# SINGLE AND MULTIPLE *WH*-QUESTIONS ASYMMETRY IN ADULT CHINESE SPEAKERS' L2 ENGLISH [*]

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**ABSTRACT**

Researchers working within the interfaces framework (Sorace and Filiaci 2006; Sorace 2011) argue that properties involving interaction between linguistic properties and other cognitive domains may pose greater difficulty to end-state second language (L2) learners than properties belonging to language faculty components. Other researchers see the problems as internal (Tsimpli and Dimitrakopoulou 2007). The current study investigates two hypotheses in relation to the acquisition of single and multiple *wh*-questions in simple and complex sentence structures in L2 English. Ninety adult L1 Chinese speakers of highly proficient L2 English together with twenty-one native English speakers were invited to take part in an acceptability judgment test. The results indicate that caution is required in interpreting failure to attain native-like knowledge as monolithic. It is argued that the results are consistent with the Interpretability Hypothesis of Tsimpli and Dimitrakopoulou (2007). In particular, following Hawkins and Hattori (2006), we speculate that the asymmetry in English-Chinese interlanguage grammars is the result of the inaccessibility of an uninterpretable syntactic feature [*u*wh:] in L2 English coupled with the transfer of *wh*-topicalization from L1 Chinese.

Keywords: Interfaces, *Wh*-topicalization, Uninterpretable features, Single and multiple *wh*-questions, Simple and complex sentences

## 1. INTRODUCTION

The role of internal and external interfaces in grammatical representations has been the focus of debate in recent generative theories of second language acquisition (SLA). Some researchers (Clahsen and Felser 2006; Hopp 2006, 2009, 2011; Montrul 2011; Sorace 2007; Sorace and Filiaci 2006; Sorace and Serratrice 2009; Sorace 2011) observe that divergence in end-state or near-native L2 grammars derives from the inadequacy of the processing resources necessary for coordinating and integrating syntactic knowledge and other cognitive domains. The lead theory of this camp is called the *Interface Hypothesis* put forward by Sorace and Filiaci (2006). The hypothesis argues that internal interfaces incorporating the modules that belong to the language faculty (e.g., syntax, semantics, morphology, and phonology) are ultimately acquirable in second language (L2) acquisition. Linguistic properties belonging to external interfaces such as discourse and pragmatics that fall outside the language faculty are inherently more difficult to acquire because external interfaces require extra processing power to incorporate syntax and information from different sources. Other researchers (Tsimpli and Roussou 1991; Hawkins and Chan 1997; Hawkins and Hattori 2006; Tsimpli and Dimitrakopoulou 2007; Kong 2011a, 2011b, 2012, 2014, 2016, 2017, 2018), however, have argued that a syntax-related property is responsible for divergent L2 performance. The *Interpretability Hypothesis* of Tsimpli and Dimitrakopoulou (2007) proposes that uninterpretable syntactic features such as Case and Agreement are acquirable only during first language acquisition. The ability to acquire these features will disappear following a critical period[1] for the reason that these features are specific to language and that it is therefore functionally uneconomical for them to remain permanently operative. What remains available in subsequent language acquisition are all other aspects of UG, the computational processes and their associated operating principles, and interpretable syntactic features which are crucial for the assembly of lexical items. According to this hypothesis, the difficulty in acquiring L2 properties may not necessarily involve the whole interface; different variables, ranging from the categorical nature

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[1] See Lenneberg (1967) for the proposal of the Critical Period Hypothesis.

of individual elements, the specific languages under investigation, to L2 input, should all be taken into consideration when accounting for the inability to attain native-like syntactic knowledge.

This study considers an asymmetrical case in which adult Chinese speakers of advanced L2 English appear to have converged on the same grammatical representations as those used by native speakers of English in extracting *simple/multiple D-linked/Non-D-linked wh- interrogatives* across *matrix clause contexts*, but not across *embedded clause contexts*. In relation to the two theories, namely the *Interface Hypothesis* (Sorace and Filiaci 2006; Sorace 2011) and the *Interpretability Hypothesis* (Tsimpli and Dimitrakopoulou 2007), the question to be specifically addressed is whether such an asymmetry in performance is an effect of processing difficulties in mapping discourse knowledge into syntax or if it can be maintained that the internal composition of *wh*-questions poses learning difficulty. It will be argued that the discourse factor transferred from the L1 enables learners to have native-like performance, but that their underlying representations are permanently diverged from those of native speakers. Speculatively, this may be the effect of an uninterpretable syntactic feature [*u*wh:] that was not selected during first language acquisition ceasing to be operative in subsequent language acquisition.

The article is organized as follows: in Section 2, the two competing theories are presented, together with representative studies of the theories. The differences between English and Chinese interrogatives are presented in Section 3. In Sections 4 and 5, the present study and its results are presented; these results are then discussed in Section 6. Finally, a conclusion of the study is drawn in Section 7.

## 2. COMPETING END-STATE L2 ACQUISITION THEORIES

Investigation of the possible causes to native vs. non-native grammar divergence has been on-going for several decades; interest in divergence from interface approaches to L2 acquisition has provided an interesting alternative answer to the question of why adult L2 learners rarely acquire native competence of the target language grammar (Borgonovo et al. 2006; Sorace and Filiaci 2006; Tsimpli and Sorace 2006; Montrul 2009; White 2009, 2010; Hopp 2011, Sorace 2011; Yuan and Dugarova 2012, Dugarova 2014). In this section we review one L2 interface hypothesis and one syntax-related hypothesis against the predictions of which the study will be assessed.

### 2.1 Interface Hypothesis (Sorace and Filiaci 2006)

Sorace and Filiaci (2006) and Sorace (2011)[2] assume that, while narrow syntactic properties can be completely acquired, those properties that involve an interface between syntax and other cognitive domains may be more difficult to acquire in L2 acquisition. The assumption that Sorace and Filiaci draw is that, during the course of L2 grammar development, the lack of efficient processing strategies to coordinate syntactic and pragmatic knowledge leads to developmental instability. While native speakers have the necessary processing resources to integrate linguistic and extralinguistic knowledge, non-native speakers find that the processing of extralinguistic knowledge, which is outside the grammar proper, to be more difficult than that of linguistic knowledge. In other words, internal interfaces involving different modules internal to the grammar (e.g., syntax-morphology, syntax-lexicon, and syntax-semantics) are relatively easier for L2 learners to

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[2] It should be noted that the Interface Hypothesis has evolved over time. In Sorace (2011), it is made very clear that the Interface Hypothesis deals with the language produced by L2 speakers with very advanced and near-native proficiency, rather than that produced by those with developmental grammars. The theory has also been extended to account for optionality in bilingual first language acquisition and the early stages of L1 attrition. Since the L2 English speakers in this study have not reached near-native proficiency, we focus on the early version of the theory, hence the early version of the theory, as in Sorace and Filiaci (2006).

acquire than external interfaces (e.g., syntax-discourse and/or syntax-pragmatics)[3] involving external conditions of contextual appropriateness because different resources are required to process external interfaces and are likely to lead to interface vulnerability.

The example in support of the *Interface Hypothesis* is an empirical study provided by Sorace and Filiaci (2006) on the interpretation of intra-sentential anaphora in Italian by English speakers of near-native Italian and (by) a group of native Italian speakers. Sorace and Filiaci adapted a test from Tsimpli et al. (2004), which incorporated overt and null subject pronouns in main and subordinate clauses in a picture verification task. Twenty experimental sentences, in addition to fifteen filler items, were included in the test. Among the experimental sentences, half were forward anaphora constructions (the main clause precedes the subordinate clause) and the other half were backward anaphora constructions (the subordinate clause precedes the main clause). The filler items were added to the test as distractor sentences.

In their analysis of the results, Sorace and Filiaci compared the performance of the participants in the experimental group on overt and null subject pronouns in matrix and subordinate clauses with the performance of the native speakers. With respect to the null subject pronouns in both the forward and backward anaphora conditions, Sorace and Filiaci found that the English speakers of near-native Italian did not perform significantly differently from the native speakers of Italian, suggesting that they had acquired the syntactic constraints on pronominal subjects in Italian. However, a closer look at the data suggests that the Italian speakers of advanced L2 English diverged significantly from the Italian controls in the interpretation of overt subject pronouns in the backward anaphora condition. While the Italian controls preferred the extralinguistic referent as the antecedent for the overt pronoun in the backward anaphora condition, the non-native speakers predominantly

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[3] Discourse and pragmatics are often used interchangeably in L2 acquisition research. According to Rothman and Slabakova (2011), syntax-discourse interface properties belong to a subset, whereas discourse-pragmatics properties belong to a superset. In other words, syntax-discourse deals with interlocutors' knowledge of the discourse context, while syntax-pragmatics deals with knowledge of the world and universal pragmatic principles. In this research, we use the two terms interchangeably.

favoured the overt matrix subject as the antecedent for the overt pronoun. Sorace and Filiaci's conclusion as to the reason for this divergence in the interpretation of the backward anaphora condition is that internal interfaces are acquirable as they only involve formal properties of the language system. External interfaces, on the other hand, are more difficult to acquire as non-native speakers may lack the necessary processing strategies to integrate multiple sources of information.

## 2.2 Interpretability Hypothesis (Tsimpli and Dimitrakopoulou 2007)

Another position that has been taken on the divergence between native and non-native grammars is that this results from adult L2 learners having a deficit in underlying representations of L2 grammars rather than a problem related to interface processing strategies. In particular, success or failure in acquiring a specific linguistic property may depend more on the syntactic features that are involved, than on domain-wide interfaces. In other words, this view allows one to make an interesting claim about native vs. non-native grammar divergence: the failure of L2 learners to acquire a particular syntactic property is the result of the inaccessibility of uninterpretable formal features in the L2 and not of the whole interface domain.

An empirical study in support of this partial access to UG view was one conducted by Kong (2011b). Kong collected data on the interpretation of relative clauses and resumptive pronouns in L2 Chinese by adult speakers of English. The participants were 54 English speakers of L2 Chinese and a control group of 18 native speakers of Chinese. The data were collected based on a grammaticality judgment test of 25 experimental sentences.

It was found that while the native speaker controls showed significant differences in their acceptance of the grammatical and the ungrammatical readings in three structural positions (resumptive pronouns in subject position, resumptive pronouns in embedded subject position, and the complementizer *De*), the English speakers were significantly different from the native speakers in the properties in question. Kong (2011b) speculates that, extending the claims of the *Interpretability Hypothesis*, once an uninterpretable [*u*wh:] is selected in

first language acquisition, it becomes difficult to reset when exposed to an L2 which lacks such feature. In other words, the uninterpretable [*u*wh:] feature associated with relative clauses and resumption pronouns for feature-checking is available in English (L1), but not in Chinese (L2). It is argued that the learners will establish grammatical representations, which diverge from those of native speakers despite continued exposure to the L2. The divergence in the performance of the native and non-native speakers in detecting the resumptive pronouns-related ungrammatical sentences seems to allow Kong (2011b) to draw the conclusion that that uninterpretable syntactic features associated with the critical period are difficult to reset once they are selected in the L1.

The studies reviewed under the two competing theories provide considerable evidence for the claim that native vs. non-native divergence exists in end-state L2 acquisition. The two views, however, differ in accounting for what gives rise to the divergence. The *Interface Hypothesis* of Sorace and Filiaci considers external interfaces involving multiple-processing strategies to be the main cause of vulnerability in L2 acquisition. The *Interpretability Hypothesis* of Tsimpli and Dimitrakopoulou, on the other hand, regards the accessibility of specific features, rather than interfaces as the key to success in L2 acquisition. In relation to the present study, if the *Interface Hypothesis* is correct, it would be expected that advanced L2 learners would have less trouble acquiring internal interfaces (narrow syntactic properties) than grammatical aspects involving an interface between the syntactic domain and other cognitive domains (external interfaces). If, however, the *Interpretability Hypothesis* is correct, it would be expected that advanced L2 learners would have access to both internal and external interfaces, but that the availability of certain uninterpretable syntactic properties in the target language causes acquisition problems.

## 2.3 Studies in L2 English *Wh*-movement

There have been a number of studies of whether L2 learners are sensitive to the constraints on movement operations (Schachter 1989, 1990, Johnson and Newport 1991, White 1992, White et al. 1992, Wolfe-Quintero 1992, Martohardjono 1993, White and Genesee 1996,

Hawkins and Chan 1997, White and Juffs 1998, Bley-Vroman and Yoshinaga 2000, Wakabayashi and Okawara 2003, Hawkins and Hattori 2006, Yuan 2007, 2010, 2014, Dugarova 2014, Yuan and Dugarova 2012, Pozzan and Quirk 2014).

White and Genesee (1996) investigated the Subjacency Principle in the grammars of L2 speakers of English who had started learning English at different ages. Using a grammaticality judgment test involving ungrammatical Subjacency violations as well as grammatical sentences to test whether *wh*-extraction out of complex sentences was accepted, and it was found that learners achieved native-like proficiency. On the basis of their response-time data, White and Genesee thus concluded that no significant processing differences were found between native and non-native groups; the near-native speakers performed highly accurately on judgments of grammatical and ungrammatical sentences, suggesting native-like representation of *wh*-movement and Subjacency. In contrast, whereas participants in White and Genesee (1996) appear to have native-like competence with respect to the Subjacency Principle, participants in Johnson and Newport (1991) performed significantly less well than native controls on Subjacency violations. Johnson and Newport (1991) tested native speakers of Chinese, who were first exposed to L2 English at different ages, on a grammaticality judgment task involving declarative statements, grammatical *wh*-questions, ungrammatical *wh*-questions without subject-auxiliary inversion, and ungrammatical Subjacency violations. They found that the participants who had arrived in the USA as adults incorrectly accepted more than a third of the Subjacency violation sentences, suggesting that constraints like Subjacency were subject to maturational decline and that there were age effects in adult L2 acquisition. Given that the results have not always been conclusive, because some studies show that learners have built a grammatical representation in which movement is constrained by subjacency (White and Genesee 1996, White and Juffs 1998), but others show that learners are unable to detect violations of subjacency (Schachter 1989, 1990, Johnson and Newport 1991, Hawkins and Chan 1997), it is hoped that the current study will contribute to the existing body of research on the L2 acquisition of English *wh*-questions in

general, and on the L2 acquisition of multiple *wh*-questions by adult Chinese speakers in particular.

## 3. Properties of single and multiple *wh*-questions in English and Chinese

### 3.1 Single *Wh*-questions

Two kinds of *wh*-questions in English and Chinese have been discussed in the literature (Huang et al., 2009; Pan 2006; Wu 1999). The first is single *wh*-questions. This is illustrated in 1a and 1b:

(1)  a.  What$i$ did he buy t$i$?
    b.  Lisi mai-le    shenme?
      Lisi buy-ASP what
      'What did Lisi buy?'
    c.  *Shenme$i$ Lisi mai-le t$i$?
      what    Lisi buy-ASP
      'What did Lisi buy?'

In contrast to English in which a *wh*-word or *wh*-phrase in a simple sentence must be fronted (as in (1a)), a *wh*-word in Chinese generally remains in-situ (as in (1b)) and cannot be fronted (as in (1c)).

In complex sentence constructions, the obligatory nature of *wh*-fronting in English and its absence in Chinese remains, as in (2a) and (2b):

(2)  a.  What$i$ did Tim say t$i$ Mary bought t$i$?
    b.  Wang Wu shuo Lisi mai-le    shenme?
      Wang Wu say   Lisi buy-ASP what
      'What did Wang Wu say Lisi bought?'

The embedded *wh*-word (*what*) in (2a) moves cyclically through the complementizer phrase and lands on the Specifier of CP. In the

equivalent construction in Chinese (2b), however, the *wh*-word (*shenme*) remains in-situ.

Although it has been generally assumed that *wh*-words move to the sentence initial position in English and stay in-situ in Chinese, as illustrated in (1a), (1b), (1c), (2a), and (2b), some Chinese *wh*-word constructions (like with the presence of the adverb *zui* or a D-link *wh*-word; see Pan 2006; Wu 1999, among others, and further discussion in Section 3.2) can be topicalized, moving from their first-merged position to the sentence initial position (Huang et al., 2009; Pan 2006; Wu 1999), as in (3) and (4):

(3)  a.  Ni  zui   xiangjian shei?
      you  most want see  who
      'Who do you want to see the most?'
   b.  Shei*i* ni   zui   xiangjian t*i*?
      who  you most want see
      'Who do you want to see the most?'

(4)  a.  Ni xiangjian [na    yi  ge ren]?
      you want see  which one CL person
      'Which person do you want to see?'
   b.  [Na    yi  ge ren]*i*    ni  xiangjian t*i*?
      which  one CL person   you want see
      'Which person do you want to see?'

Contrary to the *wh*-word *shenme* in (1b) and (1c), the *wh*-word *shei* with the insertion of the adverb *zui* (*most*) and the *wh*-determiner phrase *na yi ge ren* (*which one*) in (3) and (4) can either remain in-situ or be fronted.

Again, in complex Chinese sentences, certain *wh*-constructions can remain in-situ or be fronted whereas *wh*-fronting is obligatory in English, as in (5) and (6):

(5)  a.  What*i* did Tim say t*i* Mary bought t*i*? (repeated as 2a)
   b.  *Did Tim know Mary bought what?

(6)  a.  Wang Wu shuo Lisi zui   xiangjian shei?
          Wang Wu say   Lisi most want see  who
          'Who did Wang Wu say Lisi wanted to see the most?'
     b.  Wang Wu shuo shei*i* Lisi zui   xiangjian t*i*?
          Wang Wu say   who  Lisi most want see
          'Who did Wang Wu say Lisi wanted to see the most?'
     c.  Wang Wu shuo Lisi xiangjian [na      yi  ge ren]?
          Wang Wu say   Lisi  want see  which one CL person
          'Which person did Wang Wu say Lisi wanted to see?'
     d.  Wang Wu shuo [na    yi   ge ren]*i*   Lisi xiangjian t*i*?
          Wang Wu say   which one CL person Lisi want see
          'Which person did Wang Wu say Lisi wanted to see?'

## 3.2 Multiple *wh*-questions

The requirement that a *wh*-phrase in an interrogative clause in English moves into the specifier position of CP holds true when two *wh*-phrases are present in the same sentence. Consider the multiple *wh*-questions in (7).

(7)  a.  Who*i* did Peter say t*i* bought what?
     b.  *What*i* did Peter say who bought t*i*?
     c.  Where*i* did the boy study t*i* when?
     d.  When*i* did the boy study where t*i*?
     e.  When*i* did the teacher find out t*i* who*j* Sarah had visited t*j*?
     f.  *When*i* did the teacher find out who*j* Sarah had visited t*j* t*i*?

In (7a), where the embedded subject (*who*) moves and the embedded direct object (*what*) remains in-situ. In (7b), however, the specifier of the embedded clause is filled by *who*, the movement of *what* from the embedded direct object position to the higher CP violates the Subjacency Principle (Chomsky 1981). Both (7c) and (7d) are grammatical single-clause multiple *wh*-questions in which *where* and *when* originate as the complement of *study*. Both sentences involve the movement of one *wh*-phrase to the specifier position of the nearest CP. The grammaticality of (7e) is an instance of no crossing dependencies, as the higher *wh* (*when*)

is within the matrix clause, while the lower *wh* (*who*) is in the embedded clause. The movement of *when* and *who* involves the crossing of one bounding node to the nearest CP. (7f) involves movement of the embedded *wh*-question (*when*) across two bounding nodes, giving rise to ungrammaticality; both *who* and *when* originate in the embedded clause, but the specifier of CP in the embedded clause is filled by *who* and the movement of *when* to the higher clause is impossible.

Contrary to English, the movement of a *wh*-phrase to the specifier position of CP in multiple *wh*-questions in Chinese is generally prohibited, as Examples (8a) to (8d) show:

(8)  a.  Ta shenme shihou zai nali    chi-fan?
         he what      time    in  where eat rice
         'When did he have meal where?'
     b.  *[Shenme shihou]*i* ta t*i* zai nali    chi-fan?
          what        time      he   in  where eat rice
         'When did he have meal where?'
     c.  Laoshi   shenme shihou zhidao Lisi gen  shei  shuo hua?
         teacher  what    time    know  Lisi with who  say  dialogue
         'When did the teacher know who Lisi spoke with?'
     d.  *[Shenme shihou]*i* laoshi t*i* zhidao Lisi gen s hei  shuo hua?
          what        time      teacher  know  Lisi with who say   dialogue
         'When did the teacher know who Lisi spoke with?'

However, when the adverb *zui* (*most*) is adjoined to the verb phrase (VP), one *wh*-phrase may freely scramble over the other in a multiple-question sentence in Chinese (Yuan and Dugarova 2012), as in (8e) and (8f):

     e.  Shei zui   xihuan chi shenme cai?
         who  most like    eat  what    dish
         'Who likes what dish the most?'
     f.  [Shenme cai]*i* shei zui    xihuan chi t*i* ?
          what     dish who most like      eat
         'Who likes what dish the most?'

The English and Chinese interrogatives in (1-8) are identical in the way that *wh*-words are interpreted semantically and universally across human language. What needs to be explained is the obligatoriness of *wh*-fronting in English(,) but its optional fronting in Chinese. According to Huang (1982), Li (1990), Rizzi (1996), Aoun and Li (2003), and Huang et al. (2009), questions belong to the Complementizer (C) category and are signaled by the presence of a Q morpheme. The surface differences of question sentences in English and Chinese are the result of a parametric difference in the way that the Q morpheme is realized. According to Li (1990), Chinese C follows its complement IP, and CP in Chinese is head-final. This is in contrast to English where C precedes its complement IP (head-initial). In addition, the Q morpheme can be overt or covert (*ma*, *ne*, or *Ø*) in Chinese *wh*-questions, whereas its counterpart in English is a bound null morpheme and must be associated with another head and be moved to the specifier of CP for feature checking. The parametric differences between English and Chinese *wh*-questions in terms of headedness and the nature of the Q morpheme result in English being considered a *wh*-movement language and Chinese a *wh*-in-situ language.

However, the requirement that a *wh*-phrase moves to the specifier of CP applies uniformly to single and multiple *wh*-questions in English, but the requirement that a *wh*-phrase remain in-situ in Chinese is not so uniformly applied[4]. A *wh*-phrase can sometimes move from the base-generated position to the sentence initial position in Chinese, as (3a-b), (4a-b), (6a-d), and (8e-f) show. The asymmetric *wh*-movement and *wh* in-situ behaviour of Chinese *wh*-questions can be captured if we follow Pesetsky (1987), Wu (1999), Pan (2006), and Yuan and Dugarova (2012) in assuming that *wh*-feature checking and discourse/non-discourse-linked *wh*-words give rise to the obligatory nature of *wh*-fronting in English and its occasional fronting in Chinese[5].

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[4] Whether preposed *wh*-phrases should be treated as *wh*-topicalization or *wh*-focalization remains a point of contention in the Chinese literature. For an overview of the treatment of *wh*-questions in Chinese, see Cheung (2014) and Pan (2014). Since a decision has to be made about which linguistic assumptions to adopt in language acquisition, we pursue the consequences of following Wu's and Pan's proposals in this research.

[5] There are two reasons to suggest that *wh*-fronting is occasional in Chinese. First, without the presence of the adverb *zui* (*most*) or a D-linked *wh*-word, the extraction of

According to Wu (1999) and Pan (2006), when *wh*-phrases move in English, they have to move to the specifier position of the nearest CP for *wh*-feature checking, whereas in Chinese, *wh*-phrases can either remain in-situ or raise to the specifier position of the topic phrase (TopP) to check the topic feature for the reason that the topic feature in Chinese is strong and must be checked. Following Adger (2003), Hawkins and Hattori (2006), and Kong (2011b), we assume that the reasons for *wh*-phrase movement in English and the non-movement in Chinese lie in the presence of an uninterpretable [*u*wh:] feature in the former and the absence of the feature in the latter. The *wh*-phrase movement is established in English through an agreement dependency between an interrogative complementiser [C] (*who* and *what* for example) with an interpretable question feature [Q]. An agreement dependency can only be established when an uninterpretable [*u*wh:] feature is present. This uninterpretable feature is specified on C: [C, Q, *u*wh:] in English. As a result, a *wh*-word phrase has to move to the specifier of [C, Q, *u*wh:] to carry out a checking operation and delete the uninterpretable [*u*wh:] feature. However, such an uninterpretable feature is absent in Chinese and *wh*-phrase movement is not motivated[6]. Nevertheless, when *wh*-phrases raise to TopP in Chinese, it is still called *wh*-topicalization in Wu's sense. *Wh*-topicalization can only be activated when two conditions are met. First, the head of TopP must have a [+topic] feature, which attracts a Discourse (D)-linked *wh*-word to the specifier of TopP for feature checking. Second, only when a D-linked *wh*-word, which is

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*shei* (*who*) from the complement to the topic position violates *Wh*-topicalization. Second, *wh*-phrases can either remain in-situ or move to the topic position in Chinese even in the presence of the adverb *zui* (*most*) or of a D-linked *wh*-word.

[6] Following Adger (2003), Hawkins and Hattori (2006), and Kong (2011b), we assume that in languages like Chinese where *wh*-phrases remain in-situ, the valuing of [*u*wh:] occurs directly between [C, Q], without movement, as in (a):

  (a). [C, Q, *u*wh:] … [D, wh] → [C, Q, ~~*u*wh:~~ wh] … [D, wh] (as 7 in Hawkins and Hattori 2006: 276)

In languages like English where *wh*-phrases are fronted, the valuing of [*u*wh:] occurs within the immediate projection of interrogative C. An uninterpretable [*u*wh:] forces a *wh*-phrase to move to the specifier of [C, Q, *u*wh:] to value [*u*wh:], as in (b):

  (b). [C, Q, *u*wh:] … [D, wh] → [D, wh [C, Q, ~~*u*wh:~~ wh]] … <[D, wh]> (as in Hawkins and Hattori 2006: 276).

linked to a set of entities in the presupposition background[7] or the adverb *zui* (*most*) denoting comparison, is involved, can a *wh*-word move to the topic position; *wh*-topicalization cannot be triggered when a non-D-linked *wh*-word is involved or when the adverb *zui* (*most*) is absent, as shown in (3) and (4) (repeated here as (9 a-d)).

(9)  a.  Ni  zui   xiangjian shei?
          you most want see  who
          'Who do you want to see the most?'
     b.  Shei*i* ni   zui   xiangjian t*i*?
         who you  most want see
         'Who do you want to see the most?'
     c.  Ni  xiangjian [na     yi  ge ren]?
         you want see  which one CL person
         'Which person do you want to see?'
     d.  [Na    yi  ge ren]*i*    ni  xiangjian t*i*?
         which one CL person  you want see
         'Which person do you want to see?'

The reason why *shei* (*who*) and *na yi ge ren* (*which person*) can both remain in situ and move to the topic position in (9a-9d) is that the presence of the adverb *zui* (*most*) and the *wh*-phrase *na yi ge ren* (*which*

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[7] Conisder examples a-d:

a. Zhe ji   ben shu dangzhong, ni   xiang mai na     yi  ben?
   this few CL book among     you want buy which one CL (Among these books, which one would you like to buy?)
b. Zhe ji  ben shu  dangzhong, na     yi  ben ni xiang  mai?
   this few CL book among      which one CL you want buy (Among these books, which one would you like to buy?)
c. Ni   xihuan shei?
   you like      who (Who do you like?)
d. *Shei ni   xihuan?
    who you like (Who do you like?)

Both a and b sentences are grammatical in Chinese since the phrase *Zhe ji ben shu dangzhong* (*Among these books*) serves as discourse, which allows the *wh*-phrase *na yi ben* (*which one*) to either remain in situ or move to the topic position. On the contrary, sentences c and d lack a discourse, which requires the *wh*-word *shei* (*who*) to remain in situ, hence the ungrammaticality of sentence d.

*person*) entails that there is a presupposed group of people in the discourse. Both the speaker and the listener have a shared group of people in mind, and the answer to (9a-9d) must be someone from this group. Contrast this with a *zui*-less clause:

(10)  a.  Ni   xiangjian shei?
        you  want see  who
        'Who do you want to see?'
    b.  *Shei*i ni    xiangjian t*i*?
        who  you want see
        'Who do you want to see?'

The non-D-link *wh*-word *shei* (*who*) can only stay in situ (10a); the extraction of *shei* (*who*) from the complement to the topic position without the presence of the adverb *zui* (*most*) or a D-linked *wh*-word causes a violation of *Wh*-topicalization (10b)[8].

Given the assumptions outlined so far, there are two ways in which *wh*-questions can be said to operate differently in English and in Chinese. Firstly, one *wh*-word/phrase must appear in the left periphery of an interrogative clause in English, whereas in Chinese it can be optional; Chinese allows fronting of the *wh*-phrase not as *wh*-movement but as *Wh*-topicalization. Secondly, the overt syntactic movement in English results from the requirement that the Q morpheme must be bound and checked in the specifier of CP, whereas in Chinese the movement of a *wh*-word to the specifier of TopP results from the syntax-discourse interface; the presence of the uninterpretable [*u*wh:] feature forces a *wh*-phrase to move to the specifier of CP in English and the absence of the

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[8] It should be noted that the possibility of *wh*-topicalization is not limited to the adverb *zui* (*most*). According to Wu (1999), there is a range of other lexical items which enables *wh*-topicalization; for instance, the topicalization of a *wh*-phrase becomes acceptable if a *wh*-question involves negation *bu* (*not*) in Chinese, as in (10c) and(10d):

    (10) c. Zhangsan bu xihuan shei?
        Zhangsan  no like     who
        'Who doesn't Zhangsan like?'
      d. Shei Zhangsan bu xihuan?
        who  Zhangsan no like
        'Who doesn't Zhangsan like?'

feature allows a *wh*-phrase to remain in situ in Chinese. Following Pan (2006), Wu (1999), and Yuan and Dugarova (2012), we assume that non-D-linked *wh*-words cannot be topicalized in Chinese; only D-linked *wh*-words with a [+topic] feature or with the adverb *zui* (*most*) can move to the topic position.

Based on the above review of the syntax of *wh*-questions in English and Chinese together with the summary of the two competing theories addressing the end-state grammar development in L2 acquisition, this empirical study aims to answer the following two questions:

(a)    Can the Chinese speakers of advanced L2 English acquire obligatory *wh*-fronting? If yes, can it be maintained that they have acquired the Q morpheme which triggers *wh*-movement in English? If no, to what extent do L2 learners diverge from native speakers of English?

(b)    Which of the two competing theories, the *Interface Hypothesis* or the *Interpretability Hypothesis*, can offer a better explanation, if there is a divergence between native and nonnative speakers?

The two competing theories reviewed in the previous section provide considerable evidence to support the claim that native/ non-native divergence exists in end-state L2 acquisition. The two views, however, differ in accounting for what gives rise to the divergence. The *Interface Hypothesis* of Sorace and Filiaci considers the lack of coordination between syntactic and pragmatic knowledge to be the main cause of vulnerability in L2 acquisition. The *Interpretability Hypothesis* of Tsimpli and Dimitrakopoulou, on the other hand, regards the accessibility of specific features as the key to success in L2 acquisition. In relation to the present study, if the *Interface Hypothesis* is correct, it would be expected that advanced L2 learners would restructure their grammars in response to L2 input (noticing that the Q morpheme must be bound and checked in the specifier of CP, for instance) within the bounds sanctioned by UG. Where L2 input is available, convergence on grammars like those of native speakers is in principle possible. If, however, the *Interpretability Hypothesis* is correct, it would be expected

that advanced L2 learners would have access to both internal and external interfaces, but that the availability of the uninterpretable [$u$wh:] feature in L2 English, but which is lacking in L1 Chinese, causes acquisition problems.

## 4. THE STUDY

### 4.1 Participants

Two groups of learners (N = 90) took part in the study together with a control group of 21 adult native speakers of English. All of the participants were volunteers and they had all signed a consent form prior to taking part in the unpaid experiment. The participants in the two experimental groups were recruited from an initial cohort of 155 Chinese speakers (82 females and 73 males) of English from two universities in Central Taiwan. Their ages ranged from 19 to 24. To ensure that learners had received tuition in English only after the critical period, any Chinese speakers of L2 English who had lived in an English-speaking country before puberty (under the age of 12) were excluded. In selecting the participants, we also had to ensure that *wh*-movement had been established in their L2 English grammars. Therefore, only those who were placed in the intermediate level or above on the Oxford Placement Test (Allan 1992) were invited to participate in the experiment. The experimental learners were assigned to two proficiency levels[9]: the intermediate group (Int = 47; scores in the range of 73-80) and the advanced group (Adv = 43; scores in the range of 81-88). The native English speakers included professors at the two universities and English

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[9] One may question the employment of the intermediate group in this study given the fact that the two competing theories in question concern the behavior of very advanced or near-native learners only. However, we believe that transfer plays a role in L2 acquisition and that L2 development is incremental. The involvement of the intermediate group allows us to test the transfer and the developmental claims. In addition to the Oxford Placement Test, the initial cohort of 155 participants was given a test of 10 grammatical *wh*-questions in English. Only those participants who accepted at least seven out of the ten sentences were included in the study. Therefore, 65 participants were excluded from the study.

teachers at local language schools. Sixteen of them were Americans, three were Canadians, and two were South Africans. Twelve of them were females and nine were males. Their ages ranged from 25 to 60.

## 4.2 Tasks

Two tasks designed to test learners' acquisition of L2 English *wh*-questions were included in the study. The first task was an acceptability judgment test (AJT) consisting of 84 sentences (54 test items and 30 distractors). The 54 test items were divided into eight sentence types, testing three variables: single/multiple *wh*-interrogatives, extracting site, and D-linking.  Table 1 below displays examples of the eight sentence types and tokens, in addition to the distractors in the AJT.  Types I and II sentences involve single *wh*-interrogatives in simple sentences. The only difference between the two types of sentences lies in the D-linking elements; Type I (Sg-nD-Sm) includes Non-D-Linked elements, whereas Type II (Sg-D-Sm) has D-Linked elements. Types III and IV sentences involve single *wh*-interrogatives in complex sentences. They differ from each other with regard to the D-linking elements; Type III (Sg-nD-Com) sentences are Non-D-Linked, but Type IV (Sg-D-Com) are D-linked. Types V and VI sentences share two variables in common (multiple *wh*-interrogative and simple sentence) but differ, again, in the D-linking elements. Type V (Mp-nD-Sm) involves Non-D-Linked elements, whereas Type VI (Mp-D-Sm) sentences involve D-Linked elements. Types VII and VIII sentences involve multiple *wh*-interrogatives in complex sentences, but differ in regard to the D-linking elements; Type VII (Mp-nD-Com) sentences are Non-D-Linked, whereas Type VIII (Mp-D-Com) sentences are D-Linked. Each of the eight types includes grammatical (target form) and ungrammatical (non-target form) test sentences (See the Appendix for the 54 test sentences used).

The participants had to indicate the acceptability of each sentence according to a Likert scale ranging from -2 to +2. They were instructed that they had to respond in the following way in the case of the sentences in the test that they presumed to be grammatical: +2 (*completely acceptable*), +1 (*acceptable*), 0 (*not sure*), -1 (*unacceptable*), and -2 (*completely unacceptable*). For sentences that the participants presumed

to be ungrammatical, the scoring procedure was reversed: +2 (*completely unacceptable*), +1 (*unacceptable*), 0 (*not sure*), -1 (*acceptable*), and -2 (*completely acceptable*). Target performance was measured on the basis of all of the choices made on the right side (+1 or +2) by the control group; learners' responses of -1 or -2 were treated as non-target and 0 choices were excluded[10].

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[10] It was found later on in the analysis that zero choices (0) amounted to less than 3% of the total.

Table 1. Types of sentence structures and examples in the AJT

| Types of structures | Sample sentence and number of such items in the test |
|---|---|
| I.     Single    Non-D-linked  *wh*-questions in simple sentences     (Sg-nD-Sm) | Who does he like? (Target form = 3 test items)<br>*He drinks what? (Non-target form = 3 test items) |
| II.    Single D-linked *wh*-questions in simple sentences     (Sg-D-Sm) | Which student did he see? (Target form = 3 test items)<br>Which dish does he like the most? (Target form = 3 test items)<br>*He most hates what course? (Non-target form = 3 test items) |
| III.   Single    Non-D-linked  *wh*-questions   in   complex sentences     (Sg-nD-Com) | What did Tom remember Mary bought? (Target form = 3 test items)<br>*Susan said Jim saw who? (Non-target form = 3 test items) |
| IV.   Single D-linked *wh*-questions in complex sentences     (Sg-D-Com) | Which actor did John think Jenny liked? (Target form = 3 test items)<br>Which restaurant did Peter say John should try? (Target form = 3 test items)<br>*Peter asked John disliked the most which teacher? (Non-target form = 3 test items) |

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| V.   Multiple Non-D-linked *wh-* questions in simple sentences (Mp-nD-Sm)<br><br>VI.  Multiple D-linked *wh-* questions in simple sentences (Mp-D-Sm) | Who bought what? (Target form = 3 test items)<br>*What who ate? (Non-target form = 3 test items)<br><br>Who liked what movie the most? (Target form = 3 test items)<br>*What novel who most liked to read? (Non-target form = 3 test items) |
|---|---|
| VII.  Multiple Non-D-linked *wh-* questions in complex sentences (Mp-nD-Com)<br><br>VIII. Multiple D-linked *wh-* questions in complex sentences (Mp-D-Com) | Who remembers what Peter bought? (Target form = 3 test items)<br>*What might he think who has borrowed? (Non-target form = 3 test items)<br><br>Which teacher do you think will say what? (Target form = 3 test items)<br>*What do you think which teacher will say? (Non-target form = 3 test items) |
| Distractors<br><br>IX.   Affirmative sentences (Af)<br><br><br>X.   Incorrect use of articles (InC-art)<br><br><br><br>XI.   Incorrect S-V Agreement sentences (InC-SV-Agr) | <br><br>I like to watch Italian films the most. (Target form = 10 test items)<br><br>*The boy threw a apple at the girl. (Non- target form = 10 test items)<br><br>*He believe Tom enjoys playing video games. (Non-target form = 10 test items) |

The second task was a Translation Task in which the learners translated Chinese sentences that contained single or multiple *wh-*questions into English. Twenty-six sentences (16 test items and 10

distractors) were included in this task. The sixteen test items were designed to test single and multiple *wh*-questions in relation to sentence types (simple vs. complex) and were categorized into eight types (the same categorization as in the AJT). Below are the eight categories and their sample sentences:

XII.  Single Non-D-linked *wh*-questions in simple sentences: (2 test items)

        Ta taoyan shei?
      he hate    who
      'Who does he hate?'

XIII.  Single D-linked *wh*-questions in simple sentences: (2 test items)

      na     san-ben shu ta zui   xihuan?
      which three-CL book he most like
      'Which three books did he like the most?'

XIV.  Single Non-D-linked *wh*-questions in complex sentences: (2 test items)

      Zhangsan jide      Lisi xiuhao-le shenme?
      Zhangsn   remember Lisi fix-ASP  what
      'What did Zhangsan remember Lisi fixed?'

XV.  Single D-linked *wh*-questions in complex sentences: (2 test items)

      Wangwu yiwei Lisi zui   xihuan na-bu     che?
      Wangwu think Lisi  most like    which-CL car
      Which car did Wangwu think Lisi liked the most?

XVI.  Multiple Non-D-linked *wh*-questions in simple sentences: (2 test items)

      Shei kanjian-le shenme?
      who see-ASP   what
      'Who saw what?'

XVII. Multiple D-linked *wh*-questions in simple sentences: (2 test items)

        Shei zui xihuan na-bu dianying?

        who most like which-CL film

        'Who liked what movie the most?'

XVIII. Multiple Non-D-linked *wh*-questions in complex sentences: (2 test items)

        Ta renwei shei jie-le shenme?

         He think who borrow-ASP what

        'Who might he think has borrowed what?'

XIX. Multiple D-linked *wh*-questions in complex sentences: (2 test items)

        Zhangsan renwei na-yi-ge xuesheng hui chi shenme?

        Zhangsan think which-CL student will eat what

        'Which student did Zhangsan think will eat what?'

XX. Distractors (10 test items)

        Laoshi jiao san-ge xuesheng huiqu ba ta de shu ban lai.

        teacher ask three-CL student return BA he DE book move come

        'The teacher asked three students to go and bring back his/her books.'

## 4.3 Procedure

The experimental groups and the control group were given the AJT separately. The 84 sentences were arranged in a randomized fashion so that no two consecutive items tested the same syntactic structure. Efforts were made to minimize possible effects that the vocabulary may have on the participants' judgment. All of the vocabulary was limited to the list of the most frequently-used 2,000 words compiled by the Ministry of Education of the Republic of China (Taiwan). As a result, only simple words were used in the test sentences. Written instructions in Chinese were given to the experimental participants at the beginning of the test. In addition to the 84 test sentences, there were eight practice sentences in

the instructions. The practice sentences were different from the test sentences and the participants were encouraged to ask questions at the point of instruction if they had any problems with the conditions of the experiment. Prior to the experiment and after the practice had been completed, the participants were told that neither discussion nor the checking of answers among themselves was allowed during the test. The experiment was not timed, all of the participants in the experiment finished it within an hour [11]. One week after the AJT test, the experimental groups were invited to take part in the Translation Task. The 26 sentences in the test were also randomized so as to reduce the chance of the participants becoming aware of the syntactic knowledge being tested. The participants in the control group took the AJT test only and all of them finished it within 45 minutes. Each participant was scored individually for his or her performance in judging the acceptability of the test sentences under investigation and the mean group scores were then calculated. The results of the AJT were run through the General Linear Model (GLM) procedure of the SPSS statistical programme and ANOVAs were used. *Post hoc* Scheffe tests were performed to establish where significant differences were to be found. As for the Translation Task, two Taiwanese (Chinese-speaking) TESOL professors were invited to cross check and mark the answers. One mark was given for a correct translation, while no mark was given for a wrong translation.

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[11] It is possible that the ungrammatical *wh*-phrase in situ questions could be accepted as echo questions by some native speakers of English. It, therefore, would be more appropriate to have a bi-modal presentation where the participants heard and read the items at the same time in order to eliminate the possibility of an echo-question effect. However, the fact that the native speakers overwhelmingly rejected the ungrammatical *wh*-phrase in situ questions indicates that the possibility of such an effect on performance of the participants was ruled out. In future research, a bi-modal presentation will be adopted so as to eliminate the possibility of an echo-question effect as well as to reduce the chance of the participants spending time on analyzing test sentences rather than relying on their intuitions, as an anonymous reviewer has rightly pointed out.

## 5. RESULTS

### 5.1 Single Non-D-linked and D-linked *wh*-questions in simple sentences

One-way ANOVAs conducted on the judgment of *Single Non-D-linked and D-linked wh-questions in simple sentences* indicate that there was no significant difference between the groups in their judgements on either type of sentences: $(F(2,108) = 25.953, p<.135)$ for *Single Non-D-linked wh-questions in simple sentences* and $(F(2,108) = 18.586, p<.232)$ for *Single D-linked wh-questions in simple sentences*. As can been seen in Table 2, the experimental participants were able to interpret the two sentence types in the same way as native speakers.

Table 2. Mean scores of the groups' judgment of Single Non-D-linked and D-linked *wh*-questions in simple sentences in English (see examples in Appendix)

|  | Intermediate<br><br>G1 (N=47) | Advanced<br><br>G2 (N=43) | Native<br>G3 (N=21) |
|---|---|---|---|
| Single Non-D-linked *wh*-questions in simple sentences | 1.8723 (tokens= 282)<br><br>SD .092 | 1.9205 (tokens= 258)<br><br>SD .432 | 1.9841 (tokens= 126)<br><br>SD .050 |
| Single D-linked *wh*-questions in simple sentences | 1.8405 (tokens= 423)<br><br>SD .071 | 1.8932 (tokens= 387)<br><br>SD .305 | 1.9630 (tokens= 189)<br><br>SD .081 |

To find out how the overall pattern of development relates to the learning of obligatory *wh*-fronting and the unlearning of *wh*-phrase in situ, we broke the scores down by analyzing the acceptance rate of the

grammatical sentences and the rejection rate of the ungrammatical sentences. The results are given in Table 2A.

Table 2A. Mean accuracy scores (%) in judging grammatical *wh*-fronting and ungrammatical *wh*-phrase in-situ sentences in the AJT

|  | Intermediate G1 (N=47) | Advanced G2 (N=43) | Native G3 (N=21) |
|---|---|---|---|
| Acceptance of *wh*-fronting | 97.35 | 98.26 | 100 |
| Rejection of *wh*-phrase in-situ | 93.46 | 95.73 | 99.72 |

One-way ANOVAs conducted on the judgment of acceptance of *wh*-fronting and rejection of *wh*-phrase in-situ indicate that there were no significant differences between the groups: $(F_{(2,108)} = 62.826, p<.245)$ for accepting *wh*-fronting and $(F_{(2,108)} = 31.215, p<.425)$ for rejecting of *wh*-phrase in-situ.))

To check if the test alone is the factor affecting the pattern of development related to the acquisition of *Single Non-D-linked and D-linked wh-questions in simple sentences* in English, we examined the overall performance of the experimental participants on the sentence types in question in the translation task. The performance of the participants in translating the Chinese sentences into English is displayed in Table 2B. There were two Chinese sentences of the *Single Non-D-linked wh-questions in simple sentence* type and two of the *Single D-linked wh-questions in simple sentence* type in the translation task. Out of the 47 participants in the intermediate group (G1), only four cases of *wh* in-situ sentences were found in their translations. As for the 43 participants in the advanced group (G2), they all produced *wh*-fronted sentences in their translations. The results seem to show that the Chinese speakers have acquired the surface pattern of *Single Non-D-linked and D-linked wh-questions in simple sentences* in English. But it will be argued later below that the apparent movement of the *wh*-questions to the specifier of CP might not have been the case, and that the movement of the *wh*-phrases may have been attributable to topicalization instead.

Table 2B. Mean accuracy (%) in translating Single Non-D-linked and D-linked *wh*-questions in simple sentences in the translation task

| | Intermediate G1 (N=47) | Advanced G2 (N=43) |
|---|---|---|
| Single Non-D-linked *wh*-questions in simple sentences | 98.9 | 100 |
| Single D-linked *wh*-questions in simple sentences | 96.8 | 100 |

## 5.2 Single Non-D-linked and D-linked *wh*-questions in complex sentences

The results of the experimental participants' overall performance on (in) judging *Single Non-D-linked and D-linked wh-questions in complex sentences* are given in Table 3. One-way ANOVAs indicate that there were significant differences between the groups on (in) judging *Single Non-D-linked wh-questions in complex sentences* ($F(2,108) = 32.358$, p<.002) and *Single D-linked wh-questions in complex sentences* ($F(2,108) = 64.786$, p<.002). *Post hoc Scheffe* tests on the two sentence types show that there were no significant differences between the intermediate group (G1) and the advanced group (G2). However, the performances of the two groups were significantly different from the native controls when performance of the three groups was compared ($F(2,108) = 21.528$, p<.001); the intermediate and the advanced learners of L2 English were significantly less accurate than the native English control participants in judgment scores of the two sentence types ($F(2,108) = 43.821$, p<.001).

Table 3. Mean scores of the groups' judgment of Single Non-D-linked and D-linked *wh*-questions in complex sentences in English (see examples in Appendix)

|  | Intermediate G1 (N=47) | Advanced G2 (N=43) | Native G3 (N=21) |
|---|---|---|---|
| Single Non-D-linked *wh*-questions in complex sentences | .9876 (tokens= 282) SD .254 | 1.1517 (tokens= 258) SD .456 | 1.8968 (tokens= 126) SD .134 |
| Single D-linked *wh*-questions in complex sentences | .8132 (tokens= 423) SD .392 | 1.1266 (tokens= 387) SD .311 | 1.9577 (tokens= 189) SD .074 |

We further examined learners' performance on the translation task of the two sentence types (see Table 3A). There were two Chinese sentences of each type in the translation task (see Section 4.2 for examples). The within-group responses from the intermediate group show that there was a tendency among the learners to allow *wh*-questions to stay in-situ in both sentence types. The grammar of 21 learners in the intermediate group did not involve *wh-operators* (*operator*) movement in their translation of the *Single Non-D-linked wh-questions in complex sentences*; 19 learners were found to have translated sentences in which the *wh-operators* stayed in-situ in the *Single D-linked wh-questions in complex sentences*. Among the advanced learners, fifteen allowed *wh-operators* to stay in-situ in the *Single Non-D-linked wh-questions in complex sentences* and 17 allowed *wh-operators* to stay in the *Single D-linked wh-questions in complex sentences*.

Table 3A. Mean accuracy (%) of translating Single Non-D-linked and D-linked *wh*-questions in complex sentences in the translation task

|  | Intermediate G1 (N=47) | Advanced G2 (N=43) |
|---|---|---|
| Single Non-D-linked *wh*-questions in complex sentences | 55.3 | 65.1 |
| Single D-linked *wh*-questions in complex sentences | 59.6 | 60.5 |

The results shown in Table 3 together with those of the performance on the translation task (3A) are in contrast to those shown in Table 2, Table 2A and Table 2B; the experimental learners fared significantly better in judging *Single Non-D-linked and D-linked wh-questions in simple sentences* than in judging *Single Non-D-linked and D-linked wh-questions in complex sentences*. Among the four sentence types, the two variables that may have affected the performance are single and complex sentence structures. The three factors that the four sentence types have in common are *Single wh-questions*, *Non-D-linked*, and *D-linked*.

## 5.3 Multiple Non-D-linked and D-linked *wh*-questions in simple sentences

A one-way ANOVA conducted on the judgment scores of the *Multiple Non-D-linked wh-questions in simple sentences* indicates significant differences between the groups (F(2,108) = 58.919, p<.005), and another one-way ANOVA performed on the judgment scores of the *Multiple D-linked wh-questions in simple sentences* also shows significant differences between the groups (F(2,108) = 21.765, p<.005). *Post hoc Scheffe* tests show that there were no significant differences between the English control group (G3) and the advanced learner group (G2) on either the *Multiple Non-D-linked wh-questions in simple sentence* type or the *Multiple D-linked wh-questions in simple sentence* type. The intermediate learner group (G1), however, was significantly

less accurate than the other two groups in judging both sentence types (F(2,108) = 24.523, p<.002). The performance of the participants in judging these sentences is displayed in Table 4.

Table 4. Mean scores of the groups' judgments of Multiple Non-D-linked and D-linked *wh*-questions in simple sentences in English (see examples in Appendix)

|  | Intermediate G1 (N=47) | Advanced G2 (N=43) | Native G3 (N=21) |
|---|---|---|---|
| Multiple Non-D-linked *wh*-questions in simple sentences | 1.2482 (tokens = 282) SD .092 | 1.8434 (tokens= 258) SD .262 | 1.9365 (tokens= 126) SD .123 |
| Multiple D-linked *wh*-questions in simple sentences | 1.3255 (tokens= 282) SD .384 | 1.8209 (tokens= 258) SD .255 | 1.9286 (tokens= 126) SD .098 |

To find out whether the two sentence types were treated differently by the experimental learners, we examined between-group performance to the tokens making up the translation task (see Table 4A). There were, respectively, two sentences of the *Multiple Non-D-linked wh-questions in simple sentence* type, and two sentences of the *Multiple D-linked wh-questions in simple sentence* type in the translation task. In looking at the performance of the individual participants in the advanced group (G2), there were only four of the 43 subjects who appeared to fall outside the range of the target grammar by disallowing the movement of *wh*-operators. The grammars of these four learners involved *wh* in-situ, regardless of whether the sentences were *D-linked* or *Non-D-linked*. While the advanced group (G2) appeared to have acquired the appropriate syntactic representations of the sentences in question, the intermediate group (G1) preferred the *wh* in-situ setting of Chinese. Twenty-two of the 47 participants transferred the non-movement pattern of their L1 Chinese into their English grammars. Of these 22, 16

produced ungrammatical sentences involving *wh* in-situ regardless of whether the sentences are *D-linked* or *Non-D-linked*.

Table 4A. Mean accuracy (%) of translating Multiple Non-D-linked and D-linked *wh*-questions in simple sentences in the translation task

|  | Intermediate<br><br>G1 (N=47) | Advanced<br><br>G2 (N=43) |
|---|---|---|
| Multiple Non-D-linked *wh*-questions in simple sentences | 53.2 | 90.7 |
| Multiple D-linked *wh*-questions in simple sentences | 53.2 | 90.7 |

The results for the AJT and for the translation task regarding the *Multiple Non-D-linked and D-linked wh-questions in simple sentences* appear in stark contrast to those of the results shown in Tables 2, 2A, 2B, 3 and 3A. The advanced learners appear to perform in a native-like way in the case of most sentence types except for the *Single Non-D-linked and D-linked wh-questions in complex sentences*. Among the factors, i.e.(,) *single* vs. *multiple wh-questions*, *D-linked* vs. *Non-D-linked property*, and *simple* vs. *complex sentence*, the complex sentence structure seems to be the factor affecting the advanced learners' ability to establish the correct grammatical representations. As for the intermediate learners, neither *D-linking* properties nor *single wh-questions* are problems disallowing them to establish the appropriate L2 English *wh*-operator movement. The vulnerability involved in the intermediate learners' L2 English *wh*-operator movement lies in the areas of *multiple wh-questions* and the *complex sentence* structure, whereas in the advanced learners, it is the *complex sentence* structure that is problematic. We return to how these observations might receive an explanation in the next section.

### 5.4 Multiple Non-D-Linked and D-linked *wh*-questions in complex sentences

In judging the acceptability of *Multiple Non-D-Linked and D-linked wh-questions in complex sentences*, one-way ANOVAs show that there were significant differences in performance between the groups ((*Multiple Non-D-Linked wh-questions in complex sentences*: $F(2,108) = 139.443$, p<.005); *Multiple D-linked wh-questions in complex sentences*: $F(2,108) = 64.575$, p<.005)). *Post hoc Scheffe* tests indicate that while the advanced learners showed a significantly better performance than their intermediate counterparts on the two sentence types, they were, in the meantime, significantly less accurate than the English control group. In other words, the increase in accuracy in the case of the two sentence types suggests that, although the grammars of the learners improve with increasing general proficiency, their underlying grammatical representations are different from those of the native speakers. Table 5 displays group performance the two sentence types.

Table 5. Mean scores of the groups' judgments of Multiple Non-D-linked and D-linked *wh*-questions in complex sentences in English (see examples in Appendix)

|  | Intermediate G1 (N=47) | Advanced G2 (N=43) | Native G3 (N=21) |
|---|---|---|---|
| Multiple Non-D-linked *wh*-questions in complex sentences | .4730 (tokens = 282) SD .389 | 1.2798 (tokens= 258) SD .026 | 1.9048 (tokens= 126) SD .135 |
| Multiple D-linked *wh*-questions in complex sentences | .7624 (tokens= 282) SD .441 | 1.0854 (tokens= 258) SD .237 | 1.9444 (tokens= 126) SD .161 |

To check whether task was the factor affecting their performance, we examined learners' performance in translating the two sentence types in the translation task (see Table 5A). Recall that there were two tokens

each of the *Multiple Non-D-Linked wh-questions in complex sentences* and the *Multiple D-linked wh-questions in complex sentences* in the translation task, respectively. Thirty-five of the 47 learners in the intermediate group (G1) produced ungrammatical sentences involving the non-movement of the multiple *wh*-operators, regardless of whether the sentences were *D-linked* or *Non-D-linked*. The other 12 learners produced sentences involving only one *wh*-operator. Of the 43 learners in the advanced group (G2), only 26 produced grammatical sentences involving the movement of multiple *wh*-operators. The results of the translation task, taken together with those of the AJT, strongly suggest that the learners have trouble acquiring the appropriate syntactic representations involved in the *Multiple Non-D-Linked and D-linked wh-questions in complex sentences*.

Table 5A. Mean accuracy (%) of translating Multiple Non-D-linked and D-linked *wh*-questions in complex sentences in the translation task

|  | Intermediate G1 (N=47) | Advanced G2 (N=43) |
|---|---|---|
| Multiple Non-D-linked *wh*-questions in complex sentences | 25.5 | 60.4 |
| Multiple D-linked *wh*-questions in complex sentences | 23.4 | 58.2 |

So far, our analysis of the L2 acquisition of the English *wh*-questions in conjunction with the *simple/complex sentence* structures and the *discourse-linked* properties has resulted in the following observations. First, as proficiency increases among the Chinese speakers, the tendency to produce non-target syntactic forms decreases. Second, the mental grammars of the experimental participants' *D-linked* and *Non-D-Linked wh-questions in simple sentences* are developing towards English; no significant difference is found between the groups in their judgments of *Single Non-D-linked and D-linked wh-questions in simple sentences*. Third, although the intermediate learners are quick to acquire *Single*

*Non-D-linked and D-linked wh-questions in simple sentences* in their L2 grammars for English, they have persistent difficulty in acquiring the other three sentence structures, namely *Single Non-D-linked and D-linked wh-questions in complex sentences*, *Multiple Non-D-linked and D-linked wh-questions in simple sentences*, and *Multiple Non-D-Linked and D-linked wh-questions in complex sentences*. While the advanced learners behave like native speakers in their ability to judge the *wh*-operator movement in *Single Non-D-linked and D-linked wh-questions in simple sentences* and in *Multiple Non-D-linked and D-linked wh-questions in simple sentences*, they are insensitive to the *wh*-operator movement requirement for English in *Single Non-D-linked and D-linked wh-questions in complex sentences* and in *Multiple Non-D-Linked and D-linked wh-questions in complex sentences*. We will consider how these observations might receive an explanation next[12].

## 6. DISCUSSION

The purpose of the study is to test whether the predictions of the two end-state theories can provide an insight into the acquisition of English single and multiple *wh*-questions in simple and complex sentences containing discourse information by adult Chinese speakers. The two

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[12] One may wonder if our claim that the absence of the uninterpretable [*u*wh:] feature is the factor affecting the acquisition of wh (*wh*)-questions in L2 English. It could as well be that it is learners' inability in processing complex sentences which affects their performance. While it is possible that complex sentence structures can trigger a non-native performance, there are two reasons to believe this may not be the case. Firstly, in addition to having persistent difficulty acquiring *Single Non-D-linked and D-linked wh-questions in complex sentences*, and *Multiple Non-D-Linked* and *D-linked wh-questions in complex sentences*, the intermediate learner group also performs very badly in the cases of *Multiple Non-D-linked* ($F(2,108) = 58.919$, $p<.005$) *and D-linked* ($F(2,108) = 21.765$, $p<.005$) *wh-questions in simple sentences*. Secondly, an analysis of participants' performance on distractors involving complex sentences suggests that all learners perform in a native-like way; no significant differences are found between the native control group and the two learner groups in their ability to detect ungrammatical sentences involving complex sentences containing distractors ($F(2,108) = 11.325$, $p<.13$). In other words, complex sentences may not be the candidate that causes acquisition problems.

theories in question make different claims regarding end-state grammars in L2 acquisition. According to Sorace and Filiaci (2006), properties such as syntax, semantics, morphology, and phonology are components of language faculty and the relevant feature of these components can be completely acquired in L2 acquisition, whereas properties such as discourse and pragmatics, which belong to external interfaces involving syntax and other modules outside the language faculty, may not be fully acquirable because (the presence of) external interfaces demand extra processing resources to coordinate and integrate different types of knowledge which may impose an extra burden on the L2 learners. The *Interpretability Hypothesis* of Tsimpli and Dimitrakopoulou (2007), on the other hand, maintains that vulnerability in end-state L2 acquisition lies in the inaccessibility of certain critical-period associated uninterpretable syntactic features; linguistic properties specific to the L2 may cause persistent problems for adult L2 learners.

In relation to the two competing theories, the study has sought to address the two research questions listed in Section 3:

(a) Can the Chinese speakers of advanced L2 English acquire obligatory *wh*-fronting? If yes, can it be maintained that they have acquired the Q morpheme which triggers *wh*-movement in English? If no, to what extent do L2 learners diverge from native speakers of?

(b) Which of the two competing theories, the *Interface Hypothesis* or the *Interpretability Hypothesis*, can offer a better explanation, if there is a divergence between native-nonnative speakers?

Let us consider research question a) first. The evidence that *Single Non-D-linked and D-linked wh-questions in simple sentences* are acquired even at intermediate stages of L2 development seems to support the prediction that Chinese-speaking learners of English have knowledge of the uninterpretable [*u*wh:] feature triggering *wh*-movement in English, and that the syntax-morphology interface is acquirable. However, the situation is not so straightforward when multiple *wh*-questions and the complex sentence structure are involved. Whereas *Single Non-D-linked and D-linked wh-questions in simple sentences* fall within categories

similar to that of the native speakers, *Single and multiple wh-questions in complex sentences* seem to form another category in the grammars of such L2 speakers. This is evident from the AJT and the translation task (TT):

(11)  a.  *He saw who? (AJT)
      b.  Ta taoyan shei? (TT)
           he  hate    who
           'Who does he hate?'
      c.  *Peter said John met who? (AJT)
      d.  Zhangsan jide        Lisi xiuhao-le shenme? (TT)
           Zhangsn   remember Lisi fix-ASP  what
           'What did Zhangsan remember Lisi fixed?'
      e.  *What might he think who has borrowed? (AJT)
      f.  Wangwu renwei shei jie-le          shenme? (TT)
           Wangwu think   who borrow-ASP  what
           'Who did Wangwu think has borrowed what?'
      g.  *What do you think which boy will eat? (AJT)
      h.  Ta shenme shihou kanjian wo he   na-ge
           he  what   time    see      I    and which-CL
           xuesheng chi fan? (TT)
           student    eat rice
           'When did he see which student I had dinner with?'

The *wh*-operator *who* in (11a) has to move to the specifier position of CP, and we have found that the Chinese participants show a tendency to correctly reject it when the operator is in-situ. Likewise, in the translation task, the Chinese speakers construct grammars involving *wh*-operator movement when it is a sentence involving a single *wh*-operator in a simple sentence, as in (11b). However, the Chinese speakers appear to have trouble constructing the correct representations for English when sentences involve multiple *wh*-operators and are in complex structures, as in (11c-11h), and their behavior diverges significantly from that of the native English speakers. No *wh*-operator movement is carried out in the complex sentence in (11c), yet it is accepted by some advanced L2 English speakers (nine of the 43 advanced learners), and the *wh*-operator

*what* in the complex sentence (11d) is allowed to remain in-situ in the translation task (seven of the 43 advanced learners). The movement of the *wh*-operator *what* in the complex sentence (11g) violates the Minimality Condition (Radford 1997, citing Chomsky 1986): since *which boy* is nearer to the specifier of CP than *what*, it is *which boy* which must move to the specifier of CP, not *what*; and *what* should remain as the complement of *eat*. However, we have found that the Chinese speakers, advanced learners of English included, show a tendency to accept (11g). In (11h), twenty-five of the 47 intermediate learners and ten of the 43 advanced learners have failed to move the *wh*-phrase *which student* out of the complement position when translating the sentence from Chinese into English, resulting in \**When did he see I had dinner with which student*?.

In answer to our first question, it seems that Chinese speakers treat single and multiple *wh*-questions as well as simple and complex sentence structures differently; the Q morpheme in native English triggers obligatory *wh*-movement regardless of the properties of *wh*-questions (single or multiple *wh*-questions) or of sentence structures (simple or complex sentences), whereas in the advanced Chinese group's interlanguage grammar, the operator movement occurs when *wh*-questions are associated with simple sentences(,) but not when they are associated with complex sentences. Their asymmetrical performance between *simple single and multiple wh-questions* and *complex single and multiple wh-questions* indicates that obligatory *wh*-fronting appears to be problematic for the advanced L2 learners.

The second research question we are interested in is how learners' asymmetrical performance in contexts where *wh*-fronting is obligatory can be accounted for under the two competing theories. The *Interface Hypothesis* stipulates that external interfaces, the discourse-syntax interface for example, are the main factor causing learners to establish grammatical representations which diverge from those of native speakers. In other words, the *Interface Hypothesis* postulates that external interfaces, in comparison to internal interfaces such as the syntax-semantics interface, integrate properties of language and discourse processing at a more complex level of language use and hence impose an extra burden on the processing of information from different resources.

However, our observation regarding the availability of *D*-linked *wh*-phrases in advanced learners' performance does not seem to support the hypothesis. We, therefore, interpret the results as inconsistent with the claim that external or discourse-syntax factors give rise to asymmetrical performance in single/multiple *wh*-questions in simple sentences and (in) simple/multiple *wh*-questions in complex sentences. Why are learners successful in interpreting D-linked single/multiple *wh*-questions in simple sentences, but poor in interpreting D-linked simple/multiple *wh*-questions in complex sentences in English if external interfaces such as discourse are the main factor contributing to failure in obligatory *wh*-fronting?

The asymmetry in the performance of learners would follow if their grammars lacked the uninterpretable [*u*wh:] feature. We also speculate that the L1 discourse factor, exposure to English, and the ability to acquire surface morphophonology (the Q morpheme in this case) force learners to construct grammatical representations of *wh*-questions which diverge from those of native speakers as well as from those in their own L1. Given that syntax and morphology govern operator movement in English, which is in contrast to Chinese, where *wh*-questions remain in-situ except for when the discourse factor or the adverb *zui* (*most*) are involved, there is evidence that the L1 discourse factor enables learners to approximate in their performance to the native grammar of the target language. Recall that *wh*-words such as *shei* (*who*) and *shenme* (*what*) must remain in-situ in Chinese due to the lack of a presupposition background, whereas *wh*-phrases like *na+NP* (*which+NP*) can either remain in-situ or move to the specifier of CP. However, when the adverb *zui* (*most*) is introduced, *wh*-words such as *shei* (*who*) and *shenme* (*what*) can behave like their *na+NP* (*which+NP*) counterparts, as in (12):

(12)  a.  *Shei ni    xiangjian?
          who you  want see
          'Who do you want to see?'
      b.  Shei ni  *zui*  xiangjian?
          who  you most want see
          'Who do you want to see the most?'

    c. Ta *zui*   xihuan na      san-ben  shu?
       he most like     which three-CL book
       'Which three books did he like the most?'
    d. Na      san-ben shu ta *zui*  xihuan?
       which three-CL book he most like
       'Which three books did he like the most?'

What needs explaining is the asymmetrical performance in the judgments on the *simple/multiple D-linked/Non-D-linked wh-questions in simple sentences* and on the *simple/multiple D-linked/Non-D-linked wh-questions in complex sentences*. In other words, learners appear to have more trouble acquiring the use of *wh*-questions in complex sentences than in simple sentences. A possible answer can be given to the observed behavior if we follow Hawkins and Hattori (2006), whereby the uninterpretable syntactic features associated with the critical period are no longer available in adult L2 acquisition; learners resort to alternative resources made available by UG for L2 grammar building.

It can be argued that the presence of a presupposition background in the discourse and the presence of the adverb *zui* (*most*) enables *wh*-topicalization in the native Chinese grammar and such D-linked properties have been transferred into the L2. As exposure to L2 English increases, Chinese speakers observe restrictions on *wh*-extraction and become progressively more accurate in their intuitions about English *wh*-movement. However, there is reason to believe that the L2 speakers' apparent knowledge of surface forms is no evidence for the acquisition of the underlying representations of *wh*-movement in native English. Based on the positive evidence in the input, the learners may have analysed surface properties in English in a way which approximates to the target forms when, in fact, they retain a basic underlying grammar transferred from Chinese because the uninterpretable [*u*wh:] feature which motivates operator movement in English is missing in Chinese. Recall that in Section 3, we assume that the presence of the uninterpretable [*u*wh:] feature forces operators to move to the specifier of CP for feature checking in English, but the absence of the feature makes operator movement unnecessary in Chinese. The native vs. non-native divergence in the interpretation of *wh*-questions receives an

explanation if it can be argued that the difficulty that Chinese speakers have in establishing target grammars lies in their inability to acquire the uninterpretable [*u*wh:] feature. This position thus requires some explanation as to why the uninterpretable [*u*wh:] feature can never be acquired. Following Hawkins and Hattori (2006), Tsimpli and Dimitrakopoulou (2007), and Kong (2012, 2014), we speculate that uninterpretable syntactic features are subject to a critical period and become inaccessible to adult second language learners if they are not selected during first language acquisition[13]. In subsequent language acquisition, what appears to be the underlying representations of L2 grammar may in fact be surface morphosyntactic distributional judgments which can be involved in interpreting L2 properties for L1. In other words, the advanced learners' apparent native-like performance in judging *single and multiple D-linked/Non-D-linked wh-phrases in simple sentences* may not be the result of the uninterpretable [*u*wh:] feature being acquired. Instead, it could be driven on the basis of L2 input and the parameter settings of Chinese (discourse factor and the introduction of the adverb (*zui*)) together with a small adjustment to the use of topicalization: a *wh*-phrase can appear in the initial position of a sentence if there is a presupposition background or the adverb *zui* is introduced. A number of L2 studies (Tsimpli and Roussou 1991; Thomas 1995; Hawkins and Chan 1997; Kong 2005, 2007, 2011a, 2011b, 2014, 2016;

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[13] An empirical study relevant to the current study and that is in support of no parameter resetting in adult L2 acquisition is found in Hawkins and Hattori (2006). Hawkins and Hattori found that while Japanese speakers of L2 English were sensitive to the interpretive possibilities of long distance *wh-word…gap* dependencies in L2 English, a significant portion of the learners were not sensitive to the constraints that apply to movement: superiority and subjacency. Hawkins and Hattori hypothesize that the consequence of uninterpretable syntactic features not being selected during the early stages of primary language acquisition is the unavailability of such features in L2 language development. According to Hawkins and Hattori, an uninterpretable [*u*wh*] feature in interrogative C is present in English, but absent in Japanese. Learners no longer have the uninterpretable [*u*wh*] feature available for the reason that their exposure to the feature is beyond early language development; they resort to alternative resources made available by UG to construct representations for the relevant L2 structures. Although they may have target-like performance on a number of linguistic measures, their grammar does not involve parameter resetting.

Hawkins and Hattori 2006; and Tsimpli and Dimitrakopoulou 2007) suggest that, in a given domain, the performance of L2 learners may look like that of native speakers, but, in fact, their underlying syntactic representations are far from the same as those of native speakers.

## 7. CONCLUSION

In this study, we have tested the predictions of two interface-related theories in relation to the acquisition of *wh*-interrogatives by very proficient adult Chinese speakers of L2 English. We interpret the results as being more consistent with the *Interpretability Hypothesis* of Tsimpli and Dimitrakopolou (2007) than with the *Interface Hypothesis* of Sorace and Filiaci (2006). The *Internal Interface Hypothesis* argues against the vulnerability of syntax proper, and views inaccuracies in performance as a result of processing difficulties or of the syntax-discourse interface. However, the hypothesis has failed to adequately explain ungrammatical instances in the case of *simple/multiple D-linked/Non-D-linked wh-questions in complex sentences*, but not in the case of *simple/multiple D-linked/Non-D-linked wh-questions in simple sentences*. The *Interpretability Hypothesis*, on the other hand, argues for an internal structure inadequacy when accounting for inaccuracy in performance. The asymmetrical performance in interpreting the *simple/multiple D-linked/Non-D-linked wh-questions in simple sentences* and the *simple/multiple D-linked/Non-D-linked wh-questions in complex sentences* can be explained if learners have difficulty in accessing an uninterpretable [*u*wh:] feature of English coupled with the L1 transfer of Chinese *wh*-topicalization. Yuan (2010) has made a similar point that interface properties are not acquired in a domain-wide fashion. It is hoped that the results of the present study can provide some understanding of variables involved in the operation of L2 interfaces in general, and of the behaviors underlying the acquisition of English *wh*-interrogatives by L1 Chinese speakers in particular. However, the results of the study should be considered indicative and not conclusive. A limitation of the study lies in the choice of vocabulary, verbs, and *wh*-words, which are not properly controlled. This may cast doubts as to the

generalizability of the results obtained. For future research, the subtle testing of a range of properties in the relevant domain involving different language combinations and controls over vocabulary and verbs should be undertaken.

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**Appendix: Sentences included in the Acceptability Judgment Test**

Type I: Single Non-D-linked *wh*-questions in simple sentences (Sg-nD-Sm)
Who does he like?
Where did he go?
What has she bought?
*He drinks what?
*They went where?
*She hates who?

Type II: Single D-linked *wh*-questions in simple sentences (Sg-D-Sm)
Which student did he see?
Which book did you choose?
Which pen do you want?
Which dish does he like the most?
Which part of the movie did you miss the most?
Which course did you enjoy the least?
*He most hates what course?
*They least liked what novel?
*She most prefers which ice-cream?

Type III: Single Non-D-linked *wh*-questions in complex sentences (Sg-nD-Com)
What did Tom remember Mary bought?
Who did you say Tom saw?
What did Susan say June saw?
*Susan said Jim saw who?
*Joe remembered John bought what?
*Amy believed Peter said what?

Type IV: Single D-linked *wh*-questions in complex sentences (Sg-D-Com)
Which actor did John think Jenny liked?
Which teacher do you think John admires?
Which singer did May think Alan dislikes?

Which restaurant did Peter say John should try?
Which museum do you think Ellen has visited?
Which shopping centre did Michael think Petty had gone to?
*Peter asked John disliked the most which teacher?
*Tom believed Peter liked which dished the least?
*Amy thought Tom enjoyed which course the most?

Type V: Multiple Non-D-linked *wh*-questions in simple sentences (Mp-nD-Sm)
Who bought what?
Who went where?
Who saw what?
*What who ate?
*Where went who?
*What saw who?

Type VI: Multiple D-linked *wh*-questions in simple sentences (Mp-D-Sm)
Who liked what movie the most?
Who enjoyed what food the least?
Who bought what often?
*What novel who most liked to read?
*What dish who least like to taste?
*Who enjoyed the most what dish?

Type VII: Multiple Non-D-linked *wh*-questions in complex sentences (Mp-nD-Com)
Who remembers what Peter bought?
Who knows where John went?
Who knows what John liked?
*What might he think who has borrowed?
*What Peter bought who remembered?
*Who might he think what has bought?

Type VIII: Multiple D-linked *wh*-questions in complex sentences (Mp-D-Com)

Which teacher do you think will say what?
Which singer do you think will sing what song?
Which actor do you believe will play what role?
*What do you think which teacher will say?
*What song do you think will sing which singer?
*Which part do you think will play which actor?

二語為英語之華人在單一和多項 wh-疑問句之不對稱習得現象之解釋

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以介面理論框架的文獻(Sorace and Filiaci 2006; Sorace 2011)論證 涉及語言屬性(linguistic properties)與其他認知域(cognitive domains)的互動可能比語言能力要素(language faculty components)予終階二語學習者帶來更大困難。其他研究視其為內部因素(Tsimpli and Dimitrakopoulou 2007)。本研究探究兩項假設，乃涉及單句和複句之單元和多項 wh-疑問詞的二語英語習得。90 位二語英語程度極好的華語母語者和 21 位英語母語者一同作語法判斷測驗，其結果顯示於解釋類母語(native-like)知識視作整體時失敗是需要謹慎的。其結果被認為與 Tsimpli 和 Dimitrakopoulou (2007)的解釋性假設(Interpretability Hypothesis)一致。據 Hawkin 和 Hattori(2006)，我們推測在中-英中介語語法的非對稱現象是二語英語加上自母語華語的 wh-主題化(wh-topicalization) 的遷移中不可解釋特徵 (uninterpretable syntactic features)[uwh:]的不可達性所帶來的結果。


關鍵字：介面理論、Wh-主題化、不可預測屬性、單元與多項 wh-疑問詞、單句與複句