentences similar to (32) in the L2 input. If, for example, a sentence like (32) is produced with an appropriate context, i.e. a liker of Mary is unknown, learners can infer what (32) means. Thus, explicit positive evidence may be available, so even though there are learners who showed targetlike interpretations of indeterminate phrases in Korean, we cannot exclude the possibility that they did so based on such evidence.[74] As discussed in §2.4, in examining the question of whether or not learners can ultimately acquire the wh-constructions of a different parametric value, evidence of successful acquisition must be demonstrated with knowledge that is underdetermined in the input. Therefore, Choi & Lardiere's test sentences are problematic in this respect.

In the present dissertation, interpretations of Japanese indeterminate phrases (that are underdetermined in the input) are examined. I examine whether targetlike interpretations of Japanese indeterminate phrases are in principle possible for L2

[74] Most test items used in Yuan's study, I believe, present a case of underdetermination. Except for the yes/no question particle condition, he included grammatical and ungrammatical sentences for each condition, such as those shown below in (i) from the negation condition.

(i) a. women meiyou kanjian shenme ren.
we did-not see what person
'We didn't see anyone.'
b. *shenme ren meiyou kanjian women.
what person did-not see us
'No one saw us.'

If learners come to know the distinction between the two types of sentences exemplified in (i), their knowledge of Chinese indeterminate phrases can be said to be underdetermined. This is because there is no positive evidence in the input to inform learners that an indeterminate phrase can occur in the object position, but it cannot occur in the subject position, and thus (ia) is grammatical and (ib) is ungrammatical.

learners and whether, as found in Choi & Lardiere and Yuan's studies, such interpretations are hard to acquire.

4.4. L2 Processing study: Lieberman, Aoshima, and Phillips (2006)

In this section, I summarize a study conducted by Lieberman, Aoshima, and Phillips (2006), who investigated ambiguity resolutions in Japanese wh-constructions by English-speaking learners of Japanese.

The processing of fronted wh-phrases has been actively investigated in the literature (e.g. Fodor, 1978; Crain & Fodor, 1985; Stowe, 1986; Frazier & Clifton, 1989; Frazier & Flores d'Arcais, 1989; de Vincenzi, 1991). The fronted wh-phrase creates a gap, as illustrated in (33). The dependency created by a moved wh-phrase and its gap is called the filler-gap dependency, where the fronted wh-phrase is called a *filler*.

(33) What did Mary buy <gap>?

Readers must identify the position of the gap, and based on previous studies, researchers have determined that readers expect a gap at the earliest possible site. Readers' expectations are evidenced by a sentence like (34). The first possible position for the fronted wh-phase in (34) is encountered after the verb *force*. Upon encountering *us* at this potential gap position, reading time slows down.

(34) Who$_1$ did the children force ^ us to sing the songs for <gap$_1$>?

Miyamoto & Takahashi (2003) point out that Japanese wh-constructions exemplify something similar to the filler-gap dependency in wh-movement

languages. Japanese shows a dependency between the indeterminate phrase and the Q-particle, as discussed in the previous chapter. They investigated whether native speakers of Japanese show the same locality bias between the indeterminate phrase and the Q-particle. In other words, they examined whether, in Japanese, the occurrence of the indeterminate phrase triggers a search for a Q-particle, and whether native speakers of Japanese anticipate finding the Q-particle at the earliest possible site, just as the gap is anticipated at the first possible position by speakers of a wh-movement language. Consider the following example in (35) and (36) from Miyamoto & Takahashi (2003, 13: (9)).

(35) Senmu-ga donna-pasokon-o tukatteiru-to kakarichoo-ga
director-Nom what-kind-computer-Acc using-is-that supervisor-Nom
itta-no?
said-NO (=KA)
'What kind of computer did the supervisor say the director is using?'

(36) Senmu-ga donna-pasokon-o tukatteiru-ka kakarichoo-ga
director-Nom what-kind-computer-Acc using-is-KA supervisor-Nom
kiita-no?
asked-NO (=KA)
'Did the supervisor ask what kind of computer the director is using?'

The first possible grammatical position for the Q-particle, *KA*, is after the verb *tukatteiru* 'is using'. If the same locality bias exists for the dependency between the indeterminate phrase and the Q-particle, Japanese native speakers are predicted to show a slower reading time at the embedded complementizer region in (35) compared to that in (36). The results from their study confirm their

predictions and Miyamato & Takahashi conclude that there is a locality bias in the processing of wh-questions in Japanese as well.[75]

Lieberman et al. (2006) tested whether L2 learners show the same locality bias in processing wh-questions in Japanese. The participants of their study were English speakers. As exemplified above, although in both English and Japanese wh-phrases trigger a search for a certain constituent in the sentence in order to satisfy the dependency relation, the type of constituents that are sought after is different. Thus, Lieberman et al. argue that there is no basis in the learners' L1 for the indeterminate phrase to trigger a search for a Q-particle. To the extent that learners show the same processing bias, they argue that it must come from the same processing mechanism, although surface manifestations differ in the two languages.

Participants were 18 English-speaking learners of Japanese, who considered themselves to be advanced learners, and 24 native speakers of Japanese. The task used in the experiment was a sentence generation task, in which participants were presented with a fragment of a sentence consisting of a sequence of four phrases, one of them being an indeterminate phrase.[76] After reading the lead-in, they had to complete the sentence. There were three types of experimental sentences, which are given in (37).

(37) a. Dative I

Sensei-wa	seito-ga	tosyositu-de	dare-ni …
teacher-Top	student-Nom	library-Loc	who-Dat …

[75] Miyamoto & Takahashi also found a slow-down at the region following the embedded complementizer region, namely the matrix subject. They consider this as a "spill-over" effect.
[76] This task is a simplified version of the test used in Aoshima, Phillips, & Weinberg (2004).

b. Dative II

Sensei-ga seito-ga tosyositu-de dare-ni …

teacher-Nom student-Nom library-Loc who-Dat …

c. Nominative

Dare-ga sensei-ni seito-ga tosyositu-de …

who-Nom teacher-Dat student-Nom library-Loc …

(37a) (Dative I) and (37b) (Dative II) both have an indeterminate phrase in the embedded clause, while, in (37c) (Nominative), the indeterminate phrase is in the matrix clause.[77] The two former types can either have *KA* in the embedded clause or the matrix clause, as shown in (38) and (39), respectively. In the Nominative type, *KA* can only appear in the matrix clause, as the indeterminate phrase is in the matrix clause. This is because if *KA* is in the embedded clause and the indeterminate phrase in the matrix clause, the former fails to c-command the latter, which results in ungrammaticality, as shown in (40b).

(38) Dative I (Target)

a. Sensei-wa [seito-ga tosyositu-de dare-ni manga-o

teacher-Top student-Nom library-Loc who-Dat comic-book-Acc

ageta-ka] sitteiru.

gave-KA knows

'The teacher knows who the student gave a comic book to in the library.'

[77] The difference between Dative I and Dative II is the case-marker used for the matrix subject. The matrix subject is most natural with a topic marker, *-wa*, but ambiguous between the matrix subject and the embedded subject, due to the possibility of scrambling. The nominative marker, *-ga*, used in the matrix subject is less natural but unambiguous. It appears that the two types of case-markers are thus included in case naturalness and the ambiguity of the case-marker on the matrix subject becomes relevant.

b. Sensei-wa [seito-ga tosyositu-de dare-ni manga-wo
teacher-Top student-Nom library-Loc who-Dat comic-book-Acc
ageta-to] itta-no?
gave-that said-NO (= KA)
'Who did the teacher say the student gave a comic book to in the library?'

(39) Dative II (Target)

a. Sensei-ga [seito-ga tosyositu-de dare-ni manga-wo
teacher-Nom student-Nom library-Loc who-Dat comic-book-Acc
ageta-ka] sitteiru.
gave-KA know
'The teacher knows who the student gave a comic book to in the library.'

b. Sensei-ga [seito-ga tosyositu-de dare-ni manga-wo
teacher-Nom student-Nom library-Loc who-Dat comic-book-Acc
ageta-to] itta-no?
gave-that said-NO (= KA)
'Who did the teacher say the student gave a comic book to in the library?'

(40) Nominative

a. Dare-ga sensei-ni [seito-ga tosyositu-de manga-wo
who-Nom teacher-Dat student-NOM library-Loc comic-book-Acc
ageta-to] itta-no?
gave-that said-NO (=KA)
'Who told the teacher who the student gave a comic book to in the library?'[78]

b. *Dare-ga sensei-ni [seito-ga tosyositu-de manga-wo
who-Nom teacher-Dat student-NOM library-Loc comic-book-Acc
ageta-KA] itta.
gave-KA said

The results showed that the control group supplied at least one Q-particle per sentence at 96.6%, while L2 group supplied them at 73.2%. Thus, more particle omission was found from the L2 group and the difference between groups was significant ($p. < .001$).

The following table summarizes at what position a Q-particle appears, when supplied. As is clear from the table, the results from the control group and the L2 group were strikingly similar for all conditions. L2 learners, like native speakers, showed a strong preference for having a Q-particle in the embedded clause, when possible. When it is not, as in the Nominative condition, they preferred the Q-particle to be in the matrix clause. The results led Lieberman et al. to suggest that L2 learners of Japanese use the same locality bias as native speakers and that L2 learners are guided by the same processing mechanism as L1 speakers.

[78] This is the translation provided in Lieberman et al. However, I am not certain whether the translation given here is accurate for the interpretation of (40a). Rather, (40a) should be translated as the following:

(i) 'Who told the teacher that the student gave *someone* (=pro) a comic book in the library?'

Table 12: Lieberman et al. (2006) results

		Q-particle					
		Embedded		Matrix		Both	
Condition	Group	n	%	n	%	n	%
Dative I	NS	116	100	0	0	0	0
	L2	44	91.6	2	4.2	2	4.2
Dative II	NS	116	99.1	0	0	1	0.9
	L2	48	96	1	2	1	2
Nominative	NS	7	6.1	99	86.8	8	7
	L2	9	15.5	45	77.5	4	6.9

The results from the Lieberman et al. study show a clear resemblance between L2 learners' performance and native speakers. What the results show is that when the indeterminate phrase is in the embedded clause, learners prefer to interpret the sentence (or fragment of a sentence) as an embedded wh-question, and when the indeterminate phrase is in the matrix clause, they prefer to interpret it as a matrix wh-question. Learners' interpretations suggest that they are utilizing structural information, which the association between the indeterminate phrase and the Q-particle depends upon, rather than simply having a strategy such as attaching a Q-particle after the first verb.

What is most relevant to the present dissertation from the Lieberman et al. study is the result which suggests that learners are aware of how to construct embedded and matrix wh-questions. This implies that they are aware of the scope marking strategy in Japanese. However, because the task they used only tested learners' production of wh-questions, it is still not clear whether learners have

targetlike interpretations of wh-constructions in Japanese when presented with wh-questions. The present study hopes to provide answers to these questions regarding the comprehension of wh-questions in L2 Japanese.

4.5. Summary: Chapter 4

In this chapter, previous studies which are relevant to this dissertation were presented. In §4.1, previous studies investigating the syntax-semantics interface in interlanguage grammars were discussed. The two studies presented suggest that the acquisition of new morphological and/or syntactic properties leads to subtle interpretative contrasts which are not obvious from the input. The present study further investigates this issue. Since the two languages, Chinese and English, present morphosyntactic differences from the TL, Japanese, it is of interest to see whether learners of Japanese are able to achieve targetlike [form-meaning] mappings in acquiring Japanese wh-constructions.

In §4.2, studies pertaining to the L2 acquisition of wh-movement were presented. The question of whether or not genuine wh-movement can be acquired essentially addresses the same question as the present dissertation; that is, whether or not the wh-construal parameter can be reset. As discussed above, there are many conflicting conclusions about whether L2 learners are able to acquire true wh-movement. As is pointed out above, researchers need to be cautious about what properties they include to test wh-movement in L2 grammars. Knowledge of Subjacency, for example, is not a reliable test for the investigation of the acquisition of wh-movement.

In §4.3, recent studies investigating the interpretations of indeterminate phrases in Chinese and Korean were presented. The two studies discussed in this chapter showed that L2 learners have difficulties acquiring interpretations of indeterminate phrases. These results suggest that parameter resetting (or feature

reassembly) is difficult in L2 acquisition in this domain. The present dissertation examines the same issue by investigating the interpretations of Japanese indeterminate phrases by L2 learners.

The Lieberman et al. study demonstrated that the processing of wh-questions in English-Japanese interlanguage shows the same locality bias as in native grammars. Their study suggests that L2 learners are aware of the dependency between the indeterminate phrase and the Q-particle. This is one of the issues investigated in the present dissertation and we will see whether their finding is also supported with the results of the present study.

In the next chapter, I discuss issues for investigating the resetting of the wh-construal parameter by Chinese- and English-speaking learners.

Chapter 5: Acquiring Japanese wh-constructions

As we saw in chapter 3, the three languages, Chinese, English, and Japanese, each employ a different strategy for establishing a relationship between an indeterminate phrase (wh-phrase) and an operator. The language variation exemplified here is assumed to come from the parameterization of wh-construal, following Watanabe (1992a, 1992b), Aoun & Li (1993), Cole & Hermon (1998), and Tsai (1999).

Resetting of the wh-construal parameter is considered from the point of view of the feature reassembly approach, as the relevant features are also present in learners' L1s as well as in their L2. Table 13 below, repeated from chapter 3, summarizes the feature assembly relevant to the present dissertation.

Table 13: Wh-construal parameter: Feature assembly

Properties	Japanese	Chinese	English
[+Q]-feature	*KA*	*ne*, Ø	Ø
[+∀]-feature	*MO*	*dou*, Ø	*every-*, *-ever*
Operators	Ø	*dou*, Ø	wh-phrases, *every-*, *-ever*
Variable	Ind. phrases	Ind. phrases	trace/copy of the wh-phase

In this chapter, I discuss issues relating to parameter resetting in the acquisition of Japanese wh-constructions. In §5.1, I examine the evidence of parameter resetting, and consider test sentences that should allow us to examine whether or not the parameter has been reset. Then I discuss underdetermination, arguing that interpretations of the crucial sentences are not derivable from explicit positive evidence, negative evidence, or indirect negative evidence. In §5.2, I discuss the role of UG in resetting of the wh-construal parameter. In §5.3, I examine the role

of L1 in parameter resetting, since it is possible that only one of the L1 groups is able to reset the parameter. In §5.4, I discuss the predictions made if parameter resetting fails, and in §5.5 I summarize this chapter.

5.1. Resetting the wh-construal parameter

Learners must acquire the following properties of the wh-constructions in Japanese to demonstrate successful parameter resetting:

(1) a. Japanese wh-elements are non-quantificational.
b. Quantificational force is determined by Q-particles.
c. Association between the indeterminate phrase and the Q-particle is constrained by the locality condition.

The properties in (1a) and (1b) would seem acquirable by positive evidence in the form of sentences such as those in (2).

(2) a. Dare-ga ringo-o tabemasita-**ka**?
who-Nom apple-Acc ate-KA
'Who ate an apple?'
b. Dare-**ka**-ga ringo-o tabemasita.
who-KA-Nom apple-Acc ate
'Someone ate an apple.'
c. Dare-**mo**-ga ringo-o tabemasita.
who-MO-Nom apple-Acc ate
'Everyone ate an apple.'

The sentences in (2) demonstrate that the wh-elements in Japanese show varying

quantification depending on which Q-particle they occur with. As discussed in chapter 3, a Q-particle, *KA* or *MO*, is always present in Japanese sentences involving indeterminate phrases. Therefore, since *KA* and *MO* are overt, learners may use these Q-particles as evidence that Japanese wh-constructions involve non-quantificational indeterminate phrases and Q-particles associated with them.

Knowing what the sentences in (2) mean, however, does not necessarily imply that learners have acquired properties (1a) and (1b). It is possible that learners simply analyze *dare* as meaning the interrogative 'who', *dareka* as 'someone', and *daremo* as 'everyone', without decomposing the phrases into two parts, the indeterminate phrase and the Q-particle. In fact, this is what learners are typically taught in the classroom.[79] Therefore, when we test learners' knowledge of indeterminate phrases and Q-particles, we must look at the types of sentences in which the relationship between indeterminate phrases and Q-particles is more subtle. The test cases I suggest to investigate the resetting of the wh-construal parameter are given in the next two subsections.

As for the property in (1c), in §5.2, I argue that there is no positive evidence of the locality condition. If this is the case, knowledge of the locality condition must be derived from UG, in order to reset the wh-construal parameter.

5.1.1. Requirement for a Q-particle

The first test case for learners' knowledge of the Japanese wh-construal is the fact that indeterminate phrases require a Q-particle/operator, which binds them. This requirement is not generally taught in the classroom and can be tested by investigating the contrast shown in (3). The sentence in (3a) is grammatical as it has an operator associated with the Q-particle, which binds the indeterminate

[79] *Daremo* is typically taught as an NPI, "no one", with negation. It is rarely taught as "everyone" without negation.

phrase in the embedded clause, while (3b) is ungrammatical, since it lacks a Q-particle. Therefore, if learners know (3b) is ungrammatical, they must know that indeterminate phrases are non-quantificational, and therefore require a Q-particle.[80]

(3) a. Mary-wa [John-ga nani-o katta-ka] iimasita.
Mary-Top John-Nom what-Acc bought-KA said
'Mary said what John bought.'

b. *[Mary-wa [John-ga nani-o katta-to] iimasita.
Mary-Top John-Nom what-Acc bought-that said

A similar example is given in (4). (4a) is grammatical since there is a Q-particle, *MO*, while (4b) is not, because it lacks a Q-particle.

(4) a. Mary-wa [dare-ga kaita hon]-mo yomimasita.
Mary-Top who-Nom wrote book-MO read
'Mary read books everyone wrote.'

b. *Mary-wa [dare-ga kaita hon]-o yomimasita.
Mary-Top who-Nom wrote book-Acc read

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[80] There is a possibility that learners think that the sentences in (3) (and (4) below) are ungrammatical because these sentences are missing an interrogative Q-particle in the matrix clause. The sentence in (3b), for example, may be judged as ungrammatical because learners think that it should be like (i) below with the Q-particle *KA*.

(i) Mary-wa [John-ga $nani_1$-o katta-to] iimasita-ka?
Mary-Top John-Nom what-Acc bought-that said
'What did Mary say that John bought?'

As we will see in §6.5, for this type of sentence, learners were explicitly told that all the sentences were statements, not questions, and that the test sentences were to be judged whether they were possible statements in Japanese.

If learners become able to distinguish the grammatical cases from the ungrammatical ones in (3) and (4), it would demonstrate knowledge of a dependency between the indeterminate phrase and the Q-particle.

5.1.2. Scope interpretations

Another test case involves the scope of indeterminate phrases. As discussed in the previous chapter, the scope of indeterminate phrases is determined by the position of the Q-particle. Again, this fact is not taught in the classroom. The contrast shown in (5) illustrates how the position of a Q-particle is a determining factor for the scope of the indeterminate phrase. (5a) is a yes/no question, and (5b) is a matrix wh-question. The crucial difference between the two questions is the operator associated with *KA* in the embedded clause in (5a). Since the indeterminate phrase in the embedded clause in (5a) is bound by the operator in the embedded clause, it can take embedded scope. The matrix Q-particle, *KA*, is interpreted as a yes/no question particle, as the Q-particle is not associated with an indeterminate phrase. The indeterminate phrase in the embedded clause in (5b), on the other hand, takes matrix scope, as there is no Q-particle in the embedded clause, and therefore, the Q-particle in the matrix clause gets associated with the indeterminate phrase. If learners have knowledge of the dependency between the indeterminate phrase and the Q-particle, the two questions are interpreted differently. If not, the two become indistinguishable.

(5) a. Yes/no question

Mary-wa [John-ga $nani_1$-o katta Op_1 ka] iimasita-ka?

Mary-Top John-Nom what-Acc bought-KA said-KA

'Did Mary say what John bought?'

b. Matrix wh-question

[Mary-wa [John-ga nani$_1$-o katta-to] iimasita Op$_1$ ka]?

Mary-Top John-Nom what-Acc bought-that said-KA

'What did Mary say John bought?'

The indeterminate phrases in (6) show different scope interpretations due to the presence of *MO* in (6a) and its absence in (6b). In (6a), the Q-particle, *MO*, can be associated with the indeterminate phrase in the CNP, and the sentence-final *KA* in this case is interpreted as a yes/no question particle. (6b), on the other hand, is interpreted as a matrix wh-question as the only Q-particle in the sentence is the interrogative particle *KA*. This sentence type examines whether learners are able to interpret *MO* as a Q-particle. If not, *MO* may be interpreted as *also*, which results in a matrix wh-question, shown as an ungrammatical interpretations for (6a).

(6) a. Mary-wa [[$_{NP}$ [$_{CP}$ dare-ga kaita] hon]-mo] yomimasita-ka?

Mary-Top who-Nom wrote book-MO read-KA

'Did Mary read the books everyone wrote?'

*'Who(x), Mary *also* read the book x wrote?'

b. Matrix wh-question

[Mary-wa [$_{NP}$ [$_{CP}$ dare-ga kaita] hon]-o yomimasita-ka]?

Mary-Top who-Nom wrote book-Acc read-KA

'Who(x), Mary read the book x wrote?'

In both (5) and (6), the Q-particle and the indeterminate phrase are associated non-locally. The position at which the Q-particle is found determines the scope of the indeterminate phrase. Sentences such as these should reveal whether L2

learners know about the dependency between the indeterminate phrase and the Q-particle, and how the closest one is associated with the indeterminate phrase.

5.1.3. Underdetermination

As discussed in §2.4, the claim for successful parameter resetting must be demonstrated by L2 knowledge that is underdetermined. The key aspect in the present study is that, although there is positive evidence providing information about wh-constructions in Japanese, i.e., the presence of Q-particles, evidence for the appropriate interpretations for the specific constructions tested in the experiment, described in §5.1.1 and §5.1.2, is lacking in L2 input, presenting a case of underdetermination. The mere presence of the Q-particle does not necessarily lead to targetlike interpretations; thus, if learners come to attain such interpretations, it suggests true parameter resetting.

In order to examine the issue of underdetermination, explicit positive evidence,[81] negative evidence, and indirect negative evidence will be considered, as they can be possible candidates motivating the target interpretations. In this section, I argue that such evidence is not available or useful in the cases under consideration.

Let us first consider the case in §5.1.1, shown in (3) and (4), which are statements. There seems to be no positive evidence for the requirement that an indeterminate phrase and a Q-particle must co-occur in Japanese. This is because evidence that (3b) and (4b) are ungrammatical is not available in PLD, since these

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[81] By explicit positive evidence, I mean a kind of evidence that informs learners what the sentence means. For example, in sentences such as (i), if it is uttered in a context in which everyone in the discourse domain completed eating an apple, a listener can infer what (i) means, without sufficient knowledge of the dependency between *dare* 'who' and *MO*.

(i) dare-mo-ga ringo-o tabeta.
who-MO-Nom apple-Acc ate
'Everyone ate an apple.'

sentences are non-occurring. Learners are also not instructed about their ungrammaticality. Learners may, however, find out that an indeterminate phrase must occur with a Q-particle based on indirect negative evidence. That is, learners never hear an indeterminate phrase without a Q-particle in input, and thus, they could possibly arrive at the conclusion that an indeterminate phrase must co-occur with a Q-particle. Although this may be a possibility, I think that the input that they are exposed to is too complex for them to arrive at such a generalization. For example, the sentence-final interrogative Q-particle is often omitted, substituted by a rising intonation, as in (7).

(7) Dare-ga tsuita?
Who-Nom arrived
'Who arrived?'

In addition, the Q-particle and the indeterminate phrase can appear a few clauses apart from each other, as in (8).

(8) Mary-wa [[John-ga nani-o nusum-are-ta-to] omotta kara]
Mary-Top John-Nom what-Acc steal-Pass-Past-that think because
keisatsu-ni tsuukokusita-ka sitteiru.
police-Dat report-KA know
(lit) 'Mary knows what$_1$ John reported to the police because he thought that someone stole t_1 from him.'

Finally, in colloquial speech, *KA* is sometimes reduced to *–n* (a variant of *–no*, discussed in chapter 3), as shown in (9).

(9) John-wa nani-o katta-n-da-roo.
John-Top what-Acc bought-NO-be-Mod
'I wonder what John bought.'

Input such as (7)-(9) makes the association between the Q-particle and the indeterminate phrase unclear, and thus, it would be difficult, based on indirect negative evidence, to arrive at the conclusion that an indeterminate phrase must occur with a Q-particle.

The second case, in (5) and (6), is in the form of questions and deals with scope interpretations. If learners are exposed to positive evidence that enables them to know that, for example, (5a) is a yes/no question and (5b) is a wh-question, they might be able to arrive at the target scope interpretations without actually resetting the parameter. However, I maintain that this is not possible here either. The reason is, as Hamblin (1958) pointed out, questions have no truth value. In statements such as the sentence in (10), learners are able to determine what the sentence means from the context. If (10) is uttered in a context in which Mary had books written by different people and she read all of them, the listener can infer what (10) means based on explicit positive evidence.

(10) Mary-wa [dare-ga kaita hon-mo] yomimasita.
Mary-Top who-Nom wrote book-MO read
'Mary read all the books everyone wrote.'

In questions such as (11), however, in the same situation, it is not clear what the speaker intended to ask by uttering (11). It is equally possible for him or her to mean (11a), the target interpretation, or (11b), a non-target.

(11) Mary-wa [dare-ga katta hon-mo] yomimasita-ka?
Mary-Top who-Nom bought book-MO read-KA
a. 'Did Mary read all the books everyone wrote?'
b. #'Who(x), Mary *also* read the book x wrote?'

The locality condition leads to the interpretation in (11a), the indeterminate phrase being associated with *MO* rather than *KA*. The contextual information alone, however, does not provide evidence to disambiguate potential interpretations.

Another example is given in (12). In the situation in (12), asking (12a) or (12b) is equally plausible.

(12) [Situation]
Billy heard that John went shopping yesterday with Mary. Later, Billy heard from someone that Mary told Susan what John bought. When he saw Susan, Billy asked,

a. Yes/no question
Mary-wa [John-ga nani_1-o katta-ka Op_1] iimasita-ka?
Mary-Top John-Nom what-Acc bought-KA said-KA
'Did Mary say what John bought?'
b. Matrix wh-question
[Mary-wa [John-ga nani_1-o katta-to] iimasita-ka Op_1]?
Mary-Top John-Nom what-Acc bought-that said-KA
'What did Mary say John bought?'

The example in (12) again illustrates that the situation plays a small role in fixing the interpretations of questions. It seems that it is impossible (or extremely

difficult, at least) for the listener to infer exactly what questions such as (11) and (12) mean from the situation. Without knowledge of the locality condition, again, the association between the indeterminate phrase and the Q-particle *KA* is difficult to achieve.

One may consider the possibility that a question-answer pair provides positive evidence for the scope interpretations. This type of evidence, again, does not appear to be reliable. For example, the question in (13) is a yes/no question, but it may be followed by answers such as (14a), (14b), and (14c). All these answers are acceptable in conversation, but they do not demonstrate a targetlike scope interpretation for the question in (13).

(13) Do you know who passed the test yesterday?

(14) a. Mary.

b. I am sure Mary passed because she is the smartest in the class.

c. There was a test yesterday?

In addition, consider the situation in which, for example, learners misinterpret (15), a matrix wh-question, as a yes/no question, such as (13). They naturally hear many responses similar to that in (15a), which gives an appropriate response. However, the response in (15a) is also *pragmatically* appropriate for a yes/no question (e.g., Do you know who passed the test yesterday?). Therefore, if learners have already misinterpreted (15) as a yes/no question, hearing answers such as (15a) does not force a reanalysis of questions from a yes/no question to a wh-question.

(15) Who do you know passed the test yesterday?

a. Mary.

b. #Yes, I do.

As can be seen, pragmatics can come into play between what is actually asked in the question and what is stated in the answer; therefore, language learners, I believe, do not receive reliable evidence that leads to target scope interpretations.

Another possible source of target scope interpretations might come from negative evidence, in other words, by being explicitly told what the sentence means or does not mean.[82] For example, let us consider a scenario in which learners misinterpret (6a) as a matrix wh-question. Being asked (6a), repeated in (16a), learners may give the answer in (16b). (16b) may be considered to be an inappropriate answer, and learners may be told that questions like (16a) are yes/no questions. However, as was the case in the examples from (13) and (14), (16b) is pragmatically acceptable, as it presupposes an affirmative answer (a *yes* response) to (16a). Therefore, it is unlikely that learners receive such negative evidence.

(16) a. Mary-wa [$_{CP}$ John-ga nani-o katta-ka] iimasita-ka?
Mary-Top John-Nom what-Acc bought-KA said-KA
'Did Mary say what John bought?

b. Kutsu.
shoes
'Shoes.'

In this section, I argued that targetlike interpretations of the crucial sentences

[82] The effectiveness of negative evidence in L2 acquisition has been controversial. See, for example, Schwartz & Gubala-Ryzak (1992), Slabakova (2002), and White (1991).

cannot be achievable by relying on explicit positive evidence, indirect negative evidence, or negative evidence. Thus, if targetlike interpretations are achieved, it suggests parameter resetting, despite underdetermination.

5.2. Parameter resetting and the role of UG

The sentence types exemplified in §5.1.1 and §5.1.2 are crucial for testing whether learners acquire the dependency between the indeterminate phrase and the Q-particle. This relates to the properties in (1), given in §5.1, which are repeated below in (17).

(17) a. Japanese wh-elements are non-quantificational.
b. Quantificational force is determined by Q-particles.
c. Association between the indeterminate phrase and the Q-particle is constrained by the locality condition.

The property that links the two elements, an indeterminate phrase and a Q-particle, is (17c). For example, for sentences such as (18) and (19), the interpretations of indeterminate phrases are determined by which Q-particle is structurally closer to the indeterminate phrase.

(18) Mary-wa [John-ga nani$_1$-o katta Op$_1$ ka] iimasita-ka?
Mary-Top John-Nom what-Acc bought KA said-KA
a. 'Did Mary say what John bought?'
b. *'What did Mary say whether John bought?'

(19) Mary-wa [dare$_1$-ga katta hon Op$_1$ mo] yomimasita-ka?
Mary-Top who-Nom bought book MO read-KA

a. 'Did Mary read all the books everyone bought?'

b. *'Who (x), Mary read the books x bought?' (matrix question)

c. #'Who (x), Mary also read the books x bought?' (matrix question)

In the last section, I argued that targetlike interpretations, which are derived from the property in (17c), cannot be learned from explicit positive evidence, indirect negative evidence, or negative evidence. The source of the interpretation must be the locality condition, knowledge that must be drawn from UG.[83] Although locality conditions are considered universal, they are not manifested in the same way in the learners' L1s, since Chinese and English do not show dependency between the indeterminate phrase and a Q-particle. Therefore, learners must access this principle of UG, if targetlike interpretations are achieved.

5.3. L1 differences

In terms of how the features of [+Q] and [+∀] are associated, parameter resetting involves reassembling these features, which are present in learners' L1, to *KA* and *MO*, adopting the view of the feature reassembly approach (Lardiere, 2005, 2007; Choi & Lardiere, 2006a, 2006b). Failure to reassemble these features means failure in parameter resetting.

I assume that the learners' L1 grammar transfers as the initial state of interlanguage grammars (e.g., White, 1985, 1989; Schwartz & Sprouse, 1994, 1996). Thus, it is assumed that learners transfer the L1 feature assembly. Based on how the features [+Q] and [+∀] are assembled in their L1, English-speaking

[83] The involvement of a locality condition that is universal is also clear from L1 acquisition, as there seems to be no positive evidence in input, which excludes the interpretation in (18b), (19b), and (19c).

learners must learn the following two aspects of Japanese wh-constructions.

(20) a. Wh-elements are non-quantificational.
b. The features of Q-particles *KA* and *MO*

Chinese-speaking learners, on the other hand, need to learn only (20b), as bare wh-elements used in their L1 are also non-quantificational. As discussed in chapter 3, Chinese and Japanese are typologically similar because both languages are wh-in-situ languages, which comes from the characteristics shown in (20a).

Two L1 groups, Chinese and English, were included in the present study in order to examine whether parameter resetting is possible by learners whose L1s have different parametric values. In particular, comparing the results from Chinese and English speakers can potentially reveal whether both properties in (20) are acquirable in L2 acquisition. There are four possible outcomes of the study, as shown in (21).

(21) a. Both Chinese and English speakers are able to reset the wh-construal parameter to the Japanese value.
b. Neither Chinese nor English speakers are able to reset the wh-construal parameter to the Japanese value.
c. Only Chinese speakers are able to reset the wh-construal parameter to the Japanese value.
d. Only English speakers are able to reset the wh-construal parameter to the Japanese value.

If the outcome is (21a), since English speakers must acquire both (20a) and (20b), it suggests that both properties are acquirable in L2 acquisition. If, on the other

hand, the outcome is (21b), it suggests that both properties in (20a) and (20b) are not acquirable, implying that parameter resetting is impossible in L2 acquisition. If only Chinese speakers can reset the wh-construal parameter, as in (21c), it implies that the property in (20a) is problematic for English speakers. Chinese speakers must acquire only the property in (20b), while English speakers must acquire both properties. Therefore, if (20a) is problematic in L2 acquisition, but (20b) is not, only Chinese speakers are able to reset the parameter. If this possibility turns out to be the case, it demonstrates that parameter resetting from a wh-in-situ language to another is possible, while resetting from a wh-movement to a wh-in-situ is not. Lastly, if only English speakers are able reset the parameter, as in (21d), it suggests that both (20a) and (20b) are acquirable, since English speakers must acquire both. However, the lack of parameter resetting by Chinese speakers must be accounted for, if both properties are acquirable in L2 acquisition. If we find (21d) to be the case, explanations must be sought for why Chinese speakers fail to reset the wh-construal parameter to the Japanese value.

5.4. No parameter resetting: Predictions

In this section, the interpretations that are expected from Chinese and English speakers, if parameter resetting fails, are presented. Even if some learners fail to reset the parameter, they may not end up with uniform non-targetlike interpretations. Some learners may be "stuck" with the initial state, i.e., their L1 grammar, while others may manage to go beyond their L1 grammar and show some development. Since it is difficult to predict the developmental paths at this point, I restrict my discussions on the failure of parameter resetting to the former case, the initial state.

Let us summarize the test sentence types. In the test sentences that are in the form of statements, the contrasts are repeated in (21) and (22).

(22) a. Mary-wa [John-ga nani-o katta-ka] iimasita.
Mary-Top John-Nom what-Acc bought-KA said
'Mary said what John bought.'

b. *[Mary-wa [John-ga nani-o katta-to] iimasita.
Mary-Top John-Nom what-Acc bought-that said

(23) a. Mary-wa [dare-ga kaita hon]-mo yomimasita.
Mary-Top who-Nom wrote book-MO read
'Mary read books everyone wrote.'

b. *Mary-wa [dare-ga kaita hon]-o yomimasita.
Mary-Top who-Nom wrote book-Acc read

In the initial state, the target features of *KA* and *MO* are not expected to be known by either Chinese or English speakers. Assuming that Q-particles play no role in the learners' interpretations, the equivalents for (22) and (23) in Chinese and English are as follows:

(24) a. Chinese equivalent of (22)
Mary shuo [John mai-le shenme].
Mary say John buy-Asp what
'Mary said what John bought.'

b. English equivalent of (21)
*Mary said [John bought *what*].

(25) a. Chinese equivalent of (23)

*Lisi xihuan piping shei de shu.

Lisi like criticize who Rel book

(lit.) 'Lisi likes books that who criticizes?

b. English equivalent of (23)

*Mary read the book *who* wrote.

In (24), a difference between Chinese and English is observed. The test sentences in (22) are both predicted to be acceptable for Chinese speakers and both unacceptable for English speakers. The equivalent for (23) is ungrammatical for both in Chinese and English; thus, no differences depending on learners' L1s are expected.

The test sentences (5) and (6), which are in the form of questions, are repeated below in (26) and (27).

(26) a. Yes/no question

Mary-wa [John-ga nani-o katta-ka] iimasita-ka?

Mary-Top John-Nom what-Acc bought-KA said-KA

'Did Mary say what John bought?' (embedded scope)

b. Matrix wh-question

[Mary-wa [John-ga nani-o katta-to] iimasita-ka]?

Mary-Top John-Nom what-Acc bought-that said-KA

'What did Mary say John bought?' (matrix scope)

(27) a. Mary-wa [[dare-ga kaita hon]-mo yomimasita-ka?
Mary-Top who-Nom wrote book-MO read-KA
'Did Mary read books everyone wrote?'

b. Matrix wh-question
[Mary-wa [[dare-ga kaita] hon]-o yomimasita-ka]?
Mary-Top who-Nom wrote book-Acc read-KA
'Who (x), Mary read the book x wrote?'

Again, assuming no role for Q-particles, the equivalents for (26) and (27) in Chinese and English are given below:

(28) Chinese equivalent of (26)
Mary shuo [John maile shenme]?[84]
Mary say John bought what
a. 'What did Mary say John bought?'
b. *'Did Mary say what John bought?'

[84] In Chinese, the two interrogative particles, *ne* and *ma*, can differentiate wh-questions and yes/no questions. Examples are given in (i) and (ii).

(i) Mary shuo [John maile shenme] ne?
Mary say John bought what Qwh
'What did Mary say John bought?'

(ii) Mary shuo [John maile shenme] ma?
Mary say John bought what Qyn
'Did Mary say what John bought?'

It may be possible that Chinese speakers consider the sentence-final *KA* in (26) to be either a yes/no question or a wh-question particle. Though this is indeed possible, since *KA* is neither *ne* nor *ma*, I assume that Chinese speakers do not take *KA* to be either type, unless the data show us otherwise.

(29) English equivalent of (26) (echo-question)

Mary knows [John bought *what*]?

a. Mary knows John bought a book. (interpreted as a matrix wh-question)

b. *Yes, she does. (interpreted as a yes/no question)

(30) Chinese equivalent of (27)

Lisi xihuan piping shei de shu?

Lisi like criticize who Rel book

'Who (x), Lisi likes books x criticizes?'

(31) English equivalent of (27) (echo-question)

Mary read the book *who* wrote?

a. She read the book John wrote. (interpreted as a matrix wh-question)

b. *Yes, she did. (interpreted as a yes/no question)

As shown in (27) and (28), in both Chinese and English, both test sentences in (25) are predicted to be interpreted as matrix wh-questions. The same is true for the test sentences in (26).

Table 14 summarizes the predicted interpretations for sentences (21) and (22), and table 15 for sentences (25) and (26), if learners are unable to go beyond their L1s.

Table 14: L1 transfer: Statements

Question #	(22)		(23)	
Conditions	*KA* condition		*MO* condition	
Target	(a) grammatical	(b) ungrammatical	(a) grammatical	(b) ungrammatical
Chinese speakers	both grammatical		both ungrammatical	
English speakers	both ungrammatical		both ungrammatical	

Table 15: L1 transfer: Questions

Question #	(26)		(27)	
Conditions	*KA* condition		*MO* condition	
Target	(a) y/n Qs	(b) matrix Qs	(a) y/n Qs	(b) matrix Qs
Chinese speakers	both matrix Qs		both matrix Qs	
English speakers	both matrix Qs		both matrix Qs	

As tables 14 and 15 show, for the most part, the predicted non-targetlike interpretations by Chinese and English speakers are the same for the suggested test sentences. The only difference expected is from the interpretation of (22).

5.5. Summary of chapter 5

In the present chapter, issues relating to resetting of the wh-construal parameter were discussed. As I first mentioned in §5.1.1, parameter resetting should lead to the following knowledge about Japanese wh-constructions.

(32) a. Japanese wh-elements are non-quantificational.

b. Quantificational force is determined by Q-particles.

c. Association between the indeterminate phrase and the Q-particle is constrained by the locality condition.

I argued that (32a) and (32b) can be learned based on positive evidence, but (31c) cannot. (32c), instead, should arise from the knowledge derived from UG, if the parameter resetting is successful.

Chinese and English speakers are tested in order to examine whether the typological differences between them would affect parameter resetting. Chinese is typologically more similar to Japanese than English, as Chinese shares the property exemplified in (32a). The comparison between Chinese- and English-speaking learners can reveal whether this typological similarity helps Chinese speakers acquire another wh-in-situ language, or whether the acquisition of wh-constructions in Japanese is equally possible for learners whose L1 is a wh-in-situ language and those whose L1 is a wh-movement language.

Chapter 6: Experiments

The experiments reported in this chapter were designed to test whether the wh-construal parameter can be reset in Chinese-Japanese and English-Japanese interlanguage grammars. This chapter presents the experiment design and procedures and reports the results. The chapter is organized as follows: In §6.1, information on participants is presented, and in §6.2, the procedure is explained. §6.3 describes the test used to determine learners' proficiency levels in Japanese, and in §6.4, the test materials are presented. From §6.5 to §6.7, three tasks that were used and their results are presented. §6.8 summarizes the results, and in §6.9, the individual results are examined in terms of how consistently learners performed across the three tasks. Differences found between the two L1 groups are summarized in §6.10, and §6.11 concludes this chapter.

6.1. Participants

Sixty-one Mandarin-Chinese-speaking learners of Japanese, 43 English-speaking learners, and 14 native speakers of Japanese participated in the study. All Chinese-speaking learners were tested in Japan. They were enrolled either in Japanese language courses or in undergraduate programs at Japanese universities. As for English-speaking learners, 13 were tested in Japan, and 23 were tested in Canada. Of the 13 learners tested in Japan, 9 were taking a Japanese course at a university, and 4 were residents in Japan. Among those who were tested in Canada, 5 were taking a Japanese course at a Canadian university, and 18 had spent time in Japan. All Japanese native speakers were tested in Montréal, Canada. Those who participated as control subjects had been outside Japan no more than six months at the time of testing, in order to exclude the possibility of L1 attrition (see Sorace 1998, 1999, 2000; Gürel 2002).

Nine Chinese-speaking learners, 11 English-speaking learners, and two control subjects were later excluded from the study. Eight Chinese-speaking learners were excluded because they were from Taiwan, and all spoke both Mandarin Chinese and Taiwanese. Since there may be significant dialectal differences, I included only Chinese speakers who were from mainland China for analysis. One Chinese speaker was excluded because he was unable to complete all the tests due to time constraints. As for the English speakers, seven spoke a language or languages other than English in childhood, and four were excluded because they failed the syntactic requirement for this study. Because most of the sentences used in the experiments were bi-clausal structures, the learners needed to demonstrate that they were able to understand sentences containing more than one clause. Four learners who took part in the study were unable to interpret bi-clausal sentences as such; instead, they interpreted the sentences as mono-clausal sentences.[85] Thus, these learners were later excluded from analysis. One subject from the control group was excluded because she showed a strong response bias, and another was excluded because she modified a number of test sentences and made judgments based on her modifications.

Table 16 summarizes the total number of participants included in the study and the mean age of each group.

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[85] In the translation task, which will be presented in §6.6, bi-clausal sentences similar to those in (i) were included. Four learners from the English-speaking group consistently translated sentences in (i) as mono-clausal sentences, for example, as (ii):

(i) Jiro-wa [pro pizza-o katta-to] iimasita-ka
-Top what-Acc bought-that said-KA
'Did Jiro say he bought pizza?'

(ii) Did Jiro buy pizza?

Table 16: Participants

	Number of participants	Mean age
Chinese group	52	25.1
English group	32	29.8
Control group	12	25.8

6.2. Procedure

L2 learners of Japanese took three experimental tests and a proficiency test. Native speakers of Japanese took two experimental tests and a proficiency test. The three experimental tests were a grammaticality judgment (GJ) task, a translation task, and a question-answer pair acceptability judgment task (Q/A task). Native speakers did not take the translation test but took both remaining tests. All participants also filled out a questionnaire on their language background.

For L2 learners, testing proceeded in the following order:

(1) Task 1: GJ task
Proficiency test
Task 2: Translation task
Questionnaire
Task 3: Q/A task

The proficiency test and the questionnaire were given in between the three experimental tests, in order to prevent participants from becoming familiar with test items, leading to possible practice effects. Native speakers did not take task 2 and instead took task 3 after the proficiency test, and their testing finished with the questionnaire. For L2 learners, testing usually took from an hour and a half to

two hours. For native speakers, the experiment usually lasted from an hour to an hour and a half. I offered a small monetary compensation to participants who took the tests, and I conducted all testing.

6.3. Proficiency test

The proficiency test was in the format of a cloze test, with a blank at every 7th word, for a total of 43 blanks.[86] In a cloze test, participants generally are asked to put one word in each blank. However, in this proficiency test, multiple-choice options were given for each blank. This was done because Japanese is an agglutinating language, and it is difficult to determine where word boundaries are. In order to avoid any unnecessary errors caused by participants' misanalysis of words, multiple choices were given. An article from *Nihongo Journal*, a magazine directed at learners of Japanese, was used.[87]

Table 17 shows the mean scores and ranges from the proficiency test for each language group. The learner groups were not statistically significantly different from each other ($t(82)=.72$, $p=.47$).

Table 17: Proficiency test scores

	Mean	Range
Chinese group (n=52)	28.9	21 - 38
English group (n=32)	27.93	14 - 41
Control group (n=12)	41.1	39 - 43

The mean score from the learner group was around 28; learners who scored

[86] See Appendix A for the proficiency test used in this study.
[87] The idea to use an article from *Nihongo Journal* was adopted from Marsden (2004).

lower than 28 were classified as intermediate, and learners who scored higher than 29 were considered advanced. Based on this, learners were separated into two groups for each L1, as shown in table 18. The Chinese and English intermediate groups were not significantly different from each other (Intermediate: $t(44) = 1.68$, $p=.09$), but the advanced groups were significantly different from each other (Advanced: $t(36) = 2.02$, $p<.001$); the English group outperformed the Chinese group at the advanced level.

Table 18: Groups

	Mean age	Length of exposure[88] (years)		Length of residence in Japan (years)		Proficiency test scores (out of 43)	
		Mean	Range	Mean	Range	Mean	Range
Chinese							
Intermediate (n=27)	25.3	2.5	0;6-6	1.9	0;5-6	24.4	21-28
Advanced (n=25)	24.8	4.8	2-11	3.2	0;6-8	32.8	29-38
English							
Intermediate (n=19)	30.5	6.1	2-12	2.8	0-12	22.8	14-28
Advanced (n=13)	32.0	10.2	4-21	7.1	0;1-18	35.5	30-41
Control (n=12)	25.8					41.1	39-43

6.4. Test material

As mentioned in §6.2, the experimental tests consisted of a GJ task, a translation task, and a Q/A task, all given in a paper-and-pencil test format. The test sentences were introduced in §5.1. Test sentences that are in the form of statements are

[88] The length of exposure was calculated by subtracting their age at the time of their first exposure to Japanese, including taking classes in their country and independent study, from their age at the time of testing.

repeated below in (2) and (3).

(2) a. Mary-wa [John-ga nani-o katta-ka] iimasita.
Mary-Top John-Nom what-Acc bought-KA said
'Mary said what John bought.'

b. *Mary-wa [John-ga nani-o katta-to] iimasita.
Mary-Top John-Nom what-Acc bought-that said

(3) a. Mary-wa [[dare-ga kaita] hon]-mo yomimasita.
Mary-Top who-Nom wrote book-MO read
'Mary read books everyone wrote.'

b. *Mary-wa [[dare-ga kaita] hon]-o yomimasita.
Mary-Top who-Nom wrote book-Acc read

To recap, Japanese shows a dependency between the indeterminate phrase and the Q-particle. These sentences were tested in the GJ task. In (a) sentences, a Q-particle is present, while in (b) sentences, it is not; thus, (b) sentences are ungrammatical. Participants were tested on whether they accepted (a) sentences and rejected (b) sentences, which demonstrates knowledge of this property.

Test sentences in the form of questions are repeated in (4) and (5) below:

(4) a. Yes/no question
Mary-wa [John-ga nani-o katta-ka] iimasita-ka?
Mary-Top John-Nom what-Acc bought-KA said-KA
'Did Mary say what John bought?'

b. Matrix wh-question
[Mary-wa [John-ga nani-o katta-to] iimasita ka]?
Mary-Top John-Nom what-Acc bought-that said-KA
'What did Mary say John bought?'

(5) a. Mary-wa [[dare-ga kaita] hon]-mo yomimasita-ka?
Mary-Top who-Nom wrote book-MO read-KA
'Did Mary read books everyone wrote?'

b. Matrix wh-question
[Mary-wa [[dare-ga kaita] hon]-o yomimasita-ka]?
Mary-Top who-Nom wrote book-Acc read-KA
'Who(x), Mary read the book x wrote?'

In these test sentences, the indeterminate phrase must be within the scope of the closest Q-particle available, due to the locality condition, discussed in §3.3.2. To examine this knowledge, these sentences were tested in the translation task and the Q/A task. In the translation task, participants were asked to translate sentences such as those in (4) and (5). In the Q/A task, sentence types (4) and (5) were followed either by an appropriate or inappropriate answer, and participants made judgments as to whether they felt that the answer was appropriate to the question or not. Details of this test are given in §6.7.

In addition to (4) and (5), the following two types of sentences were tested in the translation task to examine whether learners have knowledge of *KA* as an interrogative complementizer and *–to* as a declarative complementizer, as shown below. This was tested without using an indeterminate phrase. Details of these test sentences are given in §6.6.1.

(6) a. Jiro-wa [pro pizza-o katta-ka] iimasita-ka?
Jiro-Top pizza-Acc bought-KA say-KA
'Did Jiro say whether or not he bought pizza?'

b. Jiro-wa [pro pizza-o katta-to] iimasita-ka?
Jiro-Top pizza-Acc bought-that say-KA
'Did Jiro say that he bought pizza?'

6.5. Task 1: Grammaticality judgment task

In this task, participants were given a context in their L1 and a test sentence in Japanese. Following Dykdspotter, Sprouse, & Anderson (1997, 1998), contexts were given in the participants' L1, in order to avoid misunderstanding of the context by learners, which might affect their answers on the test. All sentences included in this task, both experimental test items and fillers, were in the form of statements. Participants were told that all the sentences were to be judged by whether they were acceptable as statements. A scale from 1 to 4 was given to indicate the learners' judgments, with 1 designating an impossible sentence and 4 a possible sentence in Japanese. They were also given a choice of "*don't know*". There were 16 test sentences and 24 fillers, with an equal number of grammatical and ungrammatical sentences.[89] There were four types of test items. In the test, each page contained four sentences, and the sentences were pseudo-randomized; the subjects did not see the same type of sentences on the same page, and sentences of the same type were at least two pages apart. Furthermore, the subjects were asked not to go back to previous pages.

6.5.1. *KA*: Interrogative Particle

Type 1-1 sentences were grammatical, containing *KA* in the embedded clause. Type 1-2 sentences were ungrammatical, lacking a Q-particle to satisfy the dependency. Matrix verbs used in type 1 sentences were *iw* 'say', as there were no other verbs commonly used that can either take a declarative complement clause

[89] A list of test sentences and fillers used in this test can be found in Appendix B.

or an interrogative complement clause.[90] Furthermore, of the four tokens each for type 1-1 and type 1-2, half of the indeterminate phrases were *dare* 'who' and half were *nani* 'what'. Examples are given in (7) and (8).

(7) Type 1-1: Embedded questions: Grammatical (n=4)

[context] Akemi asked Kazuo if Daisuke had cooked anything for Hiroko, so . . .

Kazuo-wa [Daisuke-ga nani-o tukutta-ka] itta.
Kazuo-Top Daisuke-Nom what-Acc made-KA said
'Kazuo said what Daisuke made.'

(8) Type 1-2: Embedded questions: Ungrammatical (n=4)

[context] Akemi asked Kazuo if Daisuke had cooked anything for Hiroko, so . . .

*Kazuo-wa [Daisuke-ga nani-o tukutta-to] itta.
Kazuo-Top Daisuke-Nom what-Acc made-that said

The contrast between type 1-1 and type 1-2 was kept to a minimum; the only difference was the particle used in the embedded clause.

6.5.2. *MO*: Universal Quantifier Particle

Type 2 sentences in the GJ task aimed at testing whether learners know that *MO* is a Q-particle, which gives (universal) quantificational force to indeterminate

[90] The verb *tsutae* 'tell' is commonly used and can take either a declarative or an interrogative clause as a complement. However, I did not use this verb as some intermediate learners may have been unfamiliar with it.

phrases.[91] Type 2-1 sentences were grammatical as the sentences contained a particle, *MO*, and type 2-2 sentences were ungrammatical as they lacked a Q-particle, as shown in (9) and (10). For type 2-1 and type 2-2, all the indeterminate phrases were *dare* 'who'.

(9) Type 2-1: With *MO*: Grammatical (n=4)

[context] Each student from Daisuke's class read a different book. According to Daisuke,

[[Dare-ga yonda hon]-mo] omosirokatta.
who-Nom read book-MO was-interesting
'The books that everyone read were interesting.'

(10) Type 2-2: Without a Q-particle: Ungrammatical (n=4)

[context] Each student from Daisuke's class read a different book. According to Daisuke,

*[[Dare-ga yonda hon]-ga] omosirokatta.
who-Nom read book-Nom was-interesting

A targetlike distinction between the two types of sentences is predicted to be made if *MO* in (9) is analyzed as a Q-particle, and associated with the indeterminate phrase.

[91] Since the task did not test interpretations, we are unable to know whether participants took *MO* as a universal quantifier. What we can conclude from this task is only that *MO* is a quantificational particle, which quantifies over the indeterminate phrase.

6.5.3. Results

The group results from the GJ task are shown in table 19. The control group judged the sentences as expected, although the type 1-2 sentences were not categorically rejected by some speakers (see the individual results below). Nevertheless, the control group's response to type 1-2 sentences contrasted with that of type 1-1 sentences; the control group found grammatical type 1-1 sentences to be more acceptable than ungrammatical type 1-2 sentences. As for the learner groups, they did not make a distinction between grammatical sentences and ungrammatical sentences. The mean acceptance scores for type 1-2 sentences, which were ungrammatical, in fact, were higher than for type 1-1 sentences, the grammatical sentences, for the Chinese intermediate (CI), Chinese advanced (CA) and the English intermediate (EI) groups, but only the results from the EI group were statistically significant. There were two types of indeterminate phrases used in type 1, *dare* 'who' and *nani* 'what'. No significant differences were found between the two types of indeterminate phrases, and therefore, the results were collapsed.

A one-way ANOVA showed group effects for type 1-1 ($F(4, 91)=11.981$, $p<.001$), but not for type 1-2 ($F(4, 91)=2.376$, $p=.058$). The results from the comparison between the control group and each learner group using Tukey's post-hoc tests ($p<.05$) are shown in table 19. As can be seen from the table, all learner groups were significantly different from the control group for type 1-1.

Table 19: GJ task: *KA* conditions - Group results (mean)*

		Type 1-1 Grammatical		Type 1-2 Ungrammatical
Control		3.94	**	2.13
Chinese	intermediate	2.35**		2.73
	advanced	2.12**		2.48
English	intermediate	2.42**	**	3.06*
	advanced	3.03*		2.65

The asterisks (for $p<.05$, and ** for $p<.001$) next to the mean scores indicate statistically significant results compared to the control group. The asterisks between the mean scores in each row show statistical significances between type 1-1 and type 1-2 for each group.

A paired-sample t-test was used to compare the mean scores of the type 1-1 and type 1-2 sentences, and it showed that the EI group made a significant distinction between the two types ($t(18)=3.44$, $p<.003$). However, the mean acceptance is higher for the ungrammatical type 1-2 sentence than for the grammatical type 1-1 sentence. Scores for type 1-1 and type 1-2 sentences were not significantly different for the CI ($t(26)=1.89$, $p=.069$), CA ($t(24)=1.67$, $p=.106$) and the English advanced (EA) ($t(12)=1.42$, $p=.180$) groups, suggesting that they made no distinction between the two types.

Post-hoc tests also revealed that the CI and EI groups were not significantly different from each other in their responses to either type of sentence, while the CA and EA groups were significantly different in their responses to type 1-1 sentences ($p<.014$), but not type 1-2 sentences. Thus, there seem to be few L1 differences found in the results.

Individual results from the grammaticality judgment task are given in table 20. The criteria I used to determine whether participants performed targetlike are presented in (11).

(11) If the mean scores for type 1-1 and type 1-2 were separated by more than one point, the subjects were considered to have distinguished between the two types. If the type that received the higher score was grammatical and the type that received the lower score was ungrammatical, the subjects were considered to have shown targetlike judgments.[92]

As can be seen, few L2 learners showed the expected contrast. Furthermore, four out of 12 subjects from the control group failed to show the contrast. All of these four subjects had problems with type 1-2 sentences, failing to reject them consistently.

Table 20: GJ task: *KA* conditions - Individual results

Groups	Levels	Number of learners with targetlike judgment
Control		8/12 (66%)
Chinese	Intermediate	0/27 (0%)
	advanced	2/25 (8%)
English	intermediate	0/17 (0%)
	advanced	4/13 (30.1%)

The group results from the *MO* condition are shown in table 21. Similar to the results from type 1, the control group exhibited a targetlike contrast for type 2

[92] In other words, for cases in which a participant gave an average of 2 to the grammatical ones and 1 for the ungrammatical ones, this participant is considered to have targetlike interpretations. This may raise a concern since the scores given to the grammatical ones are also low, and therefore it might be considered that he or she rejected both. However, how participants used the scale depended on each subject; some may have used it conservatively, and some categorically, choosing only 1 and 4. If this particular participant only used the scale conservatively, I believe that the difference between 2 and 1 must indicate that a distinction was made.

sentences. As for the learner groups, a contrast was not made by the CI, CA, and EI groups, while the EA group showed a contrast between the two types of sentences.

Table 21: GJ task: *MO* conditions - Group results (mean)*

		Type 2-1 Grammatical		Type 2-2 Ungrammatical
Control		3.38	**	1.52
Chinese	intermediate	2.26*		2.5*
	advanced	2.35*		2.16
English	intermediate	2.3**		2.3
	advanced	2.54	*	1.56

Asterisks (for p<.05, and ** for p<.001) next to the mean scores indicate statistically significant results compared to the control group, and asterisks between the mean scores show statistically significant results for the two types of sentences.

A one-way ANOVA shows group effects for both types (type 2-1 ($F(4, 91)=3.865$, p<.006), type 2-2 ($F(4, 91)=5.011$, p<.001). The results from post-hoc tests (p<.05) are again shown in the table. For types 2-1 and 2-2, the EA group was not significantly different from the control group (type 2-1: p=.128, type 2-2: p=1.00).

A paired-sample t-test was performed, and found that responses to type 2-1 and type 2-2 sentences were not significantly different for either the Chinese group (CI: t(26)=1.17, p=.250, CA: t(24)=0.81, p=.428) or the English intermediate group (t(18)=1.64, p=.118), suggesting that they did not make a distinction between grammatical and ungrammatical sentences, while the control group and the EA group made a distinction between the two, as the results comparing types 2-1 and 2-2 were statistically significant (EA: t(12)=2.84,

p<.015).

Post-hoc tests revealed that the CI and EI groups were not significantly different from each other in their responses to either type, and neither were the CA and EA groups, showing no L1 differences at both proficiency levels.

The individual results from the *MO* condition are given in table 22. The criteria used to determine the targetlike responses are the same as those for type 1, shown in (11). As can be seen, only a few intermediate learners from both L1 groups were targetlike. About half of the English advanced learners showed targetlike judgments, and in the CA group, some were found to be targetlike. Some control subjects failed to show targetlike judgments. Of the three control subjects who failed to show targetlike judgments, one did not accept type 2-1, and the remaining two did not reject type 2-2 consistently.

Table 22: GJ task: *MO* conditions - Individual results

Groups	Levels	Number of learners with targetlike judgment
Control		9/12 (75%)
Chinese	intermediate	4/27 (14.8%)
	advanced	8/25 (32%)
English	intermediate	1/19 (5.2%)
	advanced	7/13 (53.8%)

6.5.4. Summary and discussion

In the *KA* condition, the group results showed little evidence that learners at either proficiency level know the difference between grammatical sentences and ungrammatical sentences. The individual results, however, show that some

advanced learners have targetlike knowledge of the dependency between the indeterminate phrase and the Q-particle *KA*. As for the *MO* condition, the EA group was not significantly different from the control group, and the individual results also revealed that a majority were targetlike in their judgments of the *MO* condition. Other groups, however, also seemed to struggle with the *MO* condition.

A few L1 differences were found in the results. There were no significant differences between the CI group and the EI group for both types 1 and 2. In addition, in the advanced group, the EA group was more targetlike than the CA group.

In type 1 with the interrogative particle *KA*, both the CI and EI groups were shown to make a significant distinction between grammatical and ungrammatical sentences, but in the opposite direction from the targetlike one. This is, I believe, likely to be caused by classroom instruction. In elementary-level Japanese, it is taught that, for quoted speech, the declarative complementizer particle *–to* is used preceding *iw* 'say'.[93] In other words, *-to-iw* is taught as a set form in sentences similar to (12).

(12) John$_1$-wa [pro$_1$ kutsu-ga hosii-to] itta.
John-Top shoes-Nom want-that said
'John said, "I want shoes."'

This may cause learners, especially those at the lower proficiency levels, to reject *KA* preceding *iw* 'say' but accept *–to* preceding *iw*. The tendency shown by these learners, thus, I speculate, is the result of relying on this specific instruction.

I should note that some control subjects, both in the *KA* condition and the

[93] I consulted *Nakama vol. 1* (1998) and *Yookoso!*, 3rd edition (2006), the textbooks often used for introductory Japanese classes in North America.

MO condition, failed to reject ungrammatical sentences. These results are problematic as they suggest that there may have been problems in the test items or the methodology of the task. I do not believe, however, that the test items used in the task were inaccurate in terms of grammaticality, as the ungrammatical sentences were categorically judged as impossible by most control subjects. I suspect that the unexpected results from the control group may be due to performance errors. Since test sentences are given with a context, some of the ungrammatical sentences may have been "interpretable." Native speakers (and to the same extent, non-native speakers) may somehow "try" to interpret indeterminate phrases in a sentence and may give unexpected judgments.[94] Even with the difficulties some native speakers may face, some advanced learners were able to distinguish the two types (grammatical and ungrammatical) of sentences in this task.

6.6. Translation task

As in the GJ task, in this task also, participants read a context in their L1, followed by a test sentence in Japanese. Participants were asked to translate the test sentences into their L1. All sentences in this task were in the form of questions. There were 40 questions in total, among which there were 24 test items and 16 fillers.[95] There were six types of test items. As in the GJ task, sentences were pseudo-randomized; each page contained three sentences. Subjects did not see the same type of sentences on the same page, and sentences of the same type were at least two pages apart. Furthermore, the subjects were also asked not to go back to previous pages.

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[94] Four out of five control subjects who had problems with the GJ task were targetlike in the Q/A task. This suggests that most subjects had problems only with the GJ task.

[95] A list of test items and fillers from the translation task can be found in Appendix B.

6.6.1. *KA*: Interrogative Particle

Types 1-1 and 1-2 are questions with an indeterminate phrase in the embedded clause. Type 1-1 is a yes/no question with an embedded wh-question as shown in (13). Type 1-2 is a matrix wh-question as shown in (14). All matrix verbs used in type 1 sentences were again *iw* 'say'; half of the indeterminate phrases were *dare* 'who' and half were *nani* 'what'.

(13) Type 1-1: Yes/no question (n=4)

[context] Junko threw a party last weekend. Daisuke heard that either Akiko or Miki was not at the party. Daisuke asked Junko whether Akiko was at the party. The next day, Daisuke's friend asked him,

Junko-wa [dare-ga paatii-ni kita-ka] iimasita-ka?
Junko-Top who-Nom party-to came-KA said-KA
'Did Junko say who came to the party?'

(14) Type 1-2: Matrix wh-question (n=4)

[context] Junko threw a party last weekend. Daisuke heard that either Akiko or Miki was not at the party. Daisuke asked Junko whether Akiko was at the party. The next day, Daisuke's friend asked him,

Junko-wa [dare-ga paatii-ni kita-to] iimasita-ka?
Junko-Top who-Nom party-to came-that said-KA
'Who did Junko say came to the party?'

Types 2-1 and 2-2 are yes/no questions without an indeterminate phrase. These test items examine whether learners know that *KA* is interrogative ([+Q]) and *–to* is declarative ([-Q]). In type 2-1, *KA* is in the embedded C^0, and thus the embedded clause must be interpreted as an interrogative clause. Type 2-2 has *–to* in the embedded C^0; therefore, the embedded clause is a declarative clause. Examples are shown in (15) and (16), respectively.

(15) Type 2-1: Interrogative complement *KA* (n=4)

[context] Akiko wanted to know whether Jiro bought pizza, so she asked him. Akiko's friend asked her,

Jiro-wa [pro pizza-o katta-ka] iimasita-ka?
Jiro-Top pizza-Acc bought-KA say-KA
'Did Jiro say whether or not he bought pizza?'

(16) Type 2-2: Declarative complement *–to* (n=4)

[context] Akiko wanted to know whether Jiro bought pizza, so she asked him. Akiko's friend asked her,

Jiro-wa [pro pizza-o katta-to] iimasita-ka?
Jiro-Top pizza-Acc bought-that say-KA
'Did Jiro say that he bought pizza?'

6.6.2. *MO*: Universal Quantifier Particle

Type 3 sentences have an indeterminate phrase within a CNP. Type 3-1 contains both *MO* and *KA*. *MO* gives a universal quantifier reading to the indeterminate phrase, and the sentence-final *KA* is interpreted as a yes/no question particle. Type

3-2 is the same as Type 3-1, but *MO* is not used. Therefore, the indeterminate phrase is interpreted as a wh-interrogative phrase, bound by *KA* in the matrix clause. All the indeterminate phrases were *dare* 'who' in type 3-1 and type 3-2.

(17) Type 3-1: With *MO* (n=4)

[context] Kazuo, Kenji, and Naoko each brought wine to Akemi's place. Akemi's friend asked her,

[Dare-ga mottekita wain-mo] oisikattadesu-ka?
who-Nom brought wine-MO was-delicious-KA
'Was the wine that everyone brought delicious?'

(18) Type 3-2: Without a Q-particle (n=4)

[context] Kazuo, Kenji, and Naoko each brought wine to Akemi's place. Akemi's friend asked her,

[Dare-ga mottekita wain-ga] oisikattadesu-ka?
who-Nom brought wine-Nom was-delicious-KA
'Who(x), the wine that x brought was delicious?'

6.6.3. Results

The group results from type 1 are shown in table 23. As can be seen, learners from all groups showed better accuracy in type 1-1 questions than in type 1-2 questions. Most of the non-targetlike interpretations for type 1-2 sentences were due to learners interpreting the questions as yes/no questions, with the indeterminate phrase taking embedded scope. Similar to the results from the GJ task, the two types of indeterminate phrases, *dare* 'who' and *nani* 'what', did not produce

significant differences.

Table 23: Translation task: *KA* conditions - Group results (accuracy)

Groups	Levels	Type 1-1 Yes/No-questions	Type 1-2 Wh-questions
Chinese	intermediate	89.8%	14.8%
	advanced	82%	17%
English	intermediate	76.3%	17.1%
	advanced	94.2%	21.1%

To examine L1 differences, t-tests were conducted to compare the Chinese and English groups at the same proficiency level. All the comparisons were non-significant, showing no L1 differences.

Learners' interpretations of the type 1-1 and type 1-2 sentences are summarized in tables 24 and 25, respectively. Most non-targetlike interpretations were found in type 1-2 sentences, and the interpretations predominantly came from the fact that learners in both language groups translated type 1-2 questions, which are matrix wh-questions, into yes/no questions, with the indeterminate phrase in-situ taking scope at the embedded clause (highlighted in table 25).

Table 24: Translation task: Interpretations of indeterminate phrases for type 1-1*

	Chinese		English	
	Intermediate	Advanced	Intermediate	Advanced
Target (embedded scope)	97/108 (89.8%)	82/100 (82%)	57/76 (75%)	49/52 (94.2%)
Matrix scope	7/108 (6.4%)	13/100 (13%)	12/76 (15.7%)	1/52 (1.9%)
Existential	1/108 (0.9%)	3/100 (3%)	7/76 (9.2%)	2/52 (3.8%)
Not translated	3/108 (2.7%)	2/100 (2%)	0/76 (0%)	0/52 (0%)

*The targetlike interpretations of indeterminate phrases for type 1-1 sentences are to be interpreted as wh-interrogative phrases taking embedded scope. *Matrix scope* refers to indeterminate phrases interpreted as a wh-interrogative phrase taking matrix scope. *Existential* means that indeterminate phrases are interpreted as existential quantifiers instead of as wh-interrogative phrases. There were cases where indeterminate phrases are not translated. In those cases, indeterminate phrases were often mistranslated as a pronoun, such as *you*.

Table 25: Translation task: Interpretations of indeterminate phrases for type 1-2*

	Chinese groups		English groups	
	Intermediate	Advanced	Intermediate	Advanced
Target (matrix scope)	16/108 (14.8%)	17/100 (17%)	13/76 (17.1%)	11/52 (21.1%)
Embedded scope	91/108 (84.2%)	81/100 (81%)	58/76 (76.3%)	41/52 (78.8%)
Existential	0/108 (0.9%)	2/100 (2%)	5/76 (6.5%)	0/52 (0%)
Not translated	1/108 (0.9%)	0/100 (0%)	0/76 (0%)	0/52 (0%)

*The targetlike interpretations of indeterminate phrases for type 1-2 sentences are to be interpreted as wh-interrogative phrases taking matrix scope. *Embedded scope* refers to indeterminate phrases interpreted as wh-interrogative phrases taking embedded scope.

Individual results for type 1 questions are shown in table 26. Learners were judged to have targetlike interpretations if they interpreted Japanese indeterminate phrases in-situ correctly both in type 1 and type 2 questions for at least three out of four tokens. As the table shows, very few learners showed a distinction between type 1-1 and type 1-2 questions in this task.

Table 26: Translation task: *KA* conditions - Individual results

Groups	Levels	Number of learners with targetlike interpretations
Chinese	intermediate	0/27 (0%)
	advanced	1/25 (4%)
English	intermediate	0/19 (0%)
	advanced	2/13 (15%)

The results from the type 2 sentences are shown in table 27. Recall that type 2 questions did not include an indeterminate phrase. These sentences were aimed at testing learners' knowledge of the interrogative particle *KA* being [+Q] and the declarative complementizer particle *–to* being [-Q].

Table 27: Translation task: Group results-Type 2 (accuracy)

		Type 2-1 *–ka*	Type 2-2 *–to*
Chinese	intermediate	25.2%	83%
	advanced	30%	94%
English	intermediate	66.7%	65%
	advanced	82.7%	75%

As the results show, Chinese-speaking learners were less accurate about the contrast between the two complementizers. In particular, they were inaccurate about *KA*; instead, they often interpreted it as [-Q]. At intermediate and advanced levels, the English groups were more accurate, and the English-speaking learners in the advanced group demonstrated good knowledge of the two complementizers. The non-targetlike interpretations were mostly the interrogative *KA* being misinterpreted as declarative or the declarative *–to* misinterpreted as interrogative. For example, 74.8% of the non-targetlike interpretations of *KA* in type 2-1 sentences by Chinese intermediate learners came from *KA* being interpreted as *–to*, a declarative complementizer.

T-tests were performed to examine L1 differences. For type 2-1, there were L1 effects, as the differences between the CI and EI groups ($p<.001$) as well as between the CA and EA groups ($p<.001$) were significant. As for type 2-2, there was a significant difference between the CA group and the EA group ($p<.025$).

Individual results from type 2 are shown in table 28. The majority of learners in the EA group had the targetlike distinction between the two complementizer types, while other groups seemed to lack such accurate distinctions.

Table 28: Translation task: Individual results-Type 2

		Number of learners who had targetlike interpretations
Chinese	intermediate	1/27 (4%)
	advanced	5/25 (20%)
English	intermediate	5/19 (36%)
	advanced	10/13 (76.9%)

The group results from the *MO* condition (type 3) are shown in table 29. Examples of learners' translations, which were considered targetlike, are given in (19) and (20).

Table 29: Translation task: *MO* conditions - Group results (accuracy)

		Type 3-1 Universal quantifier	Type 3-2 Wh-interrogative
Chinese	intermediate	46.2%	87%
	advanced	53%	95%
English	intermediate	6.5%	61.6%
	advanced	62.7%	61.5%

(19) Chinese

a. shei kan de dianying dou you yi si ma?
who saw DE movie all interesting Qyn
'Were the movies that everyone saw interesting?'

b. dajia kan de dianying dou heng you qu ma?
everyone saw DE movie all very interesting Qyn
'Was the movie that everyone saw interesting?'

(20) English

a. Were the movies everyone saw interesting?

b. Did everyone see an interesting movie?

c. Were all the movies they saw interesting?[96]

[96] The indeterminate phrase must be interpreted as distributive, but the subject pronoun in the relative clause *they* in (20c) is ambiguous as to whether it is collective or distributive. I considered (20c) acceptable because it has a distributive reading as one of the possible readings.

For type 3-1, the CI and CA groups showed about 50% accuracy, while the EI group seemed to lack knowledge of *MO* being a universal quantifier particle. At the advanced level, English speakers gained this knowledge and performed more targetlike. As for type 3-2, both the CI and CA groups were accurate, showing targetlike interpretation of the indeterminate phrase. English speakers were less accurate, sometimes interpreting the indeterminate phrase as an existential quantifier, instead of a wh-interrogative phrase (target) (see table 31 below).

A t-test was again conducted to examine L1 differences. L1 effects were also observed for both types, showing significant differences between the CI and EI (type 3-1: $p<.001$; type 3-2: $p<.030$) groups and between the CA and EA groups (type 3-1: $p<.045$; type 3-2: $p<.001$).

The interpretations of indeterminate phrases in type 3-1 and 3-2 sentences are summarized in tables 30 and 31, respectively.

Table 30: Translation task: Interpretations of indeterminate phrases for type 3-1*

	Chinese		English	
	Intermediate	Advanced	Intermediate	Advanced
Target	50/108 (46.2%)	53/100 (53%)	5/76 (6.5%)	32/52 (61.5%)
Interrogative	47/108 (46.5%)	43/100 (43%)	32/76 (42.1%)	3/52 (5.7%)
Existential	4/108 (3.7%)	4/100 (4%)	36/76 (47.3%)	17/52 (32.9%)
Not translated	7/108 (6.4%)	0/100 (0%)	3/76 (3.9%)	0/52 (0%)

*The target interpretations of indeterminate phrases for type 3-1 sentences are to be interpreted as universal quantifiers. *Interrogative* refers to indeterminate phrases interpreted as wh-interrogative phrases. *Existential* means that indeterminate phrases are interpreted as existential quantifiers instead of as universal quantifiers. There were cases in which indeterminate phrases were not translated.

Table 31: Translation task: Interpretations of indeterminate phrases for type 3-2*

	Chinese		English	
	Intermediate	Advanced	Intermediate	Advanced
Target	94/108 (87%)	95/100 (95%)	45/76 (59.2%)	35/52 (67.3%)
Universal	2/108 (1.8%)	5/100 (5%)[97]	0/76 (0%)	1/52 (1.9%)
Existential	7 /108 (6.4%)	0/100 (0%)	28/76 (36.8%)	16/52 (30.7%)
Not translated	5/108 (4.6%)	0/100 (0%)	3/76 (3.9%)	0/52 (0%)

*The target interpretations of indeterminate phrases for type 3-2 sentences are to be interpreted as a wh-interrogative phrase. *Universal* refers to indeterminate phrases interpreted as universal quantifiers. *Existential* means that indeterminate phrases were interpreted as existential quantifiers.

For Chinese speakers, most non-target interpretations for type 3-1 came from the indeterminate phrase interpreted as a wh-interrogative phrase. Many English speakers, on the other hand, interpreted it as an existential quantifier. This type of interpretation was not often found in Chinese speakers.

Individual results for type 3 questions are shown in table 32. Learners were judged to have targetlike interpretations if they interpreted Japanese indeterminate phrases in-situ correctly both in type 3-1 and type 3-2 conditions for at least three out of four tokens. About half of the learners from the CI, CA, and EA groups were targetlike while none from the EI group showed targetlike interpretations.

[97] Of the five tokens interpreted as universal quantifiers, four tokens were from the same subject.

Table 32: Translation task: *MO* conditions - Individual results

Groups	Levels	Number of learners with targetlike interpretations
Chinese group	Intermediate	12/27 (44%)
	Advanced	11/25 (44%)
English group	Intermediate	0/19 (0%)
	Advanced	6/13 (46.1%)

6.6.4. Summary and discussion

In the *KA* condition (type 1), accuracy about the distinction between the matrix wh-question and a yes/no question, with an indeterminate phrase taking embedded scope, was low. Only one learner from the CA group and two from the EA group were targetlike, showing the difficulty achieving targetlike knowledge of the scope interpretations of indeterminate phrase with relation to the Q-particle *KA*.

In the *MO* condition (type 3), both Chinese groups showed relatively higher accuracy for targetlike interpretations, compared to the *KA* condition. The results from the EA group were also better. The only group for which the *MO* condition was problematic was the EI group.

As for L1 differences, in the *KA* condition, no significant difference between the CI and EI groups and between the CA and EA groups was found, indicating no L1 effects. In the *MO* condition, for type 3-1, the differences between the CI and the EI groups and between the CA and EA groups were significant. The Chinese group was more targetlike compared to the English group at the intermediate level, and at the advanced level, the English group was more targetlike. As for type 3-2, the Chinese groups were more targetlike compared to the English groups at both proficiency levels. Inaccuracy was mainly caused by English speakers interpreting the indeterminate phrase as an existential quantifier in the type 3-2 condition.

Type 2 sentences included no indeterminate phrase, and thus they did not test the dependency between the indeterminate phrase and the Q-particle. Rather, those sentences were included to examine the acquisition of complementizer particles, *KA* and *–to*, themselves. The EA group was the most targetlike in these test items. Chinese speakers, at the intermediate and advanced levels, had difficulties distinguishing the two complementizer types. Their interpretations were heavily biased toward interpreting both complementizers as declarative.

6.7. Question-answer pair acceptability judgment task

In this task, participants read a question-answer (Q/A) pair preceded by a context. Contexts were given in the participants' L1, as in the other tasks. The subjects had to decide whether the answer was natural or unnatural with respect to the question. In the instruction, the following examples were given to instruct participants how to determine the naturalness of the answer with respect to the question: Note that the gloss and the translation under the Japanese sentences were not given in the actual test.

(21) Yesterday, Taro and Hanako went skating. Taro fell down and hurt himself while skating. Hanako took Taro immediately to the Honda Hospital nearby. The next day, Yoko asked Hanako,

Itsu byooin-ni ikimasita-ka?
When hospital-to go-KA
'When did you go to the hospital?'
Hanako answered,

Kinoo ikimashita-yo.

Yesterday went-Part

'I went there yesterday.'

very odd natural

Is this answer appropriate for the question? **1** **2** **3** **4**/don't know

(22) Yesterday, Taro and Hanako went skating. Taro fell down and hurt himself while skating. Hanako took Taro immediately to the Honda Hospital nearby. The next day, Yoko asked Hanako,

Itsu byooin-ni ikimasita-ka?

When hospital-to go-KA

'When did you go to the hospital?'

Hanako answered,

Honda Byooin ikimashita-yo.

Honda Hospital went-Part

'I went to the Honda Hospital.'

very odd natural

Is this answer appropriate for the question? **1** **2** **3** **4**/don't know

The participants were told that the unnaturalness in this task does not come from whether the answer is true or false. It is true that *Taro* and *Hanako* went to the Honda Hospital, but the sentence is unnatural because it does not accurately answer what is asked.

As also can be seen in the above example, participants were given a scale

from 1 to 4 to rate their judgments. They were also given a choice of "*don't know*". There were in total 48 items, among which were 28 test items and 20 fillers.[98] There were seven Q/A pair types, and as in other tasks, the pairs were pseudo-randomized; each page contained three Q/A pairs. The subjects did not see the same type of Q/A pairs on the same page, and they were at least two pages apart. Again, the subjects were asked not to go back to previous pages.

6.7.1. *KA*: Interrogative particle

Types 1-1 and 1-2 were matrix wh-questions. Questions in type 1-1 were followed by an appropriate answer, and those in type 1-2 were followed by inappropriate answers.

(23) Type 1-1: Matrix wh-questions: Appropriate (n=4)

[context] Masami and Jiro are going to have a dinner party at their house. Jiro wanted to know whether Masami had already invited Kenji, so he asked her. Later, Jiro's friend asked him,

Question: Masami-wa dare-o shootaisita-to iimasita-ka?
Masami-Top who-Acc invited-that said-KA
'Who did Masami say she invited?'

Answer: Kenji-o shootaisita-to iimasita-yo.
Kenji-Acc invited-that said-Part.
'She said that she invited Kenji.'

[98] A list of test items and fillers used in the Q/A task is given in Appendix B.

(24) Type 1-2: Matrix wh-questions: Inappropriate (n=4)

[context] same as (23)

Question: Masami-wa dare-o shootaisita-to iimasita-ka?
Masami-Top who-Acc invited-that said-KA
'Who did Masami say she invited?'

Answer: Hai, iimasita-yo.
yes, said-Part.
'Yes, she did.'

Types 2-1 and 2-2 were yes/no questions, with an indeterminate phrase taking embedded scope. Questions in type 2-1 were followed by appropriate answers, and those in type 2-2 were followed by inappropriate answers.

(25) Type 2-1: Yes/No-questions: Appropriate (n=4)

[context] Kenji heard that Miki had drunk either beer or wine at his birthday party. Kenji wanted to know whether Miki drank beer, so he asked her. Later, Kenji's friend asked him,

Question: Miki-wa nani-o nonda-ka iimasita-ka?
Miki-Top what-Acc drank-KA said-KA
'Did Miki say what she drank?'

Answer: Hai, iimasita-yo.
yes, said-Part.
'Yes, she did.'

(26) Type 2-2: Yes/No-questions: Inappropriate (n=4)

[context] same as (25)

Question: Miki-wa nani-o nonda-ka iimasita-ka?
Miki-Top what-Acc drank-KA said-KA
'Did Miki say what she drank?'

Answer: Biiru-o nonda-ka iimasita-yo.
beer-Acc drank-KA said-Part.
'She said whether or not she drank beer.'

As in task 1 and task 2, all matrix verbs in the *KA* condition were again *iw* 'say'; half of the indeterminate phrases were *dare* 'who', and half were *nani* 'what'.

6.7.2. *MO*: Universal quantifier particle

Type 3 questions contained an indeterminate phrase, *dare* 'who,' in a CNP. In type 3-1, *MO* is adjacent to the CNP, and *KA* is in the matrix clause. Because *MO* is present, the indeterminate phrase can receive a universal quantifier reading. Under the context provided, it is in fact the preferred reading. Since the indeterminate phrase is associated with *MO*, the sentence-final *KA* is interpreted as a yes/no question particle, making a yes/no answer in (27) an appropriate response.

(27) Type 3-1: With *MO*: Appropriate Q/A pair[99] (n=4)

[context] Prof. Tanaka, Prof. Suzuki, and Prof. Ito each published a book last year. Akemi knows all three professors, and Hiroko asked her,

Question: [Dare-ga kaita hon]-mo yoku uremasita-ka?
who-Nom wrote book-MO well sold-KA
'Did the books everyone wrote sell well?'

Answer: Hai, uremasita-yo.
Yes, sold-Part.
'Yes, they did.'

Types 3-2 and 3-3 are the same questions as type 3-1, except that they do not contain *MO*. Therefore, the indeterminate phrase must be interpreted as a wh-interrogative phrase, and unlike type 3-1, a yes/no answer is inappropriate, as shown in (29).

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[99] Inappropriate Q/A pairs for type 3-1 questions were not given in the task because type 3-1 is ambiguous. *MO* can be interpreted as a universal quantifier as in (ia) or as *also*, as shown in (ib).

(i) [Dare-ga kaita hon]-mo yoku uremasita-ka?
who-Nom wrote book-MO well sold-KA
a. 'Did the books everyone wrote sell well?'
b. 'Who(x), the book that x wrote also sold well?'

When the indeterminate phrase is associated with *MO*, it receives a universal quantifier meaning, making the answer in (ii) acceptable. When it is associated with *KA*, *MO* is interpreted as *also*, and the answer in (iii) becomes acceptable. Since the reading in (iii) is not what this study is interested in, I did not include it, as it appeared to be confusing, even for Japanese native speakers, since it involves an ambiguity of the question in (i).

(ii) Answer: Hai, iimasita-yo.
Yes, said-Part
'Yes, they did.'

(iii) Answer: Ito-sensei-ga kaita hon-mo yoku uremasita-yo.
Ito-professor-Nom wrote book-MO well sold-Part
'The book Professor Ito wrote also sold well.'

(28) Type 3-2: Without *MO*: Appropriate Q/A pair (n=4)

[context] Prof. Tanaka, Prof. Suzuki and Prof. Ito each published a book last year. Akemi knows all three professors, and Hiroko asked her,

Question: [Dare-ga kaita hon]-ga yoku uremasita-ka?
who-Nom wrote book-Nom well sold-KA
'Who(x), the book that x wrote sold well?'

Answer: Tanaka-sensei-ga kaitahon-ga yoku uremasita-yo.
Tanaka-professor-Nom wrote book-Nom well sold-Part
'The book Prof. Tanaka wrote sold well.'

(29) Type 3-3: Without *MO*: Inappropriate Q/A pair (n=4)

[context] same as (28)

Question: [Dare-ga kaita hon]-ga yoku uremasita-ka?
who-Nom wrote book-Nom well sold-KA
'Who(x), the book that x wrote sold well?'

Answer: Hai, uremasita-yo.
yes, sold-Part.
'Yes, it did.'

6.7.3. Results

Table 33 shows the results from the *KA* condition (types 1 and 2). In this task also, there were no significant differences between the two types of indeterminate phrases used, *dare* 'who' and *nani* 'what', so the results were collapsed. The results from the control group were as expected. Intermediate learners from both

L1 groups accepted type 1-1 and rejected 1-2, but for type 2, they accepted inappropriate type 2-2 pairs more than appropriate type 2-1 pairs. As for the advanced groups from both L1s, although the distinction was not as sharp as that shown by the control group, the appropriate pairs were judged as more appropriate than the inappropriate pairs for both types 1 and 2.

Table 33: Q/A task: *KA* conditions - Group results (mean max. 4)*

		Matrix Questions		Yes/No Questions	
		Type 1-1 appropriate	Type 1-2 inappropriate	Type 2-1 Appropriate	Type 2-2 inappropriate
Control		3.98	1.46	3.88	1.65
Chinese	intermediate	3.86	2.3	3.05*	3.24**
	advanced	3.96	2.32	3.24*	2.63*
English	intermediate	3.61	2.64*	2.63**	2.97**
	advanced	3.87	2.94*	3.63	1.56

Asterisks (for p<.05, and ** for p<.001) next to the mean scores indicate statistically significant results compared to the control group.

A one-way ANOVA showed group effects for types 1-2 ($F(4, 91)=3.171$, $p<.017$), 2-1 ($F(4, 91)=8.156$, $p<.001$) and 2-2 ($F(4, 91)=12.992$, $p<.001$). Post-hoc tests revealed that, for type 1-2, both English groups were significantly different from the control group (EI: $p<.014$, EA: $p<.042$). For type 2-1 and type 2-2, the EA group was not significantly different from the control group, but other learner groups were (CI: type 2-1: $p<.004$, type 2-2: $p<.001$; CA: type 2-1: $p<.044$, type 2-2: $p<.005$; EI: type 2-1: $p<.001$, type 2-2: $p<.001$).

Paired-sample t-tests were performed to compare the results between the two types in type 1 and type 2, and the results are summarized in table 34. Between types 1-1 and 1-2, all groups, both control and L2, demonstrated that they made a

distinction between the two types. For types 2-1 and 2-2, the control and the two advanced groups showed a significant distinction between the two types, suggesting that these groups know the targetlike contrast of types 1 and 2 questions. The results from the intermediate groups were not significantly different between types 2-1 and 2-2. The Chinese and the English advanced groups, thus, showed a targetlike contrast for both type 1 and type 2 Q/A pairs.

Table 34: Q/A task: Type 1 – Type 2 statistical comparisons

		Matrix Questions Type 1	Yes/No Questions Type 2
Control		Significant (p<.001)	Significant (p<.001)
Chinese	intermediate	Significant (p<.001)	Not significant (p=.456)
	Advanced	Significant (p<.001)	Significant (p<.012)
English	intermediate	Significant (p<.005)	Not significant (p=.147)
	Advanced	Significant (p<.010)	Significant (p<.001)

Post-hoc tests also revealed that there were few L1 differences. When the intermediate groups and the advanced groups were compared with each other, the only significant difference found was between the CA and EA groups in type 2-2 (p<.009).

Table 35 shows individual results from type 1 and 2 questions. Similar to the GJ task, if the mean scores of the two conditions from each type were separated by one point or more, participants were considered to make a distinction between the two types. If there was a distinction made, the higher mean score is taken as the type that participants accepted, and the one that received a lower score is taken as the type that they rejected. If the higher score was given to the appropriate

answer and the lower score to the inappropriate answer, a learner is considered to have targetlike interpretations. As the table shows, one control subject showed non-targetlike judgments. She accepted unacceptable type 2-2 pairs. Only one participant each from the CI and EI groups was targetlike. As for the advanced group, some learners, from the Chinese and English groups, showed targetlike interpretations of the contrast.

Table 35: Q/A task: *KA* conditions - Individual results

Groups	Levels	Number of subjects with targetlike judgments
Control		11/12 (91.6%)
Chinese	intermediate	1/27 (3.7%)
	advanced	6/25 (24%)
English	intermediate	1/19 (5.2%)
	advanced	5/13 (38.4%)

Table 36 shows the results from the *MO* conditions. Only the English advanced group was not significantly different from the control group for type 3-1. None of the groups were significantly different from the control group for the other two types.

A one-way ANOVA showed group effects for types 3-1 ($F(4, 91)=27.999$, $p<.001$) and type 3-3 ($F(4, 91)=2.859$, $p<.021$) but no group effects for type 3-2. Post-hoc tests revealed that, for type 3-1, the EA group was not significantly different compared to the control group ($p=.214$), but all other learner groups were (CI: $p<.001$; CA: $p<.001$; EI: $p<.001$). For types 3-2 and 3-3, there were no statistically significant differences between the control group and a learner group.

Table 36: Q/A task: *MO* conditions - Group results (mean max. 4)*

		Type 3-1 appropriate	Type 3-2 appropriate	Type 3-3 inappropriate
Control		3.85	4	1.31
Chinese	intermediate	1.65**	3.68	1.5
	advanced	2.07**	3.88	1.08
English	intermediate	1.72**	3.93	1.71
	advanced	3.23	3.90	1.56

Asterisks (for p<.05, and ** for p<.001) next to the mean scores indicate statistically significant results compared to the control group.

The mean results from types 3-1 and 3-3 from each group were compared, using paired-sample t-tests. The results are shown in table 37. These two pairs were compared because questions in both pairs are followed by a yes/no response; only type 3-1 is appropriate due to the presence of *MO*. The CI and EI groups did not make a significant distinction between the two types. The control group and the advanced groups showed targetlike distinction.

Table 37: Q/A task: Type 3-1 – Type 3-3 statistical comparison

Control		Significant (p<.001)
Chinese	intermediate	Not significant (p=.243)
	advanced	Significant (p<.001)
English	intermediate	Not significant (p=.925)
	advanced	Significant (p<.001)

Post-hoc tests showed a significant difference between the CA and EA groups in type 3-1 (p<.001), with the EA group more targetlike than the CA group.

There were no other significant differences between the intermediate or advanced groups. Thus, L1 effects were observed in the advanced groups, with the English group more targetlike than the Chinese group.

Table 38 shows individual results from type 3 questions. The comparison was made between type 3-1 and 3-3 and between type 3-2 and 3-3. The criteria used to determine the individual results are the same as those used for types 1 and 2, as described above. As can be seen, the majority of advanced English-speaking learners and about half of the advanced Chinese-speaking learners seemed to make targetlike judgments.[100]

Table 38: Q/A task: *MO* conditions - Individual results

Groups	Levels	Number of subjects with targetlike interpretations
Control		12/12 (100%)
Chinese	intermediate	2/27 (7.4%)
	advanced	13/25 (52%)
English	intermediate	1/19 (5.2%)
	advanced	11/13 (84.6%)

6.7.4. Summary and discussion

In the *KA* conditions, the CA and EA groups made the distinction between the two types of questions, types 1 and 2. The individual results revealed that some advanced learners made targetlike interpretations, suggesting that scope interpretations of Japanese wh-constructions are acquirable. The intermediate groups, on the other hand, lacked knowledge of the scope interpretations in

[100] For the individual response patterns, see Appendix D.

Japanese.

In the *MO* condition, the EA group was not statistically different from the control group, and the CA and EA groups showed a distinction for the two types of questions, types 3-1 and 3-3. The individual results also show accurate performances by advanced learners. About half of the Chinese-speaking advanced learners and the majority of the English-speaking advanced learners were targetlike, suggesting, again, that scope interpretations of indeterminate phrases are acquirable. Intermediate learners were much less accurate, suggesting that this knowledge develops at a later stage in acquisition.

L1 differences were found in types 2-2 and 3-1 between the CA and EA groups. In both cases, the EA group was more targetlike than the CA group. There were no differences between the two intermediate groups for any of the types.

6.8. Summary of the three tasks

The experiment was designed to test whether L2 learners of Japanese are able to acquire targetlike knowledge of the dependency between the indeterminate phrase and the Q-particle. In the *KA* conditions, the intermediate groups from both L1s seemed to lack knowledge of the dependency between the indeterminate phrase and the Q-particle in all tasks, failing to show the crucial interpretive contrast for the experimental test items. Advanced learners, on the other hand, showed some evidence of this knowledge. Both the CA and the EA groups demonstrated that they have knowledge of the contrast in the Q/A tasks. In other tasks, however, such knowledge was not found in the group results. In the individual results, a few learners were able to achieve targetlike interpretations, as summarized in table 39.

Table 39: Summary of individual results - *KA* conditions*

	Task 1 GJT	Task 2 Translation	Task 3 Q/A pair
Chinese			
Intermediate	0/27 (0%)	0/27 (0%)	1/27 (3.7%)
Advanced	2/25 (8%)	1/25 (4%)	6/25 (24%)
English			
Intermediate	0/17 (0%)	0/19 (0%)	0/19 (0%)
Advanced	4/13 (30.1%)	2/13 (15%)	5/13 (38.4%)

*The raw numbers in the table are the number of subjects who had targetlike judgments/interpretations.

In the *MO* conditions, the EI groups, again, showed no evidence that they had knowledge of the dependency between an indeterminate phrase and a Q-particle. The CI group subjects were much more accurate in their interpretations of indeterminate phrases as universal quantifiers in the translation task. However, in other tasks, they showed no significant differences compared to their English-speaking counterparts. The CA group showed good knowledge of the association between the indeterminate phrases and *MO* in the translation task and the Q/A task. The EA group, on the other hand, was targetlike in all tasks in the *MO* condition. The individual results of the *MO* conditions are summarized in table 40.

Table 40: Summary of individual results - *MO* conditions

	Task 1 GJT	Task 2 Translation	Task 3 Q/A pair
Chinese			
Intermediate	4/27 (14.8%)	12/27 (44%)	2/27 (7.4%)
Advanced	8/25 (32%)	11/25 (44%)	13/25 (52%)
English			
Intermediate	1/19 (5.2%)	0/19 (0%)	1/19 (5.2%)
Advanced	8/13 (61.5%)	7/13 (53.8%)	11/13 (84.6%)

Although some inconsistencies were found depending on task and conditions (*KA* or *MO*), overall, some advanced learners from both the Chinese and English groups demonstrated that they had achieved targetlike knowledge of the dependency between the indeterminate phrase and *MO*.

6.9. Consistency across three tasks

In this section, we consider how consistent learners were in showing targetlike judgments/interpretations across the three tasks. [101] Table 41 presents consistencies in the *KA* conditions, and table 42 presents consistencies in the *MO* conditions. The ratios in the tables indicate the number of learners who were targetlike in at least two of the three tasks. Since the control group took only two tests, the GJ task and the Q/A task, the ratios represent subjects who were consistently targetlike in both tasks. One learner in the CA group was targetlike in two of the three tasks, the GJ task and the Q/A task. Of the five learners in the EA group, one learner was consistent across all three tasks, while the other four were targetlike in two of the three tasks.

[101] For the individual results across the three tasks, see Appendix C.

In the *MO* conditions, among those in the Chinese groups, one each from the intermediate group and the advanced group were consistently targetlike in all three tasks, and all the rest were consistent across two of the three tasks. As for the English groups, four out of nine advanced learners were targetlike in all three tasks, and five were targetlike in two out of the three tasks.

Learners who were targetlike for the *KA* conditions were also targetlike for the *MO* conditions. In other words, the learners shown in table 41 (one from the Chinese advanced group and five from the English advanced group) were a subset of the learners shown in table 42.

Table 41: Consistency – *KA* conditions

Groups	Levels	Number of subjects with targetlike interpretations
Control		8/12 (66.6%)
Chinese	intermediate	0/27 (0%)
	advanced	1/25 (4%)
English	intermediate	0/19 (0%)
	advanced	5/13 (38.4%)

Table 42: Consistency – *MO* conditions

Groups	Levels	Number of subjects with targetlike interpretations
Control		10/12 (83.3%)
Chinese	intermediate	5/27 (18.5%)
	advanced	12/25 (48%)
English	intermediate	0/19 (0%)
	advanced	9/13 (69.2%)

Most learners in tables 41 and 42 were not consistent in all three tasks; rather, they were targetlike in two out of three tasks. The task in which learners (and control subjects) were most targetlike was the Q/A task, and they were less targetlike in the other two tasks, the GJ task and the translation task (see the tables in Appendix C). Some inconsistencies, I believe, were caused by the type of task that was used. As discussed in §6.5.4, in the GJ task, even some native speakers were non-targetlike. I speculated that it might have been because, due to contextual information provided in the task, some ungrammatical sentences were "interpretable" for them. L2 learners may have been affected by the same reason in the GJ task. In the translation task, learners were asked to translate sentences from their L2 into their L1. It may have been difficult for some learners to reflect what they interpreted L2 sentences to mean in their L1. I believe this is particularly true in the *KA* condition, in which the translation they were asked to do was quite subtle, since the contrast was whether the indeterminate phrase took matrix scope or embedded scope. The Q/A task did not involve judging sentences as possible or impossible, and therefore, the problem with the GJ task did not arise. In addition, unlike in the translation task, learners' L1s were not involved in the judgment. For these reasons, it is likely that learners and the native control groups performed the best in the Q/A task.

Given the difficulties that learners may have had in the GJ task and the translation task, if learners were targetlike at least in two of out three tasks, I consider that they have acquired Japanese wh-constructions.

6.10. L1 differences

One of the questions investigated in this study was whether we observed a difference in the possibility of parameter resetting in learners with distinct L1s. Table 43 summarizes the statistical comparison between the Chinese and English

groups.

Table 43: Comparison between the Chinese and English groups*

Groups	Task 1		Task 2		Task 3	
	KA	*MO*	*KA*	*MO*	*KA*	*MO*
Intermediate	n-sig	n-sig	n-sig	sig (C)	n-sig	n-sig
Advanced	sig (E)	n-sig	n-sig	sig (E)	sig (E)	sig (E)

* "sig" means significant, and "n-sig" means not significant. The letter in the parentheses next to the significant results indicates the group that was more targetlike between the two groups ((C) for the Chinese group or (E) for the English group).

As can be seen from the table, at the intermediate level, no difference was found, except for the results from the *MO* condition in the translation task. At the advanced level, more significant results between the Chinese and English groups were found, and the EA group was more targetlike in all significant results.

As discussed in the previous section, there were more individual learners who were targetlike from the English advanced group than from the CA group. The same tendency was found in the group results; the English speakers outperformed the Chinese speakers.

6.11. Summary: Chapter 6

The experiments discussed in this chapter were designed to investigate the following research questions:

(30) a. Is resetting of the wh-construal parameter possible?

b. Can both Chinese and English speakers reset the wh-construal parameter?

It seems that the answer to (30a) is positive, given the fact that a number of the

advanced learners were consistent across tasks in demonstrating native-like judgments. However, it was also the case that many learners at the advanced level had yet to reset the parameter. It is, therefore, necessary to examine why, for some learners, resetting of the wh-construal parameter causes difficulties.

The answer to research question (30b) is positive for English speakers but somewhat unclear for Chinese speakers, as only one Chinese-speaking learner was targetlike in both the *KA* and *MO* conditions. At the intermediate level, the CI group outperformed the EI group in the translation task in the *MO* condition. However, in other conditions, the results were not significantly different from those of the EI group. At the advanced level, in fact, the EA group outperformed the CA group in all the tasks in both conditions. Since Chinese is typologically similar to Japanese, the results turn out to be puzzling as to why English speakers, not Chinese speakers, outperformed their counterparts.

In the next chapter, I will discuss the evidence for successful parameter resetting as well as the failure of parameter resetting by some advanced learners. In addition, I will examine L1 differences, and present an alternative view on the role of L1.

Chapter 7: Discussion

7.1. Introduction

The results from the experiment showed that some learners at the advanced level are able to achieve the targetlike interpretations of indeterminate phrases in Japanese, suggesting that the wh-construal parameter can be reset. However, as also shown by the results, many learners, including advanced learners, failed to show evidence of parameter resetting. This is consistent with previous research on the L2 acquisition of wh-in-situ, and it begs for an explanation as to why the acquisition of wh-in-situ poses difficulties for L2 learners. In addition, when comparing the two L1 groups, English speakers outperformed Chinese speakers, and there was little evidence that Chinese speakers are able to reset the wh-construal parameter to the Japanese value.[102]

Given the results, the focus will be on the following three points in this section.

(1) a. The possibility of resetting the wh-construal parameter
    b. The difficulties in resetting the wh-construal parameter
    c. Out-performance of Chinese speakers by English speakers

As mentioned above, only a few learners were successful at resetting the parameter. This means that the majority of the learners showed non-targetlike interpretations. I summarize both targetlike and non-targetlike interpretations in §7.2 to examine interlanguage development of the Japanese wh-constructions. In

[102] Out-performance by the English advanced group could be in part due to the difference in the proficiency levels between the Chinese and English advanced groups. However, as I will argue in §7.3.2, based on the learners' non-targetlike interpretations, the reason for English speakers outperforming Chinese speakers may not merely be the difference in their proficiency level.

§7.3, I present discussions of both the targetlike and non-targetlike interpretations from the results. In §7.3.1, I examine why, among many advanced learners, a few learners were able to achieve targetlike interpretations. It was found that learners who demonstrated targetlike interpretations were high-proficiency learners, suggesting that the acquisition of the wh-construal in Japanese is linked to learners' proficiency level. In §7.3.2, I re-examine the role of L1, and I propose a different view on the acquisition of Japanese wh-constructions. Under this proposal, English can be viewed as more similar to Japanese. This proposal may account for why English speakers were more targetlike compared to Chinese speakers. I discuss some remaining issues, relating to the results of this study and previous studies, in §7.4, and I give summaries of this chapter and conclusions in §7.5 and §7.6, respectively.

7.2. Interlanguage interpretations of indeterminate phrases

In this section, I summarize the targetlike and non-targetlike interpretations of the indeterminate phrases, demonstrated by L2 learners of Japanese. Only the interpretations exhibited consistently by some participants are summarized here. Some learners showed inconsistent non-targetlike interpretations. The table summarizing all interpretation types, both target and non-target, is shown in Appendix D.

In §7.2.1, the summary and the discussion of the interpretations from the *KA* conditions are presented, and in §7.2.2, those from the *MO* conditions are presented. The interpretations from the test item testing learners' knowledge of the interrogative Q-particle *KA* and declarative particle *–to* are summarized and discussed in §7.2.3.

7.2.1. *KA* conditions

7.2.1.1. Response patterns

The results from the experiment show that the majority of intermediate learners from both language groups lack knowledge of the dependency between the indeterminate phrase and the Q-particle. This is, to some extent, true for advanced learners. In the *KA* condition, the results from the Q/A task showed that 33.3% of the Chinese intermediate learners and 42.1% of the English intermediate learners rejected yes/no responses for both matrix wh and yes/no questions in (2) and (3), repeated below, while accepting both Q/A pairs in (4) and (5).

(2) Question: Masami-wa dare-o shootaisita-to iimasita-ka?
Masami-Top who-Acc invited-that said-KA
'Who did Masami say she invited?'
Answer: Hai, iimasita-yo.
yes, said-Part.
'Yes, she did.'

(3) Question: Miki-wa nani-o nonda-ka iimasita-ka?
Miki-Top what-Acc drank-KA said-KA
'Did Miki say what she drank?'
Answer: Hai, iimasita-yo.
yes, said-Part.
'Yes, she did.'

(4) Question: Masami-wa dare-o shootaisita-to iimasita-ka?
Masami-Top who-Acc invited-that said-KA
'Who did Masami say she invited?'
Answer: Kenji-o shootaisita-to iimasita-yo.
Kenji-Acc invited-that said-Part.
'She said that she invited Kenji.'

(5) Question: Miki-wa nani-o nonda-ka iimasita-ka?
Miki-Top what-Acc drank-KA said-KA
'Did Miki say what she drank?'
Answer: Biiru-o nonda-ka iimasita-yo.
beer-Acc drank-KA said-Part.
'She said whether or not she drank beer.'

The questions in (2) and (3) are followed by a yes/no response, and the questions in (4) and (5) are followed by a content answer. Rejecting a yes/no response and accepting only a content answer suggest that these learners interpreted both types of questions, a yes/no question and a matrix wh-question, as wh-questions.[103] This response type was virtually non-existent at the advanced level; only one out of 25 (4%) learners from the advanced Chinese group and none from the advanced English group showed this type of response.

In addition, some learners in the intermediate groups and the advanced groups interpreted indeterminate phrases as taking embedded scope even without *KA* present at the embedded C^0. Such interpretations were particularly evident in the GJ task and in the translation task. In the grammaticality judgment task, 25.9% of responses from the Chinese intermediate learners, 47.3% of responses

[103] See Appendix D for response patterns for the *KA* conditions.

from the English intermediate learners, 8% of responses from the Chinese advanced learners, and 38.4% of responses from the English advanced learners judged both sentences in (6) below as grammatical. For the sentence in (6b) to be grammatical, the indeterminate phrase must take embedded scope. Since the embedded clause is marked with *–to*, the declarative complementizer, (6b) is ungrammatical. However, interlanguage grammars seem to allow the indeterminate phrase to take scope at the embedded clause.

(6) a. Grammatical

Mary-wa [John-ga nani-o katta-ka] iimasita.
Mary-Top John-Nom what-Acc bought-KA said
'Mary said what John bought.'

b. Ungrammatical

*Mary-wa [John-ga nani-o katta-to] iimasita.
Mary-Top John-Nom what-Acc bought-that said

In the translation task, 85.1% of the Chinese intermediate learners, 73.6% of the English intermediate learners, 76% of the Chinese advanced learners, and 76.9% of the English advanced learners translated questions such as (7a) and (7b) as yes/no questions. In order for both sentences in (7) to be interpreted as yes/no questions, the indeterminate phrase must take scope at the embedded clause. In (7a), the embedded clause is marked with the declarative complementizer *–to*, and thus, again in the TL, it is impossible for the indeterminate phrase to take embedded scope. However, some interlanguage grammars, again, seem to allow this interpretation.

(7) a. Matrix wh-question

[Mary-wa [John-ga nani-o katta-to] iimasita-ka]?

Mary-Top John-Nom what-Acc bought-that said-KA

'What did Mary say John bought?'

b. Yes/no question

Mary-wa [John-ga nani-o katta-ka] iimasita-ka?

Mary-Top John-Nom what-Acc bought-KA said-KA

'Did Mary say what John bought?'

The two non-target interpretations observed from the response patterns are shown in (8a) and (8b), and the target interpretation is given in (8c).

(8) a. [[… ind_1 … ka/to] ka-Op_1]

b. [[… ind_1 … ka/to (Op_1)] ka-(Op_1)]

c. [[… ind_1 … ka-Op_1] ka]

In the interpretation in (8a), indeterminate phrases are always interpreted as taking matrix scope. This is particularly evident in the intermediate learners. The interpretation shown in (8b) was observed in intermediate as well as advanced learners, who allowed an indeterminate phrase to take scope at the embedded clause, even without the presence of *KA*. Some advanced learners showed the targetlike interpretation, where the scope interpretations of indeterminate phrases are linked to the presence of *KA* in C^0, as shown in (8c).

The interpretation in (8a) is typically found in intermediate learners and less so in advanced learners. Therefore, (8a) is likely to be a representation that L2 learners choose initially. The interpretation in (8c) was found by only high-proficiency learners in the advanced groups (see §7.3.1), suggesting that this

interpretation is what learners can ultimately achieve. The interpretation in (8b) may arise during the course of acquiring wh-constructions in Japanese, in between (8a) and (8c).

7.2.1.2. Discussion

The interpretation in (8a) means that both yes/no and matrix wh-questions are interpreted as matrix wh-questions, and in (8b), both question types are ambiguous between yes/no and matrix wh-questions. In both (8a) and (8b), the distinction between the two types of complementizers, *KA* and *–to*, is absent. In (8a), regardless of the particle used in the embedded COMP position, the indeterminate phrase always takes matrix scope, and in (8b), the indeterminate phrase in the embedded clause can either take embedded or matrix scope, again, regardless of the particle in the embedded COMP.

The interpretation in (8a) is predicted from both L1 groups, due to their L1s, as discussed in §5.4. The interpretation in (8b), however, is an interpretation that is consistent neither with L1 transfer nor with targetlike interpretation. This interpretation shows that learners go beyond their L1s, but the source of this interpretation type is unclear. I believe the interpretation in (8b) also comes from learners' previous knowledge of language. They already have knowledge that the wh-interrogative phrase is associated from the COMP position from their L1s. By encountering bi-clausal sentences containing a wh-element, learners are likely to realize that there are two potential sites for the indeterminate phrase to take scope, one at the embedded CP and the other at the matrix CP. If learners lack the knowledge that the position of the Q-particle determines the scope position for the indeterminate phrase, both COMP positions can be the site for the indeterminate phrase to take scope. The representation in (8b), therefore, may arise from their knowledge of scope and their lack of knowledge of the scope-marking strategy

that is specific to Japanese. Since particles and their association with the indeterminate phrase are not fully acquired, the representation in (8b) may be more similar to that in (9). In this representation, the indeterminate phrase can take either matrix or embedded scope.

(9) [[… ind_1 … (Op_1)] (Op_1)]

If learners have a representation as in (9), which allows optional interpretations between embedded and matrix scope readings, the results found in the translation task seem puzzling. In the translation task, when tested with the contrast such as below in (10), the majority of learners from all groups predominantly translated both (10a) and (10b) as a yes/no question.

(10) a. Junko-wa [dare-ga paatii-ni kita-ka] iimasita-ka?
Junko-Top who-Nom party-to came-KA said-KA
'Did Junko say who came to the party?'

b. Junko-wa [dare-ga paatii-ni kita-to] iimasita-ka?
Junko-Top who-Nom party-to came-that said-KA
'Who did Junko say came to the party?'

If learners can have a representation similar to (9), which is truly optional, it is not clear why many learners interpreted both sentences in (10) as yes/no questions, choosing the embedded COMP position to take scope.

I believe the interpretations that many learners demonstrated in the translation task reveal their preferences. This preference, I speculate, is related to the locality bias also shown in Lieberman et al. (2006), presented in §4.4. In the test sentences used in the current study, all indeterminate phrases are in the

embedded clause. Recall from Lieberman et al.'s study that L2 learners (and native speakers) preferred the indeterminate phrase in the embedded clause to take embedded scope and the indeterminate phrase in the matrix clause to take matrix scope. There seems to be a preference among L2 learners (and also native speakers) to interpret the indeterminate phrase in the embedded clause as taking scope at the local CP.

If learners have the representation in (9), which lacks the role of the Q-particle altogether, the closest operator position available is the one in the embedded clause, and thus, this is the operator that the indeterminate phrase associates with. Since the use of particles, either *KA* or *–to*, is not reflected in their interpretation, the general processing mechanism may lead the indeterminate phrase to be associated with the closest operator available. Without the particles, the representation is similar to that of Chinese, exemplified in (11). Thus, even if learners have the interpretation in (9), this is not a violation of what is allowed in natural languages.

(11) [(QU) Mary shuo [(QU) John maile shenme] (?)
Mary say John bought what

a. 'What did Mary say John bought?'

b. 'Mary said what John bought.'

The interpretation in (9) is presumably abandoned once knowledge of the association between the indeterminate phrase and the Q-particle develops.[104]

[104] One may wonder whether there may be a learnability problem recovering from (9). I believe that that is not the case, as the interpretation in (9) is caused by learners' insufficient knowledge of Q-particles. Once this knowledge is acquired, targetlike interpretations should be possible.

7.2.2. *MO* conditions

7.2.2.1. Response patterns

Compared to the results from the *KA* conditions, learners generally performed better on the *MO* conditions. Five out of 27 (18.5%) Chinese intermediate learners, 12 out of 25 (48%) Chinese advanced learners, and 9 out of 13 (69.2%) English advanced learners were targetlike in the *MO* conditions.

Non-targetlike interpretations seem to have been caused by the difficulties in associating *MO* with an indeterminate phrase. This was most evident by intermediate learners from both language groups. Even with the presence of *MO*, intermediate learners tended to interpret indeterminate phrases as wh-interrogative phrases.[105] In the translation task, 40.7% of the Chinese intermediate learners and 26.3% of the English intermediate learners translated (12) as a wh-question. At the advanced level, 44% of the Chinese speakers translated it as a wh-question, while no advanced English speakers translated it as a wh-question.

(12) Mary-wa [dare-ga kaita hon]-mo yomimasita-ka?
Mary-Top who-Nom wrote book-MO read-KA
'Did Mary read books everyone wrote?'

In the Q/A task, 74% of the responses by the Chinese intermediate learners and 57.8% of the responses by the English intermediate learners rejected the Q/A pairs in (13), suggesting again that the indeterminate phrase in (13) was interpreted as a wh-interrogative phrase. At the advanced level, the percentages were decreased to 48% of the responses by the Chinese advanced group and 7.6% of the responses by the English advanced group.

[105] For individual response patterns, see Appendix D.

(13) With *MO* Appropriate Q/A pair

Question: [Dare-ga kaita hon]-mo yoku uremasita-ka?
who-Nom wrote book-MO well sold-KA
'Did the books everyone wrote sell well?'

Answer: Hai, uremasita-yo.
Yes, sold-Part.
'Yes, they did.'

The response patterns suggest that, in the structure schematized in (14), learners start with the interpretation in (14a), in which they interpret the indeterminate phrase as a wh-interrogative phrase, and later they start to associate the indeterminate phrase with a Q-particle *MO*, as shown in (14).

(14) a. [[… ind_1 … mo] ka Op_1]

b. [[… ind_1 … mo-Op_1] ka]

At the advanced level, the majority of English-speaking learners were sensitive to the presence of *MO*, which indicates that they have knowledge of the association between the indeterminate phrases and a Q-particle *MO*. Chinese-speaking learners, on the other hand, were less successful compared to English-speaking learners.

As for the interpretations of *MO*, in the translation task, some learners in fact did not interpret *MO* as a universal particle but rather as an existential particle. This interpretation was often made by English-speaking learners, in the intermediate and the advanced groups, but rarely made by Chinese-speaking learners. The test sentences used in the translation task are repeated below in (15).

(15) a. Type 3-1: With *MO*

[Dare-ga mottekita wain-mo] oisikattadesu-ka?

who-Nom brought wine-MO was-delicious-KA

'Was the wine that everyone brought good?'

b. Type 3-2: Without a Q-particle

[Dare-ga mottekita wain-ga] oisikattadesu-ka?

who-Nom brought wine-Nom was-delicious-KA

'Who(x), the wine x brought was delicious?'

Three consistent patterns were found in the translation task results, which are shown in (16).[106]

(16) a. Both types 3-1 and 3-2 as existential: EI 6/19 (31.5%), EA 2/13 (15.3%)

b. Type 3-1 as universal, type 3-2 as existential: EI 1/19 (5.2%), EA 3/13 (23.0%)

c. Type 3-1 as existential, type 3-2 as interrogative: EI 2/18 (10.5%), EA 2/13 (15.3%)

One learner in the Chinese intermediate group had the interpretation in (16a), but, except for this learner, the interpretations in (16) by Chinese speakers were not observed. The presence of the interpretations in (16) suggests that some learners have the knowledge that Japanese wh-elements have non-interrogative interpretations, although the learners have not fully acquired how the indeterminate phrase is associated with a quantificational element in Japanese.

[106] Responses were considered consistent if they showed the same response pattern three out of four tokens for each type.

7.2.2.2. Discussion

In the *MO* conditions, two scope interpretations of an indeterminate phrase with relation to the presence of *MO* were found, as shown in (17). The interpretation represented in (17b) is targetlike, and the one in (17a) is not. The majority of L2 learners at the intermediate level seem to have the interpretation in (17a), being insensitive to the presence of *MO*, and interpret the indeterminate phrase as an interrogative phrase. This interpretation is predicted from learners' L1s, as discussed in §5.4. In addition, given their proficiency level, it is not surprising that they lack knowledge of the feature associated with *MO*. As a learner's proficiency level improves, the interpretation in (17b) becomes possible.

(17) a. [[… ind_1 … mo] ka-Op_1]

b. [[… ind_1 … mo-Op_1] ka]

As summarized in the last section, some learners interpreted *MO* as an existential particle. This interpretation was often made by English-speaking learners, but almost non-existent for Chinese speakers. What seems to be the characteristic difference between Chinese and English speakers is that Chinese speakers' responses tended to be categorical; some learners are sensitive to the presence of *MO*, but some learners *completely* ignore it, and simply interpret indeterminate phrases as wh-interrogative phrases, as in (15a). Responses by English speakers, on the other hand, are less categorical, seemingly less sure of the interpretations of indeterminate phrases, but *MO* is rarely ignored, except by some low-proficiency learners. English speakers tried to interpret *MO* one way or the other, and their attempts sometimes resulted in non-target interpretation of *MO*, interpreting it as an existential quantifier particle, for example. In other words, some Chinese speakers seemed to have difficulties recognizing the presence of

Q-particles. English speakers, on the other hand, recognized the presence, but sometimes interpreted it in a non-targetlike way.

The reason for the difference in their sensitivity to the presence of Q-particles is not clear. However, the difference is clearly present between the two groups, and this will be taken up again in §7.3.2.

7.2.3. Complementizer types

7.2.3.1. Response patterns

In this section, I will examine the results from the translation task, which tested learners' knowledge of the distinction between the interrogative particle *KA* and the declarative particle *–to*. In this task, learners were tested with bi-clausal sentences containing no indeterminate phrases. The examples are given in (18) below. There were two types of questions, one containing the interrogative particle *KA* and one containing the declarative particle *–to* 'that'.

(18) a. Interrogative embedded clause

Jiro-wa [pro pizza-o katta-ka] iimasita-ka?

Jiro-Top pizza-Acc bought-KA say-KA

'Did Jiro say whether or not he bought pizza?'

b. Declarative embedded clause

Jiro-wa [pro pizza-o katta-to] iimasita-ka?

Jiro-Top pizza-Acc bought-that say-KA

'Did Jiro say that he bought pizza?'

The individual results revealed that only one out of the 27 subjects (4%) in the Chinese intermediate group and five out of the 25 subjects (20%) in the Chinese advanced group were able to distinguish the two. The English intermediate and

advanced groups, on the other hand, were much more successful: five out of the 19 (36%) intermediate subjects and 10 out of the 13 (76.9%) advanced subjects, respectively, were able to make a distinction between the two complementizer types.

For both Chinese and English groups, the non-targetlike interpretations of the two complementizers were, for the most part, caused by interpreting the relevant complementizer as the opposite type; that is, interpreting the declarative complementizer as interrogative and vice versa. The responses by Chinese speakers were heavily biased, as the majority of learners, both in the intermediate and advanced groups, translated both types of sentences in (18) as having declarative embedded clauses.

7.2.3.2. Discussion

Compared to English speakers, Chinese speakers were less accurate in interpreting the interrogative and declarative complementizers. A possible explanation is that, in Chinese, overt complementizer particles that mark a declarative or an interrogative clause, such as *KA* and *–to* in Japanese, do not exist. In Chinese, a declarative clause contains no particle, and an interrogative clause is marked with an A-not-A construction, as shown in (19).[107]

(19) a. Mary shuo $[_{CP[-Q]}$ ta maile xie.]
Mary say he bought shoes
'Mary said that she bought shoes.'

b. Mary shuo $[_{CP[+Q]}$ ta shi-bu-shi maile xie].
Mary say he be-no-be bought shoes
'Mary said whether or not she bought shoes.' (Chen Qu, p.c.)

[107] For the A-not-A construction, see, for example, Huang (1982).

In English, on the other hand, overt complementizers distinguishing the declarative and the interrogative are available.

(20) a. Mary said [$_{CP[-Q]}$ (that) she bought shoes].

b. Mary said [$_{CP[+Q]}$ whether (or not) she bought shoes].

The tendency by Chinese speakers to interpret both complementizer types as declarative may come from the fact that the null complementizer means declarative in their L1. This is a natural consequence if they are insensitive to the presence of particles.

The features of Q-particles are crucial for the interpretation of sentences containing an indeterminate phrase. As has repeatedly been discussed, the scope interpretations of indeterminate phrases depend upon the position of *KA*. As illustrated in (21), it is only when there is a particle with a [+Q] feature, *KA*, that the indeterminate phrase can take embedded scope. Without it, it is prohibited, as in (21b).

(21) a. [[$_{CP}$ … ind$_1$ … Op$_1$ ka$_{[+Q]}$]]

b. [[$_{CP}$ … ind$_1$ … to$_{[-Q]}$] Op$_1$ ka$_{[+Q]}$]

If, as evident from the results, Chinese speakers in particular have difficulties acquiring the features of particles, [+Q] for *KA* and [-Q] for *–to*, even at the advanced level, it is not surprising that they are unable to achieve targetlike scope interpretations for indeterminate phrases in Japanese.

However, knowing the distinction between the two types of complementizers does not guarantee that they have targetlike scope interpretations. Although the majority of English speakers were able to make the distinction between the two

types of complementizers, they were not as successful at the scope interpretation of indeterminate phrases in the *KA* conditions as in knowledge of the *KA/-to* contrast. The results from the test items examining their acquisition of the *KA/-to* contrast and the *KA* conditions are summarized in table 44. Only six learners showed targetlike knowledge of scope interpretations in the *KA* conditions, as has already been mentioned. However, as can be seen in the left column of table 44, many more learners knew the distinction between the interrogative and the declarative complementizers, when the learners were tested without an indeterminate phrase in a sentence, demonstrating that learners who know the distinction between the two complementizer types do not simultaneously achieve targetlike scope interpretations of indeterminate phrases with *KA*.

Table 44: Morphology-semantics correlation (number of learners)

	The contrast *KA/-to*	Targetlike interpretation: *KA* conditions
Chinese		
intermediate	1/27 (4%)	0/27 (0%)
advanced	5/25 (20%)	1/25 (4%)
English		
intermediate	5/19 (36%)	0/19 (0%)
advanced	10/13 (76.9%)	5/13 (38.4%)

It is, however, important to note that, in table 44, although not all learners who knew the *KA/-to* distinction had targetlike scope interpretations, those with targetlike scope interpretations always knew the *KA/-to* contrast. What is clear from the results, therefore, is that knowledge of the complementizer types is prerequisite to knowing scope interpretations. It is natural that, in the grammar of

Japanese, the *KA/–to* distinction must precede the target scope interpretations. In other words, the features for *KA* and *–to* must be in place to determine where indeterminate phrases take scope. It is impossible, in fact, to have targetlike scope interpretations without knowledge of the interrogative and declarative complementizers for the test sentences used in the experiment.

Although there was a link between the features of the particles and the scope interpretations, the target scope interpretation does not emerge instantaneously after acquiring the feature of *KA*. This observation is similar to Montrul & Slabakova's (2002) finding, discussed in §4.1.2. They found that the acquisition of morphology is a prerequisite for targetlike semantics to emerge, but the development of semantic contrast was gradual. In the case of L2 acquisition of wh-in-situ, the same phenomenon is observed. The development of targetlike semantics is gradual after having acquired the features of *KA* and *–to*.

7.2.4. Summary

Three interpretation patterns were found in the *KA* conditions and two in the *MO* conditions, as repeated below in (22) and (23).

(22) a. [[… ind_1 … ka/to] ka-Op_1]
b. [[… ind_1 … ka/to (Op_1)] ka-(Op_1)]
c. [[… ind_1 … ka-Op_1] ka]

(23) a. [[… ind_1 … mo] ka Op_1]
b. [[… ind_1 … mo-Op_1] ka]

The non-targetlike interpretations seem to arise from the lack of knowledge of the Q-particle and its association with the indeterminate phrase. This is expected, as

the interpretations of indeterminate phrases crucially depend on the features of the Q-particles, as well as the position at which they appear. The acquisition of targetlike knowledge is possible, though its development is gradual, after acquiring the features of Q-particles.

7.3. Parameter resetting and the role of L1

7.3.1. Full access and parameter resetting

In this section, those participants who were able to reset the wh-construal parameter are examined. As mentioned earlier, altogether, there were six learners out of 84 (7%) learners, and all were from the advanced groups (among the advanced learners, it was six out of 38 (15.7%)). One learner was from the Chinese advanced group, and five were from the English advanced group. The five learners from the English advanced group, who were targetlike in both *KA* and *MO* conditions, were also the five most proficient learners within the group. Biographical data of the learners in the English advanced group are shown in table 45.[108] As for the one Chinese speaker who was targetlike, she scored 35 out of 43 on the proficiency test and was 18 when she was first exposed to Japanese. She had been studying Japanese for 8 years and had lived in Japan for 6 years.

[108] Subject E27 scored high in the proficiency task just as other subjects who were targetlike. However, she was only targetlike in the Q/A task under the *MO* condition. Her non-targetlike performance may be attributed to the fact that her exposure to Japanese had been predominantly limited to the classroom as she had never resided in Japan over a extensive period of time, unlike the other high-proficiency learners in the English advanced group. Although she is an advanced learner of Japanese, and therefore scored high on the proficiency test, it seems that her exposure to Japanese was not comparable to other advanced learners who were targetlike in the tests used in the experiment.

Table 45: Biographical data of advanced English-speaking learners

			Proficiency test scores (out of 43)	Age of first exposure	Number of yrs studying Japanese	Length of residence in Japan
1	E20	Non-target	30	25	6 yrs	6 yrs
2	E21	Non-target	30	24	15 yrs	4 yrs
3	E22	Non-target	32	18	16 yrs	13 yrs
4	E23	Non-target	33	20	7 yrs	3 yrs
5	E24	Non-target	33	18	4 yrs	10 mo
6	E25	Non-target	34	26	5 yrs	5 yrs
7	E26	Non-target	35	19	4 yrs	1 yrs. 9 mo
8	E27	Non-target	38	14	5 yrs	1 mo
9	**E28**	**Target**	**38**	**22**	**16 yrs**	**9 yrs**
10	**E29**	**Target**	**38**	**22**	**7 yrs**	**4 yrs**
11	**E30**	**Target**	**38**	**16**	**21 yrs**	**18 yrs**
12	**E31**	**Target**	**41**	**18**	**10 yrs**	**4 yrs**
13	**E32**	**Target**	**41**	**22**	**17 yrs**	**14 yrs**

Given these results, it seems evident that targetlike interpretations are closely linked to high proficiency. The Chinese speaker who was targetlike was not the most advanced learner in the group. However, this learner was also very proficient. Parameter resetting, therefore, appears to be possible only at the highly proficient level, or even at the near-native level.

Since only a few learners were able to achieve targetlike interpretations, some readers may wonder whether this is purely accidental. By accidental, I mean some learners, by chance, showed targetlike knowledge of indeterminate phrases in Japanese. I believe this is highly unlikely because, for them to be considered targetlike, they must have shown targetlike responses in two out of the three tasks in both *KA* and *MO* conditions. Such accidents seem unlikely. In addition, if it is

purely by chance that they succeeded in at least two out of three tasks, it is not clear how such "accidents" occurred only with highly advanced learners. If it was purely accidental, the same should have been possible for intermediate learners.

There may also be a concern that, because only high-proficiency learners were able to acquire targetlike interpretations, surface frequency may be responsible. However, as argued in §5.1.3, the key aspect for the test items used in the experiment was that targetlike knowledge is underdetermined by the L2 input, and thus surface frequency can have little to do with the interpretations of indeterminate phrases. Because targetlike interpretations are underdetermined by the L2 input, the amount of exposure learners receive is irrelevant. It is only by accessing UG that targetlike interpretations are expected to be possible (see §5.2).

Given that some L2 learners are able to achieve targetlike interpretations of indeterminate phrases in Japanese wh-constructions, the results demonstrate that parameter resetting is possible, lending support to the full access hypothesis (White, 1989; Schwartz & Sprouse, 1994, 1996;Epstein, et al., 1996), rather than to the no access hypothesis (Clahsen & Muysken, 1986; Meisel, 1997) and the partial access hypothesis (e.g., Clahsen & Muysken, 1989; Bley-Vroman, 1990; Clahsen & Hong, 1995). However, as mentioned above, since only high-proficiency learners are able to acquire target-like interpretations, it raises a question as to why many learners, including those at an advanced level, have yet to reset the parameter, if UG is involved. There is an implicit assumption in L2 research that parameter resetting should take place at least by the advanced level, as exemplified in the studies, among others, by Hawkins & Hattori (2006) and Yuan (to appear), as we saw in chapter 4. This assumption, however, is not without problems. Since expected interpretations with the appropriate parameter setting are drawn from native speakers, it is plausible that targetlike interpretation can also be expected when L2 learners have competence compatible to that of

native speakers of the TL and that targetlike interpretation is not possible in developing interlanguage grammars.[109] Therefore, the fact that some advanced learners did not reset the parameter is not necessarily evidence against the involvement of UG in L2 acquisition.

7.3.2. The role of L1

The typological differences between Chinese and English were used to examine whether resetting of the wh-construal parameter is possible by learners whose L1s have different parametric values. Chinese is a wh-in-situ language, which has indeterminate phrases used in interrogative sentences and as existential and universal quantifiers, such as Japanese. English, on the other hand, is a wh-movement language, and wh-elements are not typically used as existential and universal quantifiers, except for limited cases. In §5.3, I presented four possible outcomes of the study, repeated below in (24).

(24) a. Both Chinese and English speakers are able to reset the wh-construal parameter to the Japanese value.

b. Neither Chinese nor English speakers are able to reset the wh-construal parameter to the Japanese value.

c. Only Chinese speakers are able to reset the wh-construal parameter to the Japanese value.

d. Only English speakers are able to reset the wh-construal parameter to the Japanese value.

[109] This holds when the TL property in question is the one that is parameterized. However, if the property in question is assumed to involve unparameterized UG principles, interlanguage grammars should show the effects, no matter the proficiency and the length of exposure, if UG constrains L2 acquisition (e.g., White, 1989).

As argued above, five English speakers and one Chinese speaker seemed to have reset the wh-construal parameter. Since only one learner from the Chinese speaker group demonstrated parameter resetting, it seems rather difficult to claim that parameter resetting is possible for Chinese speakers. Thus, the results suggest that they support (24d). However, it should be noted that about half of the Chinese advanced learners were targetlike in the *MO* conditions (12 out of 25, or 48%). It was in the *KA* conditions that Chinese speakers especially had problems (1 out of 25, or 4%), and it is not the case that Chinese speakers cannot acquire Japanese wh-constructions at all. Furthermore, as argued above, resetting of the wh-construal parameter may be possible only at highly proficient levels. There is a possibility that many Chinese speakers who participated in the study were not proficient enough to show targetlike interpretations of indeterminate phrases. Therefore, I believe that there are some remaining questions regarding the possibility of resetting of the wh-construal parameter by Chinese speakers.

The fact that English speakers were more successful at acquiring Japanese wh-constructions than Chinese speakers is surprising, given that Chinese is typologically more similar to Japanese than English. As discussed above, one of the possible differences in the performances of the Chinese and English speakers is the difference in their proficiency levels. However, another possibility for the differences between the Chinese and English speakers emerged from the results. As we saw in §7.2.2.2 and §7.2.3.2, compared to English speakers, Chinese speakers had difficulties acquiring the features of Q-particles, *KA* and *MO*. One possible way to look at these results is to consider the relationship between positive evidence and the learners' L1s. I argued in §5.1.1 that positive evidence for parameter resetting must be something similar to the following in (25).

(25) a. Dare-ga ringo-o tabemasita-**ka**?
who-Nom apple-Acc ate-KA
'Who ate an apple?'

b. Dare-**ka**-ga ringo-o tabemasita.
who-KA-Nom apple-Acc ate
'Someone ate an apple.'

c. Dare-**mo**-ga ringo-o tabemasita.
who-MO-Nom apple-Acc ate
'Everyone ate an apple.'

Input such as (25) is assumed to provide evidence that a) Japanese wh-elements are non-quantificational and that b) the Q-particles determine the quantificational force.

From the point of view of both Chinese and Japanese being wh-in-situ languages, Chinese is more similar to Japanese than English, but English, in fact, is more similar to Japanese, if the morphological composition of the positive evidence such as in (25) is taken into consideration. As discussed in §3.3.5, English also has non-quantificational wh-elements, as shown in (26).

(26) a. some-where
b. every-where
c. who-ever

The morphological composition of the examples in (26) is clearly similar to those in (25) from Japanese. Brueing (2007) even suggests that *KA* in (25b) is similar to *some-*, and *MO* in (25c) is similar to *every-*.

In Chinese, on the other hand, the morphological composition exemplified in

English and Japanese is non-existent. The quantifiers associated with indeterminate phrases are always non-local. Rather, the quantificational force is determined by an abstract operator, occurring at the sentential level. Viewed from this perspective, English is more similar than Chinese to Japanese.

In addition to the similarity in the morphological composition of existential and universal quantifiers, English is again similar to Japanese for having a declarative and interrogative complementizers, which Chinese lacks, as discussed in §7.2.3.2.

Viewed in this light, we can see the advantage English speakers may have over Chinese speakers. English speakers may, in fact, use their L1 knowledge to acquire the features of *KA* and *MO*. Since the acquisition of the features of the Q-particles is a prerequisite for interpreting Japanese indeterminate phrases, English speakers may be able to acquire the features of *KA* and *MO* more easily than Chinese speakers. If this is correct, it suggests that the typological differences, whether wh-in-situ or wh-movement, play a small role in the acquisition of wh-in-situ.

7.4. Remaining issues and future directions

7.4.1. L2 acquisition of Wh-constructions

The results from previous studies showed that L2 acquisition of Korean and Chinese wh-constructions is difficult (Choi & Lardiere, 2006a, 2006b; Yuan, to appear). Both of these languages are wh-in-situ languages, and the present study adds another wh-in-situ language, Japanese, to the picture, and further strengthens the observation that that L2 acquisition of the subtle properties of wh-in-situ is, in general, problematic. Although the three languages, Chinese, Japanese, and Korean, are all wh-in-situ languages, the environment, in which interrogative, universal, and existential readings of indeterminate phrases arise, differs, due to

morphosyntactic differences among the three languages. Therefore, although learners of these languages have evidence that the TL, whichever it is, is a wh-in-situ language, many properties that are linked to the interpretations of wh-in-situ are found elsewhere. Acquiring wh-in-situ entails more than 'not to move' wh-elements; it involves acquiring properties that determine the interpretations of wh-in-situ, which are often extremely subtle and differ among wh-in-situ languages. This should be clear from the Chinese and Japanese wh-constructions, as we have seen in detail.

In the L2 acquisition of wh-in-situ, the most pressing issue remaining is whether Chinese-speaking learners of Japanese are able to reset the wh-construal parameter to the Japanese value. As mentioned above, only one learner from the Chinese advanced group seemed to have reset the parameter. It may be the case that acquiring Japanese wh-constructions is problematic for Chinese speakers due to their difficulties in acquiring Q-particles. It is also possible that, at the near-native level, Chinese speakers are able to reset the parameter. It seems necessary to test this with highly proficient learners.

If resetting the wh-construal parameter is difficult, one may wonder whether resetting this parameter is also difficult from wh-in-situ to wh-movement. As summarized in §4.2.1, after many years of attempting to address this issue, there seems to be little consensus as to whether or not it is indeed possible. In most studies on L2 acquisition of wh-movement, however, there are inconsistencies in the definition of what counts as *parameter resetting*. For studies that tested the Subjacency effect, the domain that is in question is at the syntactic level, rather than semantic. Therefore, targetlike syntactic knowledge is assumed to reveal whether or not the parameter can be reset. In Hawkins & Hattori (2006) and Umeda (2005, 2006), on the other hand, learners' scope interpretations are examined. Thus, parameter resetting means whether they have targetlike semantic

knowledge for fronted wh-phrases.

In the present study, a mismatch between learners' syntactic knowledge and their semantic knowledge was pointed out. That is, many learners who seem to know the features of the Q-particle still had problems interpreting the indeterminate phrase. If it is indeed the case that there is a gap between syntactic knowledge and semantic knowledge, it is important to investigate both domains. This is important because we must make it clear what we mean by "successful parameter resetting" in L2 acquisition of wh-constructions: whether it involves only syntactic knowledge, or whether learners must achieve targetlike semantics knowledge in order to be considered successful. Since wh-constructions are relevant to the syntax-semantic interface, it seems only natural to examine learners' interpretations of the fronted wh-phrases as well as their syntactic knowledge.

7.4.2. The feature reassembly approach

As discussed in §2.2, Lardiere (2005, 2007a) argues that L2 learners may have difficulties with feature reassembly. This is because, in some cases, learners need to tease apart formal features that already exist in the L1 and reassemble them in the L2 in a manner different from that used in the L1. How the features are assembled in the L2 must be learned from PLD, and it can be a difficult process, as the environment in which certain features occur may be extremely complex.

Just as observed in the studies by Choi & Lardiere (2006a, 2006b), this study showed that the acquisition of wh-in-situ in Japanese is also difficult. The difficulties learners face may come from difficulties reassembling features because positive evidence available for learners may be complex, as Lardiere argues.

As I have already mentioned above, L2 acquisition of wh-in-situ involves

learning subtle properties between the wh-in-situ and the quantificational element, which may differ among wh-in-situ languages. Therefore, knowing that Japanese is a wh-in-situ language is not sufficient to have targetlike knowledge of wh-constructions in Japanese. What learners must know is the association between the non-quantificational wh-element and a quantificational particle. Positive evidence that is assumed for resetting the wh-construal parameter is again repeated below in (27).

(27) a. Dare-ga ringo-o tabemasita-**ka**?
who-Nom apple-Acc ate-KA
'Who ate an apple?'

b. Dare-**ka**-ga ringo-o tabemasita.
who-KA-Nom apple-Acc ate
'Someone ate an apple.'

c. Dare-**mo**-ga ringo-o tabemasita.
who-MO-Nom apple-Acc ate
'Everyone ate an apple.'

Sentences such as those in (27) may not appear to be so complex, and thus it may be unclear as to why it requires a long time to acquire the feature assembly that is relevant to Japanese wh-constructions. However, it is certainly not the case that feature reassembly takes place as soon as positive evidence is heard by learners. If, for example, phrases such as *dareka* and *daremo* in (27b) and (27c) are not decomposed into two parts, the indeterminate phrase and the Q-particle, and instead, they are analyzed as a chunk, *someone* and *everyone*, respectively, interlanguage grammars cannot realize how the wh-element, *dare*, is non-quantificational and that it is particles that determine quantificational force.

In addition, it is also after decomposition takes place that learners are able to acquire the features of Q-particles, based on various contexts in which these particles appear. All this, of course, must be learned based on input.[110] Acquiring these subtle properties is likely to require a lot of exposure, which perhaps explains why acquiring relevant features of Q-particles is not achieved early in the process of the acquisition of wh-in-situ.

The feature reassembly approach, however, does not explain why there is a delay in learners' targetlike semantics, after learners have acquired the features of the Q-particle, *KA*. As seen in §7.2.3.2, it is not the case that targetlike interpretations of indeterminate phrases arise as soon as the feature of *KA* is acquired. This suggests that the gradual development of targetlike interpretations of indeterminate phrases does not arise solely due to the difficulty in feature reassembly. The slow development of the interpretations of indeterminate phrases seems to be caused by the difficulty learning the features of the Q-particles, which is followed by gradual semantic development.

7.4.3. Comparison with Lieberman et al. (2006) study

The results from the *KA* condition seem to contradict the findings by Lieberman et al. (2006), which were presented in §4.4. Recall that in the Lieberman et al. study, advanced learners of Japanese demonstrated their knowledge of how to produce matrix wh-questions and embedded wh-questions. The contrast is given in (28) and (29).

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[110] Learners may "notice" consciously that there are connections between the wh-interrogative phrases and other indefinites, and learners may even form metalinguistic knowledge about such connections. However, the issue here is not such conscious realization about the nature of indeterminate phrases in Japanese. The information about the dependency between the indeterminate phrase and the Q-particle must be "noticed" by their interlanguage grammars, which leads to unconscious knowledge of Japanese wh-constructions.

(28) Sensei-wa [seito-ga tosyositu-de dare-ni manga-o
teacher-Top student-Nom library-Loc who-Dat comic book-Acc
ageta-ka] sitteiru.
gave-KA knows
'The teacher knows who the student gave a comic book to in the library.'

(29) Dare-ga sensei-ni [seito-ga tosyositu-de manga-o
who-Nom teacher-Dat student-NOM library-Loc comic book-Acc
ageta-to] itta-no?
gave-that said-NO
'Who told the teacher that the student gave a comic book to (someone) in the library?'

The indeterminate phrase in (28) is in the embedded clause, and the large majority of sentences created by L2 learners were embedded wh-questions, as shown in (28). In (29), on the other hand, when the indeterminate phrase is in the matrix clause, the majority of sentences created were matrix wh-questions. What this shows is that learners are able to construct embedded and matrix wh-questions, suggesting that they have knowledge of the scope-marking strategy in Japanese.

As has been discussed, in the present study, it was found that many advanced English-speaking learners of Japanese lacked knowledge of the scope-marking strategy in Japanese, being unable to distinguish indeterminate phrases taking matrix scope from those taking embedded scope.

Since the learners who participated in Lieberman et al.'s study were not tested for their comprehension, it is not clear whether the learners who were able to produce matrix and embedded wh-questions in that study would also be able to distinguish between the two types of questions in a comprehension task. Further

research is required to examine whether a production-comprehension discrepancy exists by testing the same learners with production and comprehension tasks.

7.5. Summary of this chapter

The results from the present study were examined for the two research questions, repeated below:

(30) a. Is resetting of the wh-construal parameter possible?

b. Can both Chinese and English speakers reset the wh-construal parameter?

As I argued in this chapter, the answer to question (30a) is positive, as some learners in the advanced groups were able to show targetlike knowledge of the properties tested, in spite of underdetermination.

However, many learners failed to show evidence of parameter resetting. It was evident from the results that learners at lower proficiencies had difficulties acquiring the features of the Q-particles and their association with the indeterminate phrase.

The results showed that some English advanced learners are successful resetting the wh-construal parameter. The results from the Chinese speakers, however, were less clear, as only one learner from the advanced group was targetlike. The answer to question (30b), thus, was at most inconclusive. This was surprising given that Chinese and Japanese are typologically similar languages. I argued in §7.3.2 that, looking at the relationship between positive evidence for parameter resetting and learners' L1s, English speakers have an advantage over Chinese speakers. In English, the overt complementizers *that* and *whether*, similar to *KA* and *–to*, are present. In addition, quantifiers such as *some-* and *every-* attach

to wh-elements, as in *some-how* and *every-where*, just as the existential *KA* and universal *MO* attach to indeterminate phrases in Japanese. The way English quantifiers associate with wh-elements is more similar to Japanese than the way Chinese quantifiers do. The similarity between English and Japanese may have helped English speakers acquire the features of Q-particles. For Chinese speakers, on the other hand, the way Q-particles is used in Japanese is quite different from how Chinese indeterminate phrases acquire quantificational force. Thus, compared to English speakers, Chinese speakers may have a disadvantage in acquiring Q-particles.

7.6. Concluding remarks

The present study investigated L2 acquisition of wh-in-situ, an understudied area in L2 acquisition research. The main goal for this study was to investigate whether L2 learners are able to reset one of the parameters of UG, the wh-construal parameter. Wh-constructions were seen as parameterized depending on how relevant features, such as [+Q] and [+∀], are associated with lexical items. It was investigated whether L2 learners are able to associate these features with L2 lexical items that are non-existent in their L1s, and then interpret sentences containing an indeterminate phrase in a targetlike way, despite underdetermination in the L2 input.

The results from the study demonstrate that parameter resetting is possible. This is supported by some advanced learners showing targetlike interpretations of indeterminate phrases. These learners demonstrated knowledge that the indeterminate phrase is associated with a Q-particle, and that the meaning and structural position of the Q-particle determine the interpretation of indeterminate phrases. This type of knowledge is not attributable to the learners' L1s or L2 input.

Although resetting of the wh-construal parameter seems possible, many learners, including some advanced learners, were not able to reset the parameter. The lack of parameter resetting seems to have been caused by their difficulties acquiring the features of Q-particles and/or the way the Q-particles are associated with the indeterminate phrase. These properties are specific to Japanese wh-constructions, and the development of these properties seemed to be a gradual process, requiring high proficiency in the TL.

Two L1 groups, Chinese and English, were compared to see whether we can observe any differences because these two languages employ different parametric values from Japanese and from each other. It seemed natural to consider that resetting the wh-construal parameter to the Japanese value was easier for Chinese speakers than for English speakers, as Chinese and Japanese are both wh-in-situ languages. However, contrary to our expectation, English speakers were more successful than Chinese speakers overall. I argued that, in fact, English has more similarity than Chinese to Japanese, when we consider the way indeterminate phrases associate with quantifiers, which determine quantificational force. English speakers may have an advantage over Chinese speakers in acquiring the features of Q-particles, which is one of the pieces necessary for the acquisition of Japanese wh-constructions.

This is one of the few studies that have been conducted on L2 acquisition of wh-in-situ. The acquisition of wh-in-situ has been neglected on the assumption that there is little that L2 learners need to learn. However, this is clearly false. The interpretations of wh-in-situ cross-linguistically depend on subtle conditions, which give rise to varying quantificational expressions. Investigating acquisition of wh-in-situ in fact turns out to be a fruitful area in L2 acquisition research, encompassing topics such as parameter resetting, L1 transfer, and the syntax-semantics interface. I hope that this study has contributed as a first step in the investigation of wh-in-situ in L2 research.

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Appendix A: Proficiency test

空白（_____）に入る最も適切なことばを選択肢の中から選んでください。
Choose the most appropriate word for each blank from the list.

日本食ブーム：味付けの問題

外国人にとっての日本食のイメージは「ヘルシー」とか、「素材の味を活かしている」といったのもが多い。例えば、すしとか天ぷら (1)_____ その代表例 だ。最近で (2)_____ 豆腐も注目されているよう (3)_____。だが、外国人にとって日本食を (4)_____ 入れにくい要素がいくつか (5)_____。それは「生で食べること」(6)_____「味付けが淡白であること」(7)_____。

「味付けが淡白であること」 (8)_____ ついては、日本に来た多く (9)_____ 外国人が感じることである。(10)_____ 滞在するにつれて淡白な味 (11)_____ 慣れていくそうだが、それ (12)_____、しょうゆ や みそといった日本 (13)_____ の調味料を克服しなくては (14)_____ ようである。あるトルコ人 (15)_____ 男性は「しょうゆは色が (16)_____ で、最初はなじめなかった。今 (17)_____ もう大丈夫だけどね」と言う。

(18)_____ の味付けを変えることに (19)_____ 抵抗を感じる人 もいる (20)_____ もしれないが、料理が世界 (21)_____ 受け入れられるためには多少 (22)_____ 味の変化は仕方の (23)_____ ものである。料理のなか (24)_____、世界で一番多くの国 (25)_____ 地域で受け入れられているの (26)_____ 中国の料理であろう。世界 (27)_____ どの都市に

行っても、チャイナタウン (28)＿＿＿＿ あり、中華レストランがある。でも、(29)＿＿＿＿ 味は世界各地で大きく (30)＿＿＿＿。これは国や地域の (31)＿＿＿＿ に合わせているためだ。同様 (32)＿＿＿＿、日本食が世界に受け (33)＿＿＿＿ ためには、味付けを (34)＿＿＿＿ 変える必要があることを (35)＿＿＿＿ しなければならない。

つまり、日本食の「素材 (36)＿＿＿＿ 活かす」「ヘルシー感がある」と (37)＿＿＿＿ イメージは守りつつも、味 (38)＿＿＿＿ 世界各地の好みに応じて (39)＿＿＿＿ することが重要だろう。日本人 (40)＿＿＿＿ 世界の料理を色々アレンジ (41)＿＿＿＿ 食べてきたのだから、日本食自体 (42)＿＿＿＿ アレンジすることだって、できないこと (43)＿＿＿＿ ないのだ。

1) a. に
b. は
c. が
d. を

(2) a. は
b. が
c. に
d. で

(3) a. な
b. だ
c. で
d. の

(4) a. 受ける
b. 受け
c. 受けた
d. 受けて

(5) a. ある
b. あった
c. あり
d. あって

(6) a. て
b. も
c. は
d. と

(7) a. の
b. な
c. で
d. だ

(8) a. より
b. で
c. に
d. も

(9) a. に
b. の
c. は
d. も

(10) a. 長(なが)くて
b. 長(なが)い
c. 長(なが)く
d. 長(なが)さ

(11) a. で
b. が
c. を
d. に

(12) a. でも
b. は
c. が
d. から

(13) a. 最古(さいこ)
b. 各地(かくち)
c. 本来(ほんらい)
d. 独特(どくとく)

(14) a. ならない
b. いい
c. よくない
d. 仕方(しかた)ない

(15) a. が
b. の
c. に
d. で

(16) a. 不気味(ぶきみ)
b. 大変(たいへん)
c. 便利(べんり)
d. 貴重(きちょう)

(17) a. で
b. は
c. が
d. を

(18) a. 調味料(ちょうみりょう)
b. 料理(りょうり)
c. しょうゆ
d. 日本食(にほんしょく)

(19) a. で
b. が
c. は
d. を

(20) a. さ
b. と
c. か
d. よ

(21) a. を
b. で
c. は
d. に

(22) a. が
b. は
c. に
d. の

(23) a. ない
b. ある
c. よい
d. 通(とお)り

(24) a. まで
b. に
c. から
d. で

(25) a. から
b. や
c. まで
d. も

(26) a. が
b. は
c. を
d. に

(27) a. を
b. に
c. の
d. も

(28) a. を
b. は
c. が
d. に

(29) a. その
b. あの
c. この
d. どの

(30) a. 異(こと)なって
b. 異(こと)なった
c. 異(こと)なる
d. 異(こと)なり

(31) a. 味(あじ)
b. 民族(みんぞく)
c. 習慣(しゅうかん)
d. 文化(ぶんか)

(32) a. と
b. も
c. は
d. に

(33) a. 入(い)れる
b. 入(い)れられる
c. 入(い)れた
d. 入(い)れて

(34) a. 多少(たしょう)に
b. 多少(たしょう)と
c. 多少(たしょう)
d. 多少(たしょう)も

(35) a. 努力(どりょく)
b. 理解(りかい)
c. 勉強(べんきょう)
d. 誤解(ごかい)

(36) a. を
b. に
c. が
d. も

(37) a. いえる
b. いって
c. いく
d. いう

(38) a. も
b. は
c. に
d. が

(39) a. 努力(どりょく)
b. チャレンジ
c. 左右(さゆう)
d. アレンジ

(40) a. は
b. が
c. に
d. の

(41) a. して
b. した
c. する
d. しない

(42) a. に
b. が
c. を
d. は

(43) a. が
b. は
c. に
d. を

Answers

(1)	c	(2)	a	(3)	b	(4)	b	(5)	a
(6)	d	(7)	d	(8)	c	(9)	b	(10)	c
(11)	d	(12)	a	(13)	d	(14)	a	(15)	b
(16)	a	(17)	b	(18)	b	(19)	c	(20)	c
(21)	d	(22)	d	(23)	a	(24)	d	(25)	b
(26)	b	(27)	c	(28)	c	(29)	a	(30)	c
(31)	a	(32)	d	(33)	b	(34)	c	(35)	b
(36)	a	(37)	d	(38)	b	(39)	d	(40)	a
(41)	a	(42)	c	(43)	b				

Appendix B: Test material

A. GJ task

(1) Type 1-1: *KA* - grammatical

a. Junko-wa Miki-ga dare-to paatii-ni itta-ka itta.
-Top -Nom who-with party-to went-KA said
'Junko said who Miki went to a party with.'
b. Masami-wa Jiro-ga dare-to atteita-ka itta.
-Top -Nom who-with met-KA said
'Masami said who Jiro met.'
c. Kazuo-wa Daisuke-ga nani-o tukutta-ka itta.
-Top -Nom what-Acc made-KA said
'Kazuo said what Daisuke cooked.'
d. Akemi-wa Jiro-ga nani-o tabeta-ka itta.
-Top -Nom what-Acc ate-KA said
'Akemi said what Jiro ate.

(2) Type 1-2: *KA* - ungrammatical

a. *Junko-wa Miki-ga dare-to paatii-ni itta-to itta.
-Top -Nom who-with party-to went-that said
b. *Masami-wa Jiro-ga dare-to atteita-to itta.
-Top -Nom who-with met-that said
c. *Kazuo-wa Daisuke-ga nani-o tsukutta-to itta.
-Top -Nom what-Acc made-KA said
d. *Akemi-wa Jiro-ga nani-o tabeta-to itta.
-Top -Nom what-Acc ate-KA said

(3) Type 2-1: *MO* - grammatical

a. dare-ga katta sushi-mo oisikatta.
who-Nom bought sushi-MO delicious
'The sushi everyone bought was delicious.'

b. dare-ga dashita shukudai-mo muzukashikatta.
who-Nom gave homework-MO difficult
'The homework everyone gave was difficult'.
c. dare-ga kaita hon-mo yoku ureta.
who-Nom wrote book-MO well sold
'The books everyone wrote sold well.'
d. dare-ga yonda hon-mo omoshirokatta.
Who-Nom read book-MO interesting
'The books everyone read were interesting.'

(4) Type 2-2: *MO* - ungrammatical

a. *dare-ga katta sushi-ga oishikatta.
who-Nom bought sushi-Nom delicious
b. *dare-ga dashita shukudai-ga muzukashikatta.
who-Nom gave homework-Nom difficult
c. *dare-ga kaita hon-ga yoku ureta.
who-Nom wrote book-Nom well sold
d. *dare-ga yonda hon-ga omoshirokatta.
who-Nom read book-Nom interesting

(5) Fillers

Negative Polarity Items (n=4)

a. Masami-wa nani-mo mi-nakat-ta.
-Top what-MO see-Neg-Past
'Masami didn't see anything.'
b. *Masami-wa nani-mo mita.
-Top what-MO saw

Existential quantification particle *KA* (n=4)

c. Kenji-wa dare-ka-ga kaita e-o utta.
-Top who-KA-Nom painted painting sold
'Kenji sold the painting someone had painted.'

d. *Kenji-wa dare-ga kaita e-ka utta..
-Top who-Nom painted painting-KA sold

Scrambling (n=4)

e. Kenji-wa neko-o katta hito-o mita.
-Top cat-Acc bought person-Acc saw
'Kenji saw the person who bought the cat.'
f. *neko-o Kenji-wa katta hito-o mita.
cat-Acc -Top bought person-Acc saw

B: Translation task

(1) Type 1-1: *KA* – embedded clause

a. Jiro-wa dare-to atteita-ka iimasita-ka.
-Top who-with met-KA said-KA
'Did Jiro say who he was with?'
b. Junko-wa dare-ga paatii-ni kita-ka iimasita-ka.
-Top who-Nom party-to came-KA said-KA
'Did Junko say who came to the party?'
c. Jiro-wa nani-o tabeta-ka iimashita-ka.
-Top what-Acc ate-KA said-KA
'Did Jiro say what he ate?
d. Kazuo-wa nani-o tsukutta-ka iimashita-ka
-Top wat-Acc made-KA said-KA
'Did Kazuo say what he made?'

(2) Type 1-2: *KA* – matrix clause

a. Jiro-wa dare-to atteita-to iimasita-ka?
-Top who-with met-that said-KA
'Who did Jiro say he was with?'
b. Junko-wa dare-ga paatii-ni kita-to iimasita-ka?
-Top who-Nom party-to came-that said-KA
'Who did Junko say came to the party?'

c. Jiro-wa nani-o tabeta-to iimashita-ka?
-Top what-Acc ate-KA said-KA
'What did Jiro say he ate?
d. Kazuo-wa nanii-o tsukutta-to iimashita-ka?
-Top what-Acc made-KA said-KA
'What did Kazuo say he made?'

(3) Type 2-1: Interrogative embedded clause

a. Daisuke-wa sentaku-o shita-ka iimashita-ka?
-Top laundry-Acc do-KA said-KA
'Did Daisuke say whether or not he did a laundry?'
b. Masami-wa sushi-o tabeta-ka iimashita-ka?
-Top sushi-Acc ate-KA said-KA
'Did Masami say whether or not she ate sushi?'
c. Junko-wa pizza-o tabeta-ka iimashita-ka?
-Top pizza-Acc ate-KA said-KA
'Did Junko say whether or not she ate pizza?'
d. Daisuke-wa razania-o tsukutta-ka iimashita-ka?
-Top lasagna-Acc made-KA said-KA
'Did Daisuke say whether or not she made lasagna?'

(4) Type 2-2: Declarative embedded clause

a. Daisuke-wa sentaku-o shita-to iimashita-ka?
-Top laundry-Acc do-that said-KA
'Did Daisuke say that he did a laundry?'
b. Masami-wa sushi-o tabeta-to iimashita-ka?
-Top sushi-Acc ate-that said-KA
'Did Masami say that she ate sushi?'
c. Junko-wa pizza-o tabeta-to iimashita-ka?
-Top pizza-Acc ate-that said-KA
'Did Junko say that she ate pizza?'
d. Daisuke-wa razania-o tsukutta-to iimashita-ka?
-Top lasagna-Acc made-that said-KA
'Did Daisuke say that he made lasagna?'

(5) Type 3-1: *MO*

a. dare-ga atta hito-mo yuumeedesu-ka?
who-Nom met person-MO was-famous-KA
'Are the people everyone met famous?'

b. dare-ga mottekita wain-mo oishikattadesu-ka?
who-Nom brought wine-MO was-delicious-KA
'Was the wine everyone brought delicious?'

c. dare-ga katta booshi-mo takakattadesu-ka?
who-Nom bought hat-Mo was-expensive-KA
'Were the hats everyone bought expensive?'

d. dare-ga mita eiga-mo omosirokattadesu-ka?
who-Nom saw movie-MO was-interesting-KA
'Were the movies everyone saw interesting?'

(6) Type 3-2: Without *MO*

a. dare-ga atta hito-ga yuumeedesu-ka?
who-Nom met person-Nom was-famous-KA
'Who(x), the person that x met was famous?'

b. dare-ga mottekita wain-ga oishikattadesu-ka?
who-Nom brought wine-Nom was-delicious-KA
'Who(x), the wine that x brought was delicious?'

c. dare-ga katta booshi-ga takakattadesu-ka?
who-Nom bought hat-Nom was-expensive-KA
'Who(x), the hat that x bought was expensive?'

d. dare-ga mita eiga-ga omosirokattadesu-ka?
who-Nom saw movie-Nom was-interesting-KA
'Who(x), the movie that x saw was interesting?'

(7) Fillers

a. Wh-word with existential *KA* (adjacent) (n=4)
dare-ka-ga suteeki-o chuumon-shimasita-ka?
who-KA-Nom steak order-do-KA
'Did anyone order steak?'

b. Wh-word with universal *MO* (adjacent) (n=4)
dare-mo-ga suteeki-o chuumon-shimasita-ka?
who-MO-Nom steak order-do-KA
'Did eveyone order steak?'

c. Wh-word with interrogative *KA* (n=4)
dare-ga suteeki-o chuumon-shimasita-ka?
who- Nom steak ordering-do-KA
'Who ordered steak?'

d. Relative clause with no wh-word (n=4)
Jiro-wa Akemi-ga kaita e-o kaimasita-ka?
-Top -Nom painted painting-Acc bought-KA
'Did Jiro buy the painting Akemi painted?'

C: Question-Answer acceptability judgment task

(1) Type 1-1: Matrix wh-questions - Appropriate

a. Q: Miki-wa dare-o shootaisita-to iimasita-ka?
-Top who-Acc invited-that said-KA
'Who did Miki say she invited?'
A: Kenji-o shootaisita-to iimasita-yo.
-Acc invited-that said-part.
'She said that she invited Kenji.'

b. Q: Hiroko-wa dare-ga sushi-o tabeta-to iimasita-ka?
-Top who-Nom sushi-Acc ate-that said-KA
'Who did Hiroko say ate sushi?'
A: Kazuo-ga tabeta-to iimasita-yo.
-Nom ate-that said-part.
'She said that Kazuo ate it.

c. Q: Miki-wa nani-o mita-to iimasita-ka?
-Top what-Acc saw-that said-KA
'What did Miki say she saw?'
A: Kingu Kongu-o mita-to iimasita-yo.
King Kong-Acc saw-that said-part
'She said that she saw King Kong.'

d. Q: Miki-wa nani-o katta-to iimasita-ka?
-Top what-Acc bought-that said-KA
'What did Miki say she bought?'
A: Sofa-o katta-to iimasita-yo.
sofa-Acc bought-that said-part
'She said that she bought a sofa.'

(2) Type 1-2: Matrix wh-questions - Inappropriate

a. Q: Miki-wa dare-o shootaisita-to iimasita-ka?
-Top who-Acc invited-that said-KA
'Who did Miki say she invited?'
A: Hai, iimasita-yo.
Yes said-Part
'Yes, she did.'
b. Q: Hiroko-wa dare-ga sushi-o tabeta-to iimasita-ka?
-Top who-Nom sushi-Acc ate-that said-KA
'Who did Hiroko say ate sushi?'
A: Hai, iimasita-yo.
yes said-Part
'Yes, she did.'
c. Q: Miki-wa nani-o mita-to iimasita-ka?
-Top what-Acc saw-that said-KA
'What did Miki say she saw?'
A: Hai, iimasita-yo.
yes said-Part
'Yes, she did.'
d. Q: Miki-wa nani-o katta-to iimasitaka?
-Top what-Acc bought-that said-KA
'What did Miki say she bought?'
A: Hai, iimasita-yo.
yes said-Part
'Yes, she did.'

(3) Type 2-1: Yes-no questions - Appropriate

a. Q: Naoko-wa dare-ni atta-ka iimasita-ka?
-Top who-with met-KA said-KA
'Did Naoko say who she met?'
A: Hai, iimasita-yo.
yes said-Part
'Yes, she did.'

b. Q: Daisuke-wa dare-ga wain-o katta-ka iimasita-ka?
-Top who-Nom wine-Acc bought-KA said-KA
'Did Daisuke say who bought wine?'
A: Hai, iimasita-yo.
yes said-Part
'Yes, he did.'

c. Q: Miki-wa nani-o nonda-ka iimasita-ka?
-Top what-Acc drank-KA said-KA
'Did Miki say what she drank?'
A: Hai, iimasita-yo.
yes said-Part
'Yes, she did.

d. Q: Hiroko-wa nani-o tsukutta-ka iimasita-ka?
-Top what-Acc made-KA said-KA
'Did Hiroko say what she made?'
A: Hai, iimasita-yo.
yes said-Part
'Yes, she did.'

(4) Type 2-2: Yes-no questions - Inappropriate

a. Q: Naoko-wa dare-ni atta-ka iimasita-ka?
-Top who-with met-KA said-KA
'Did Naoko say who she met?'
A: Daisuke-ni atta-ka iimasita-yo.
-with met-KA said-Part
'She said whether or not she met Daisuke.'

b. Q: Daisuke-wa dare-ga wain-o katta-ka iimasita-ka?
-Top who-Nom wine-Acc bought-KA said-KA
'Did Daisuke say who bought wine?'
A: Akemi-ga katta-ka iimasita-yo.
-Nom bought-KA said-Part
'He said whether or not Akemi bought wine.'

c. Q: Miki-wa nani-o nonda-ka iimasita-ka?
-Top what-Acc drank-KA said-KA
'Did Miki say what she drank?'
A: wain-o nonda-ka iimasita-yo.
wine-Acc drank-KA said-Part
'She said whether or not she drank wine.'

d. Q: Hiroko-wa nani-o tsukutta-ka iimasita-ka?
-Top what-Acc made-KA said-KA
'Did Hiroko say what she made?'
A: Poteto-sarada-o tsukutta-ka iimasita-yo.
Potato-salad-Acc made-KA said-Part
'She said whether or not she made the potato salad.'

(5) Type 3-1: *MO* - appropriate

a. Q: dare-ga kai-ta tegami-mo nagakattadesu-ka?
who-Nom wrote letter-MO was-long-KA
'Were the letters everyone wrote long?'
A: hai, nagakattadesu-yo.
yes was-long-Part
'Yes, they were.'

b. Q: dare-ga kai-ta hon-mo yoku uremasita-ka?
who-Nom wrote book-MO well sold-KA
'Did the books everyone wrote sell well?'
A: iie, ure-mase-ndesi-ta.
no sell-Pol-Neg-Past
'No they didn't.'

c. Q: dare-ga sundeiru apaato-mo hirokattadesu-ka?
who-Nom live apart-MO was-spacious-KA
'Were the apartments in which everyone lives big?'
A: hai, hirokattadesu-yo.
yes was-spacious-Part
'Yes, they were.'

d. Q: dare-ga tsukutta karee-mo karakattadesu-ka?
who-Nom made curry-MO was-spicy-KA
'Was the curry which everyone made spicy?'
A: iie, karaku-na-katta-desu.
no spicy-Neg-Past-Pol
'No, it wasn't.'

(6) Type 3-2: Without *MO* – appropriate

a. Q: dare-ga kaita tegami-ga nagakattadesu-ka?
who-Nom wrote letter-Nom was-long-KA
'Who(x), the letter which x wrote was long?'
A: Daisuke-ga kaita tegami-ga nagakattadesu-yo.
-Nom wrote letter-Nom was-long-Part
'The letter Daisuke wrote was long.'

b. Q: dare-ga kaita hon-ga yoku uremasita-ka?
who-Nom wrote book-Nom well sold-KA
'Who(x), the book which x wrote sold well?'
A: Tanaka-sensei-ga kaita hon-ga yoku uremasita-yo.
-Professor-Nom wrote book-Nom well sold-Part
'The book Prof. Tanaka wrote sold well.'

c. Q: dare-ga sundeiru apaato-ga hiroidesu-ka?
who-Nom live apart-Nom was-spacious-KA
'Who(x), the apartment x lives was spacious?'
A: Kazuo-ga sundeiru apaato-ga hirokattadesu-yo.
-Nom live apart-Nom was-spacious-Past-Hon-Part
'The apartment Kazuo lives was spacious.'

d. Q: dare-ga tsukutta karee-ga karakattadesu-ka?
who-Nom made curry-Nom was-spicy-KA
'Who(x), the curry which x made was spicy?'
A: Daisuke-ga tsukutta karee-ga karakattadesu-yo.
-Nom made curry-Nom was-spicy-Part
'The curry Daisuke made was spicy.'

(7) Type 3-3: Without *MO* – inappropriate

a. Q: dare-ga kaita tegami-ga nagakattadesu-ka?
who-Nom wrote letter-Nom was-long-KA
'Who(x), the letter which x wrote was long?'
A: hai, nagakattadesu-yo.
yes was-long-Part
'Yes, they were.'
b. Q: dare-ga kaita hon-ga yoku uremasita-ka?
who-Nom wrote book-Nom well sold-KA
'Who(x), the book which x wrote sold well?'
A: hai, yoku uremasita-yo.
yes well sold-Part
'Yes, they did.'
c. Q: dare-ga sundeiru apaato-ga hirokattadesu-ka?
who-Nom live apart-Nom was-spacious-KA
'Who(x), the apartment x lives was spacious?'
A: hai, hirokattadesu-yo.
yes was-spacious-Part
'Yes, they were.'
d. Q: dare-ga tsukutta karee-ga karakattadesu-ka?
who-Nom made curry-Nom was-spicy-KA
'Who(x), the curry which x made was spicy?'
A: hai, karakattadesu-yo.
yes was-spicy-Part
'Yes, it was.'

(8) Fillers

a. Mono-clausal wh-questions

Appropriate (n=4)

Q: Akemi-wa chooshoku-ni nani-o tabemasita-ka?
-Top breakfast-at what-Acc ate-KA
'What did Akemi have for breakfast?'
A: toosuto-o tabemasita-yo.
toast-Acc ate-Part
'She had toast.'

Inappropriate (n=4)

Q: Akemi-wa chooshoku-ni nani-o tabemasita-ka?
-Top breakfast-at what-Acc ate-KA
'What did Akemi have for breakfast?'
A: hai, tabemasita-yo.
yes ate-Part
'Yes, she did.'

b. Multiple wh-questions

Appropriate (n=2)

Q: Dare-ga nani-o mottekimasita-ka?
who-Nom what-Acc brough-KA
'Who brought what?'
A: Daisuke-ga wain-o, Miki-ga biiru-o mottekimasita-yo.
-Nom wine-Acc Miki-Nom beer-Acc brought-Hon
'Daisuke brought wine and Miki brought beer.'

Inappropriate (n=6)

Q: Dare-ga nani-o mottekimasita-ka?
who-Nom what-Acc brought-KA
'Who brought what?'
A: Daisuke-ga motte-kimasita-yo.
-Nom brought-Part
'Daisuke did.'

c. Yes/no questions without wh-words (n=2x2)

Appropriate (n=2)

Q: Miki-wa eki-ni tsukimasita-ka?
Miki-Top station-at arrived-KA
'Has Miki arrived at the station?'
A: iie, tsuite-imasen.
no arrive-Neg
'No she hasn't.'

Inappropriate (n=2)

Q: Miki-wa eki-ni tsukimasita-ka?
Miki-Top station-at arrived-KA
'Has Miki arrived at the station?'
A: Tokyo-eki-ni tsukimasita-yo.
Tokyo-station-at arrive-Part
'She has arrived at Tokyo Station'

Appendix C: Individual results

The tables from A to D show how learners performed in the three tasks. The subjects who are found in the following tables are those who showed targetlike interpretations/judgments in at least one of the three tasks. These tables show how consistently the subjects performed in the tasks. In these tables, the subject numbers are in ascending order in accordance with their proficiency scores.

Table A: Individual results: Targetlike performance-Chinese group: *KA* conditions

Groups	Subjects	Task 1	Task 2	Task 3
Intermediate	C23	*	*	target
Advanced	C35	*	*	target
	C41	*	target	*
	C42	*	*	target
	C43	*	*	target
	C44	target	*	*
	C45	target	*	target
	C47	*	*	target
	C52	*	*	target

Table B: Individual results: Targetlike performance-Chinese group: *MO* conditions

Group	Subject	Task 1	Task 2	Task 3
Intermediate	C1	*	target	*
	C2	*	target	*
	C6	*	target	:*
	C7	target	target	*
	C8	*	target	*
	C13	*	target	*
	C14	target	*	target
	C15	*	target	*
	C16	*	target	*
	C20	*	target	*
	C23	*	target	target
	C25	target	target	*
	C27	target	target	target
Advanced	C29	target	*	*
	C31	*	target	*
	C33	target	*	*
	C35	*	target	target
	C36	*	target	target
	C37	target	*	target
	C38	target	*	*
	C39	target	*	*
	C40	*	target	target
	C41	target	*	target
	C42	*	*	target
	C43	*	target	target
	C44	target	target	target
	C45	*	target	target
	C47	*	target	target
	C48	target	*	target
	C49	*	target	target
	C51	*	target	*
	C52	*	target	target

Table C: Individual results: Targetlike performance-English group: *KA* conditions

Group	Subject	Task 1	Task 2	Task 3
Advanced	E28	target	*	target
	E29	target	*	target
	E30	target	target	target
	E31	*	target	target
	E32	target	*	target

Table D: Individual results: Targetlike performance-English group: *MO* conditions

Group	Subject	Task 1	Task 2	Task 3
Intermediate	E9	target	*	*
	E18	*	*	target
Advanced	E20	*	*	target
	E21	*	*	target
	E22	target	*	target
	E23	target	target	*
	E24	target	target	target
	E26	target	target	target
	E27	*	*	target
	E28	target	*	target
	E29	target	target	target
	E30	*	target	target
	E31	target	target	target
	E32	*	target	target

Table E: Individual results: Control group – *KA* conditions

Subject	Task 1	Task 3
J1	target	target
J2	target	target
J3	target	target
J4	*	*
J5	target	target
J6	*	target
J7	target	target
J8	*	target
J9	target	target
J10	target	target
J11	target	target
J12	*	target

Table F: Individual results: Control group – *MO* conditions

Subject	Task 1	Task 3
J1	target	target
J2	target	target
J3	target	target
J4	target	target
J5	target	target
J6	target	target
J7	target	target
J8	target	target
J9	target	target
J10	*	target
J11	target	target
J12	*	target

Appendix D: Individual response patterns

Response patterns, targetlike and non-targetlike, in all types from all three tasks are presented in this section.

KA conditions

(1) a. Type 1-1

Mary-wa [John-ga nani-o katta-ka] iimasita.
Mary-Top John-Nom what-Acc bought-KA said
'Mary said what John bought.'

b. Type 1-2

*Mary-wa [John-ga nani-o katta-to] iimasita.
Mary-Top John-Nom what-Acc bought-that said

Tables G and H show the individual results of the intermediate learners and advanced learners, respectively, in the GJ task. The criteria I used to determine what response types each learner showed are in (2) and (3):

(2) If the mean scores, ranging between the minimum of 1 and the maximum of 4, for type 1-1 and type 1-2 were separated by less than one point, learners were considered to not distinguish the two types. If no distinctions were made for the two types, the mean scores for type 1-1 and type 1-2 from each subject were combined and divided by 2. The results were then analyzed based on the following criteria:

a. If the result is 3 or higher, it is considered that the subject accepted both types.
b. If it is 2 or lower, it is considered that the subject rejected both types.
c. If the result is between 2 and 3, it is considered *neither*, as it is not clear whether the subject rejected or accepted either sentence type.

(3) If the mean scores for type 1-1 and type 1-2 were separated by more than one point, they were considered to distinguish the two types. The type that received the higher score was considered to be accepted, and the type that received the lower score was considered to be rejected.

Table G: GJ task: Intermediate learners' response types – Type 1

	Chinese (out of 27)		English (out of 19)	
Targetlike	0	(0%)	0	(0%)
Both rejected	10	(37.0%)	2	(10.5%)
Both accepted	7	(25.9%)	9	(47.3%)
Only type 1-2 accepted	6	(22.2%)	6	(31.58%)
Neither	4	(14.8%)	2	(10.5%)

Table H: GJ task: Advanced learners' response types - Type 1

	Chinese (out of 25)		English (out of 13)	
Targetlike	2	(8%)	4	(30.7%)
Both rejected	9	(36.0%)	3	(23.0%)
Both accepted	2	(8%)	5	(38.4%)
Only type 1-2 accepted	5	(20%)	1	(7.6%)
Neither	7	(28%)	0	(0%)

Tables I and J present what responses each learner gave to the two types of questions in the translation task shown in (4). Learners' responses were seen as consistent if they gave the same response in at least 3 out of 4 tokens for each type. For example, if a learner translated yes/no questions as such 3 out of 4 tokens and matrix wh-questions as yes/no questions 3 out of 4 tokens, he or she was considered to have interpreted both question types as yes/no questions.

(4) a. Type 1-1: Matrix wh-question
[Mary-wa [John-ga nani-o katta-to] iimasita-ka]?
Mary-Top John-Nom what-Acc bought-that said-KA
'What did Mary say that John bought?'

b. Type 1-2: Yes/no question
Mary-wa [John-ga nani-o katta-ka] iimasita-ka?
Mary-Top John-Nom what-Acc bought-KA said-KA
'Did Mary say what John bought?'

Table I: Translation task: Intermediate learners' response types – Type 1

	Chinese (out of 27)		English (out of 19)	
Targetlike	0	(0%)	0	(0%)
Both as matrix wh-questions	1	(3.7%)	3	(15.7%)
Both as yes/no questions	23	(85.1%)	14	(73.6%)
Inconsistent (wh or y/n)	2	(7.4%)	0	(0%)
Other	0	(0%)	2[111]	(10.5%)

Table J: Translation task: Advanced learners' response types - Type 1

	Chinese (out of 25)		English (out of 13)	
Targetlike	1	(4%)	2	(15.3%)
Both as matrix wh-questions	1	(4%)	0	(0%)
Both as yes/no questions	19	(76%)	10	(76.9%)
Inconsistent (wh or y/n)	4	(16%)	1	(7.6%)
Other	0	(0%)	0	(0%)

Individual response types from the Q/A task shown below in (5) and (6) are given in tables K and L. There were four points of comparison: between types 1-1 and 1-2, types 2-1 and 2-2, types 1-1 and 2-2, and types 1-2 and 2-1. The comparison was made between types 1-1 and 1-2 and between types 2-1 and 2-2 was whether they have knowledge that the former is a yes/no question and the latter is a matrix wh-question. Types 1-1 and 2-2 were compared since both questions were followed by a yes/no answer, but only the former was appropriate. Types 1-2 and 2-2, on the other hand, were both followed by a content answer, but only the latter was appropriate.

(5) a. Type 1-1: Matrix wh-questions: Appropriate

Q: [Mary-wa [John-ga nani-o katta-to] iimasita-ka]?
Mary-Top John-Nom what-Acc bought-that said-KA
'What did Mary say John bought?'

[111] These two subjects interpreted the indeterminate phrases in (4b) as existential quantifiers.

A: ringo-o katta-to iimasita-yo.
apple-Acc bought-that said-part.
'She said that he bought apples.'

b. Type 1-2: Matrix wh-questions: Inappropriate

Q: [Mary-wa [John-ga nani-o katta-to] iimasita-ka]?
Mary-Top John-Nom what-Acc bought-that said
'What did Mary say that John bought?'

A: Hai, iimasita-yo.
yes, said-Part.
'Yes, she did.'

(6) a. Type 2-1: Yes/No-questions: Appropriate

Q: Mary-wa [John-ga nani-o katta-ka] iimasita-ka?
Mary-Top John-Nom what-Acc bought-KA said-KA
'Did Mary say what John bought?'

A: Hai, iimasita-yo.
yes, said-Part.
'Yes, she did.'

b. Type 2-2: Yes/No-questions: Inappropriate

Q: Mary-wa [John-ga nani-o katta-ka] iimasita-ka?
Mary-Top John-Nom what-Acc bought-KA said
'Did Mary say what John bought?'

A: ringo-o katta-ka iimasita-yo.
apple-Acc bought-KA said-Part.
'She said whether or not she drank apples.'

Each point was examined using the same criteria given in (2) and (3) for the results from the grammaticality judgment task shown above. The comparisons were then led to the following response types.

Table K: Q/A task: Intermediate learners' response types - Types 1 & 2

	Chinese (out of 27)		English (out of 19)	
Targetlike	1	(3.7%)	0	(0%)
Both as matrix wh-questions	9	(33.3%)	8	(42.1%)
Both as yes/no questions	0	(0%)	1	(5.2%)
Ambiguous	6	(22.2%)	7	(36.8%)
Rejected only 1-2 pairs	6	(22.2%)	1	(5.2%)
Rejected only 2-2 pairs	2	(7.4%)	1	(5.2%)
Neither	3	(11.1%)	1	(5.2%)

Table L: Q/A task: Intermediate learners' response types - Types 1 & 2

	Chinese (out of 25)		English (out of 13)	
Targetlike	6	(24%)	5	(38.4%)
Both as matrix wh-questions	1	(4%)	0	(0%)
Both as yes/no questions	0	(0%)	0	(0%)
Ambiguous	6	(24%)	1	(7.6%)
Rejected only 1-2 pairs	4	(16%)	0	(0%)
Rejected only 2-2 pairs	1	(4%)	6	(46.1%)

MO conditions

The response types for the type 2 sentences shown in (7) from the GJ task are shown in tables O and P. The criteria used to determine the response types were the same as those for the *KA* conditions.

(7) a. Type 2-1: With *MO*: Grammatical (n=4)
Dare-ga yonda hon-mo omosirokatta.
who-Nom read book-MO interesting
'The books everyone read were interesting.'

b. Type 2-2: Without a Q-particle: Ungrammatical (n=4)
*Dare-ga yonda hon-ga omosirokatta.
who-Nom read book-Nom interesting

Table M: GJ task: Intermediate learners' response types – Type 2

	Chinese (out of 27)		English (out of 19)	
Targetlike	4	(14.8%)	1	(5.2%)
Both rejected	7	(25.9%)	9	(47.3%)
Both accepted	3	(11.1%)	1	(5.2%)
Only type 2-2 accepted	4	(14.8%)	2	(10.5%)
Neither	9	(33.3%)	8	(42.1%)

Table N: GJ task: Advanced learners' response types – Type 2

	Chinese (out of 25)		English (out of 13)	
Targetlike	8	(32%)	8	(61.5%)
Both rejected	7	(28.0%)	4	(30.7%)
Both accepted	2	(8%)	1	(7.6%)
Only type 2-2 accepted	5	(20%)	0	(0%)
Neither	3	(12%)	0	(0%)

The response types for the type 3 sentences shown below in (8) from the translation task are shown in tables O and P. The criteria used to determine the response types were, again, the same as those for the *KA* conditions.

(8) a. Type 3-1: With *MO* (n = 4)
[Dare-ga mottekita wain-mo] oisikattadesu-ka?
who-Nom brought wine-MO delicious-KA
'Was the wine everyone brought delicious?'

b. Type 3-2: Without a Q-particle (n = 4)
[Dare-ga mottekita wain-ga] oisikattadesu-ka?
who-Nom brought wine-Nom delicious-KA
'What(x), the wine x brought was delicious?'

Table O: Translation task: Intermediate learners' response types – Type 3

	Chinese (out of 27)		English (out of 19)	
Targetlike	12	(44.4%)	0	(0%)
Both as wh-interrogative phrase	7	(25.9%)	5	(26.3%)
MO as 'also'	0	(0%)	3	(15.7%)
MO as universal, Ø as existential	0	(0%)	1	(5.2%)
MO as existential	0	(0%)	2	(10.5%)
Both as universal	0	(0%)	0	(0%)
Both as existential	1	(3.7%)	6	(31.5%)
Other	7[112]	(25.9%)	2[113]	(10.5%)

Table P: Translation task: Advanced learners' response types – Type 3

	Chinese (out of 25)		English (out of 13)	
Targetlike	11	(44%)	6	(46.1%)
Both as wh-interrogative phrase	11	(44%)	0	(0%)
MO as 'also'	0	(0%)	0	(0%)
MO as universal, Ø as existential	0	(0%)	3	(23.0%)
MO as existential	0	(0%)	2	(15.3%)
Both as universal	1	(4%)	0	(0%)
Both as existential	0	(0%)	2	(15.3%)
Other	2[114]	(8%)	0	(0%)

The response types for the type 3 sentences from the Q/A task are shown in tables Q and R. The criteria used to determine the response types were the same as those for the *KA* conditions. I compared only types 3-1 in (9a) and 3-3 in (9c) since these two pairs were followed by the same answer type (i.e., yes/no answers) and the difference between them is whether or not the question contains *MO*. There was no subject in all groups who did not accept the appropriate type 3-2 pairs.

[112] Six out of seven subjects showed inconsistent interpretations of indeterminate phrases and one translated all indeterminate phrases as *you*.

[113] One of the two subjects showed inconsistent responses and the other translated all indeterminate phrases as *you*.

[114] Both subjects showed inconsistent interpretations of indeterminate phrases.

(9) a. Type 3-1: CNP with *MO* Appropriate Q/A pair (n=4)

Q: [Dare-ga kaita hon]-mo yoku uremasita-ka?
who-Nom wrote book-MO well sold-KA
'Did the books everyone wrote sell well?'

A: Hai, uremasita-yo.
Yes, sold-Part.
'Yes, they did.'

b. Type 3-2: CNP without *MO*: Appropriate Q/A pair (n=4)

Q: [Dare-ga kaita hon]-ga yoku uremasita-ka?
who-Nom wrote book-Nom well sold-KA
'Who(x), the book x wrote sold well?'

A: Tanaka-sensei-ga kaitahon-ga yoku uremasita-yo.
Tanaka-professor-Nom wrote book-Nom well sold-part
'The book Prof. Tanaka wrote sold well.'

c. Type 3-3: CNP without *MO*: Inappropriate Q/A pair (n=4)

Q: [Dare-ga kaita hon]-ga yoku uremasita-ka?
who-Nom wrote book-Nom well sold-KA
'Who(x), the book x wrote sold well?'

A: Hai, uremasita-yo.
yes, sold-Part.
'Yes, it did.'

Table Q: Q/A task: Intermediate learners' response types – Type 3

	Chinese (out of 27)		English (out of 19)	
Targetlike	3	(11.1%)	1	(5.2%)
All matrix wh-questions	20	(74.0%)	11	(57.8%)
All yes/no questions	0	(0%)	0	(0%)
Only 3-1 rejeceted	1	(3.7%)	0	(0%)
Neither	3	(11.1%)	7	(36.8%)

Table R: Q/A task: Intermediate learners' response types – Type 3

	Chinese (out of 25)		English (out of 13)	
Targetlike	13	(52%)	11	(84.6%)
All matrix wh-questions	12	(48%)	1	(7.6%)
All yes/no questions	0	(0%)	1	(7.6%)
Only 3-1 rejected	0	(0%)	0	(0%)
Neither	0	(0%)	0	(0%)

Complementizer types

Tables S and T present what responses each learner gave to type 2 questions from the translation task shown in (10). The learners' responses were seen as consistent if they gave the same response at least three out of four tokens for each type.

(10) a. Type 2-1: Interrogative embedded clause
Jiro-wa [pro pizza-o katta-ka] iimasita-ka?
Jiro-Top pizza-Acc bought-KA say-KA
'Did Jiro say whether or not he bought pizza?'

b. Type 2-2: Declarative embedded clause
Jiro-wa [pro pizza-o katta-to] iimasita-ka?
Jiro-Top pizza-Acc bought-that say-KA
'Did Jiro say that he bought pizza?'

Table S: Translation task: Intermediate learners' response types

	Chinese (out of 27)		English (out of 19)	
Targetlike	1	(3.7%)	5	(26.3%)
Both as interrogative	0	(0%)	6	(31.5%)
Both as declarative	18	(66.6%)	6	(31.5%)
Inconsistent	8	(29.6%)	2	(10.5%)

Table T: Translation task: Advanced learners' response types

	Chinese (out of 25)		English (out of 13)	
Targetlike	5	(20%)	10	(76.9%)
Both as interrogative	0	(0%)	2	(15.3%)
Both as declarative	19	(76.0%)	1	(7.6%)
Inconsistent	3	(12%)	0	(0%)