English Speakers' L2 Chinese *Wh*-topicalization: Movement or Base-Generation?

Esuna Dugarova
University of Cambridge

1. Introduction

Although a *wh*-word in Chinese generally remains in-situ, as in (1a), it can be topicalized (e.g. Pan 2006; Wu 1999), as in (1b).

(1)   a. Lisi kan-le   [shenme shu]?
          Lisi read-ASP what   book
        'What book did Lisi read?'

      b. [$_{TopP}$ [Shenme shu] Lisi kan-le]?
              what   book Lisi read-ASP
        'What book did Lisi read?'

In contrast to Chinese, a *wh*-word in English must obligatorily move to Spec-ForceP in *wh*-questions and no discourse requirement is imposed on *wh*-movement. Furthermore, topicalization does not apply to *wh*-words in English (Stepanov and Tsai 2008).

Availability of *wh*-topicalization in Chinese raises a question as to whether a *wh*-topic like *shenme shu* 'what book' in (1b) is the result of movement or base-generation. Taking complex NP island, reconstruction and superiority effects as a diagnostic of movement, the current study aims to provide empirical evidence that the topicalized *wh*-element is derived by movement in English learners' L2 Chinese grammars.

The sensitivity of Chinese *wh*-topicalization to syntactic constraints has not been investigated in L2 acquisition research, presumably due to the general assumption that *wh*-words in Chinese stay in-situ and no overt movement is involved; thus no constraints on movement can be tested in L2 Chinese. This study will, therefore, fill a gap in this research area by showing that overt movement does take place in L2 Chinese topicalized *wh*-questions.

2. *Wh*-topicalization: movement or base-generation?

Some researchers argue that a *wh*-element is base-generated in the TopP domain (e.g. Xu and Langendoen 1985), while others claim that a *wh*-word undergoes movement from the IP internal position to Spec-TopP (e.g. Wu 1999). Evidence for a movement-derived topic in Chinese comes from the fact that a topicalized element leaves a null copy in the position out of which it is moved and this copy is co-indexed with the topic. By contrast, a base-generated topic does not have any copy in the structure, as no movement is involved.

It has generally been assumed in the literature that overt movement is subject to various syntactic constraints. If a Chinese *wh*-topic is derived by movement, extraction of a *wh*-element out of a complex NP (CNP) island, as in (2b), should not be allowed in English-Chinese interlanguage grammars.

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(2) a. [$_{IP}$ Wang Ming zui   xihuan [$_{NP}$ Xiao Liu mai de na   yi   liang qiche]]?
      Wang Ming most like   Xiao Liu buy DE which one CL   car
   *'Which car$_i$ does Wang Ming like [that Xiao Liu bought t$_i$] most?'

   b. *[$_{TopP}$ [$_{NP}$ Na   yi   liang qiche]$_i$ [$_{IP}$ Wang Ming zui xihuan [$_{NP}$ Xiao Liu mai de t$_i$]]]?
        which one CL car   Wang Ming most like   Xiao Liu buy DE
   *'Which car$_i$ does Wang Ming like [that Xiao Liu bought t$_i$] most?'

In (2a), the *wh*-phrase *na yi liang qiche* 'which car' is located in its base-generated position inside the CNP island, while in (2b), the *wh*-phrase is topicalized and placed in Spec-TopP in the sentence initial position. The fact that extraction of the *wh*-phrase is sensitive to the island constraint in (2b) provides evidence that the *wh*-phrase in Chinese has undergone movement leaving a copy behind at its extraction site (Cheung 2008).

Furthermore, if learners can establish referential relations of a reflexive and those of an r-expression in accordance with Binding Principles in topicalized *wh*-questions like (3b) and (4b), this would suggest that reconstruction is operative in L2 Chinese and thus the *wh*-topic is the result of movement.

(3) a. [$_{IP}$ Lisi$_i$ zui   xihuan [$_{NP}$ ziji $_{i/*j}$ de na   yi   zhang zhaopian]]?
      Lisi most like   self   DE which one CL   picture
   'Which picture of himself does Lisi like most?'

   b. [$_{TopP}$ [$_{NP}$ Ziji $_{i/*j}$ de na   yi   zhang zhaopian]$_k$ Lisi$_i$ zui   xihuan t$_k$]?
        self   DE which one CL   picture   Lisi most like
   'Which picture of himself does Lisi like most?'

In (3a), the *wh*-phrase *ziji de na yi zhang zhaopian* 'which picture of himself' remains in its base-generated position and the reflexive *ziji* is bound by *Lisi* which c-commands it and serves as its antecedent. In (3b), the topicalization of the *wh*-phrase has taken place, with a copy left by the topicalized *wh*-phrase at its extraction site. Although *ziji* is no longer in a c-command relationship with its antecedent *Lisi*, it can still refer to *Lisi*, which is in accordance with Principle A of the Binding Theory. From this it follows that the *wh*-question in (3b) has been successfully reconstructed (Cheung 2008).

(4) a. [$_{IP}$ Ta$_{*i/j}$ zui bu xihuan kan [$_{NP}$ Wang Ming$_i$ de   na   yi   ben shu]]?
      he   most not like   read   Wang Ming DE which one CL book
   'Which book of Wang Ming does he not like to read most?'

   b. [$_{TopP}$ [$_{NP}$ Wang Ming$_i$ de   na   yi   ben shu]$_k$ [$_{IP}$ ta$_{*i/j}$ zui bu xihuan kan t$_k$]]?
        Wang Ming DE which one CL book   he   most not like   read
   'Which book of Wang Ming does he not like to read most?'

The *wh*-phrase *Wang Ming de na yi ben shu* 'which book of Wang Ming' stays in-situ in (4a) and the r-expression *Wang Ming* is not bound anywhere in the structure. In (4b), the *wh*-phrase has been topicalized leaving a copy in its base-generated position. *Wang Ming* cannot be coreferent to *ta* 'he' in (4b), even though *ta* is c-commanded by *Wang Ming*, due to Principle C of the Binding Theory. This suggests that reconstruction has taken place in (4b) (Cheung 2008).

Further evidence for the movement-derived *wh*-topic can be provided from behaviors of *wh*-elements in multiple *wh*-questions featuring superiority, as in (5b) and (6b).

(5) a. [$_{IP}$ Shei xihuan shenme]?
      who like   what
   'Who likes what?'

b. *[$_{TopP}$ Shenme$_j$ [$_{IP}$ shei xihuan t$_j$]]?
      what   who like
  *'What does who like?'

(6) a. [$_{IP}$ Na   ge xuesheng xihuan na   ben shu]?
     which CL student   like   which CL book
   'Which student likes which book?'

b. *[$_{TopP}$ [Na   ben shu]$_j$ [$_{IP}$ na   ge xuesheng xihuan t$_j$]]?
      which CL book   which CL student   like
   'Which book does which student like?'

The structurally lower *wh*-elements *shenme* 'what' in (5b) and *na ben shu* 'which book' in (6b) have been topicalized and raised above the structurally higher *wh*-elements *shei* 'who' and *na ge xuesheng* 'which student', respectively. Both *wh*-questions in (5b) and (6b) are illicit due to the violation of superiority. From this it follows that Chinese *wh*-topicalization involves movement, which is subject to superiority in both non-D-linked multiple *wh*-questions like (5b) and D-linked multiple *wh*-questions like (6b). In contrast to Chinese, *wh*-movement in English is sensitive to superiority only in non-D-linked but not in D-linked multiple *wh*-questions (Pesetsky 1982, 2000). If learners manage to reject *wh*-questions like (5b) and (6b) in their L2 Chinese despite possible L1 influence, it would indicate that *wh*-topicalization in L2 Chinese multiple *wh*-questions involves movement and such movement is constrained by superiority.

3. The empirical study

Before testing the existence of movement in L2 Chinese *wh*-topicalization and its sensitivity to syntactic constraints, it is necessary to know whether English learners are able to acquire *wh*-topicalization in their L2 Chinese. Yuan and Dugarova (this volume) have found that once general (i.e. non-*wh*-NP) topicalization is established in L2 Chinese, advanced English learners allow *wh*-topicalization in their interlanguage grammars. In view of this, the following research questions are asked in this study.

3.1. Research questions

(i) Is a *wh*-topic derived by movement or base-generation in English learners' L2 Chinese *wh*-questions?
(ii) If movement is involved in L2 Chinese topicalized *wh*-questions, will it be sensitive to complex NP island, reconstruction and superiority effects?
(iii) Will superiority apply in both D-linked and non-D-linked multiple *wh*-questions in English-Chinese interlanguage grammars?

3.2. Participants

As the prerequisite for testing the existence of movement in L2 Chinese *wh*-topicalization and its sensitivity to syntactic constraints is the acquisition of Chinese *wh*-topicalization, only those learners who can acquire *wh*-topicalization in their L2 Chinese are considered here. As reported in Yuan and Dugarova (this volume), 19 English speakers are found to allow *wh*-topicalization in their interlanguage grammar and these participants are, therefore, included in the analyses here. Detailed information about the English group and the Chinese native speakers' (NS) group is provided in Table 1.

Table 1. *Information of participants who allow wh-topicalization in Chinese*

Groups	No. of participants	Average age	Average months of learning Chinese	Average months in China/Taiwan	Mean scores in the cloze test (SD in brackets)
English	19	35	178	66	36 (3.47)
NS	20	23	N/A	N/A	39 (1.07)

The result of a two-samples Kolmogorov-Smirnov test indicates that there is no significant difference between the two groups in their performance in the cloze test (Z=1.314, p=0.063).

3.3. Procedure and instruments

The participants of this study had to do an acceptability judgement test (AJT) and a multiple choice interpretation test (MCIT). In the AJT and MCIT, each experimental sentence had three tokens and distracters were used in both tests. The test items and distracters were randomized and all test sentences were presented in Chinese characters.

3.3.1. The acceptability judgement test

The AJT contains 9 sentence types relevant to this study. Each test sentence was followed by a continuum scale ranging from "-3" 'completely unacceptable to "+3" 'completely acceptable', as shown in (7). The participants were asked to judge the acceptability of each sentence by marking one number on the scale.

(7) *Acceptability scale in the AJT*

-3 _____ -2 _____ -1 _____ 0 _____ +1 _____ +2 _____ +3
completely   very likely to be   probably   "I don't know"   probably   very likely to be   completely
unacceptable   unacceptable   unacceptable   acceptable   acceptable   acceptable

Sentence types used in the AJT to test the existence of movement in L2 Chinese are presented in (8).

(8) *Sentence types in the AJT*

(I) *Wh-questions with a complex NP island*
   1. Sentences with a CNP (control)
      E.g. Wang Ming zui   xihuan Xiao Liu mai de qiche.
         Wang Ming most like   Xiao Liu buy DE car
         'Wang Ming likes the car that Xiao Liu bought most.'

   2. *Wh*-questions with a *wh*-subject inside a CNP
      E.g. Wang Ming zui   xihuan na   yi   ge pengyou mai de qiche?
         Wang Ming most like   which one CL friend   buy DE car
         *'Which friend does Wang Ming like the car that bought most?'

   3. *Wh*-questions with a *wh*-subject moved out of a CNP
      E.g. Na   yi   ge pengyou Wang Ming zui   xihuan mai de qiche?
         which one CL friend   Wang Ming most like   buy DE car
         *'Which friend does Wang Ming like the car that bought most?'

4. *Wh*-questions with a *wh*-object inside a CNP
     E.g. Wang Ming zui   xihuan Xiao Liu mai de   na   yi liang qiche?
          Wang Ming most like   Xiao Liu buy DE which one CL car
        *'Which car does Wang Ming like that Xiao Liu bought most?'

5. **Wh*-questions with a *wh*-object moved out of a CNP
     E.g. Na   yi liang qiche Wang Ming zui   xihuan Xiao Liu mai de?
          which one CL car   Wang Ming most like   Xiao Liu buy DE
        *'Which car does Wang Ming like that Xiao Liu bought most?'

(II) *Non-D-linked multiple wh-questions*
   1. Both *shei* 'who' and *shenme* 'what' in-situ
      E.g. Shei xihuan shenme?
           who like   what
           'Who likes what?'

   2. **Shenme* 'what' topicalized and *shei* 'who' in-situ
      E.g. Shenme shei xihuan?
           what   who like
           *'What does who like?'

(III) *D-linked multiple wh-questions*
   1. Both *na NP* 'which NP' in-situ
      E.g. Na   yi ge xuesheng xihuan kan na   yi ben shu?
           which one CL student   like   read which one CL book
           'Which student likes to read which book?'

   2. **Lower *na NP* 'which NP' topicalized and higher *na NP* 'which NP' in-situ
      E.g. Na   yi ben shu na   yi ge xuesheng xihuan kan?
           which one CL book which one CL student   like   read
           'Which book does which student like to read?'

     In type (I), there is a control sentence in addition to experimental sentences. A control sentence is almost identical to an experimental sentence with one difference. The difference lies in the use of an ordinary NP inside a CNP island in the control and the use of a *wh*-element in the experimental sentence. Comparing subjects' judgements of experimental sentences with those of corresponding control sentences would enable us to see whether or not a difference found in L2 learners' judgements is due to the use of a *wh*-element in a CNP island. Including both a *wh*-subject and a *wh*-object in the CNP island would show us whether L2 learners can rule out the illicit *wh*-extraction from the island regardless of the position, i.e. subject or object, that the *wh*-phrase is extracted from.

3.3.2. The multiple choice interpretation test

     The purpose of conducting the MCIT is to find out whether reconstruction effects take place in L2 Chinese *wh*-questions.

(9) *Sentence types in the MCIT*

Type 1: *Wh-questions with ziji 'self' inside the in-situ wh-NP*
Lisi zui   xihuan ziji de na   yi zhang zhaopian?
Lisi most like   self DE which one CL   picture
'Which picture of himself does Lisi like most?'

Type 2: *Wh-questions with ziji 'self' inside the topicalized wh-NP*
Ziji de na   yi zhang zhaopian Lisi zui   xihuan?
self DE which one CL   picture   Lisi most like
'Which picture of himself does Lisi like most?'

Type 3: *Wh-questions with an r-expression inside the in-situ wh-NP*
Ta zui   bu xihuan kan Wang Ming de   na   yi ben shu?
he most not like   read Wang Ming DE which one CL book
'Which book of Wang Ming does he not like to read most?'

Type 4: *Wh-questions with an r-expression inside the topicalized wh-NP*
Wang Ming de na   yi ben shu   ta zui   bu xihuan kan?
Wang Ming DE which one CL book he most not like   read
'Which book of Wang Ming does he not like to read most?'

In type 1, the reflexive *ziji* 'self' inside the in-situ *wh*-NP is bound by its c-commanding antecedent *Lisi*. In type 2, *ziji* inside the topicalized *wh*-NP is coreferent to its antecedent *Lisi* despite the fact that *ziji* is no longer c-commanded by *Lisi*. In type 3, the r-expression *Wang Ming* does not refer to *ta* 'he', and in type 4, *Wang Ming* inside the topicalized *wh*-NP is not coreferent to *ta* either, even though *ta* is c-commanded by *Wang Ming*. Sentence types 2 and 4 involve reconstruction of binding relationships in topicalized *wh*-questions in Chinese, which takes place in accordance with respective Principles A and C.

Each sentence in the MCIT was followed by a question with four choices, and the participants were asked to choose one of them.

(10)   Ziji de na yi zhang zhaopian Lisi zui   xihuan?
       Who does *ziji* refer to?
       a. Lisi
       b. Another person
       c. This sentence is incorrect.
       d. I don't know.

4. Results and discussion
4.1. Wh-questions with a complex NP island

Table 2. *Mean scores of groups' judgements of Chinese wh-questions with a complex NP island*

	English	NS
Control	2.96	2.7
Wh-subject inside a CNP	2.67	2.82
Wh-object inside a CNP	2.79	2.88
*Wh-subject moved out of CNP	-2.23	-2.58
*Wh-object moved out of CNP	-2.12	-2.27

From Table 2 it can be seen that both English learners and Chinese native speakers accept control sentences as well as *wh*-questions with a *wh*-subject and a *wh*-object inside a CNP island. At the same time, they reject *wh*-questions in which a *wh*-subject and a *wh*-object are moved out of the island. The results of an Independent-samples *t*-test show that there is no significant difference between the groups in their judgements of these sentence types: $t(37)=1.236$, $p=0.151$ in control sentences; $t(37)=1.198$, $p=0.239$ in *wh*-questions with a *wh*-subject inside a CNP; $t(37)=1.081$, $p=0.287$ in *wh*-questions with a *wh*-object inside a CNP; $t(37)=1.675$, $p=0.102$ in *wh*-questions with a *wh*-subject moved out of a CNP and $t(37)=0.804$, $p=0.427$ in *wh*-questions with a *wh*-object moved out of a CNP. In section 2 it was assumed that if the *wh*-topic in L2 Chinese is derived by movement, extraction of a *wh*-word out of the CNP island should not be allowed in English-Chinese interlanguage grammars. Thus if English

speakers' L2 Chinese grammars are shown to be sensitive to the CNP island effects, this would provide empirical evidence that the extracted *wh*-word undergoes overt movement. This is exactly what we find here. The target-like behavior of English learners in L2 Chinese *wh*-questions with a CNP island in Table 2 suggests that the *wh*-topic is the result of movement in L2 Chinese *wh*-questions and this movement is subject to the island constraint.

4.2. Multiple wh-questions featuring superiority

Table 3. *Mean scores of groups' judgements of Chinese non-D-linked multiple wh-questions with 'who' and 'what'*

	English	NS
'Who' + 'what' in-situ	1.88	2.1
*'What' topicalized + 'who' in-situ	-2.91	-2.53

From the data in Table 3 we can see that English learners behave in a native-like manner in that they accept grammatical multiple *wh*-questions with both *shei* 'who' and *shenme* 'what' in-situ and at the same time reject ungrammatical multiple *wh*-questions with *shenme* 'what' topicalized and raised above an in-situ *shei* 'who'. The results of a Paired-samples *t*-test indicate that the two question types differ significantly from each other in the judgement by each group: $t(18)=14.078$, $p<0.001$ for English and $t(19)=19.753$, $p<0.001$ for Chinese. This suggests that English learners and Chinese native speakers treat non-D-linked multiple *wh*-questions with 'who' and 'what' in-situ differently from those with 'what' topicalized and 'who' in-situ. Thus from these results it follows that learners respect superiority in L2 Chinese non-D-linked multiple *wh*-questions.

Consider now groups' judgements of D-linked multiple *wh*-questions.

Table 4. *Mean scores of groups' judgements of Chinese D-linked multiple wh-questions with 'which NP'*

	English	NS
Both 'which NP' in-situ	1.46	1.17
*Lower 'which NP' topicalised	-0.63	-1.85

Data in Table 4 indicate that English learners accept grammatical multiple *wh*-questions with both *na NP* 'which NP' in-situ but exhibit indeterminacy in judging ungrammatical multiple *wh*-questions with a lower *na NP* 'which NP' topicalized and raised above a higher *na NP* 'which NP' that stays in-situ. The results of a Paired-samples *t*-test reveal that the two question types differ significantly from each other in the judgement by each group: $t(18)=6.497$, $p<0.001$ for English and $t(19)=8.652$, $p<0.001$ for Chinese. From these statistical analyses it can be inferred that learners and native speakers treat D-linked multiple *wh*-questions with both 'which NP' in-situ differently from those with a lower 'which NP' topicalized and a higher 'which NP' in-situ. These data seem to suggest that superiority effects show up in D-linked multiple *wh*-questions in native Chinese grammars but apparently not in English learners' L2 Chinese. That is, the movement of the lower *wh*-element in D-linked multiple *wh*-questions is ruled out in native Chinese grammars because it violates superiority, while such movement takes place optionally in L2 Chinese. This gives rise to the following two questions. First, if it is correct to postulate that movement occurs in English speakers' L2 Chinese D-linked multiple *wh*-questions, what type of movement is it: *wh*-topicalization or *wh*-movement? Second, why is this movement optional in L2 Chinese grammars?

It is assumed that the movement of the lower *wh*-element in English learners' L2 Chinese is represented by *wh*-topicalization rather than by *wh*-movement. If this movement was an instance of *wh*-movement, as in English L1, English learners would not only have rejected non-D-linked multiple *wh*-questions with the lower *wh*-word *shenme* 'what' moved but would also have accepted D-linked multiple *wh*-questions with the lower *wh*-element *na NP* 'which NP' moved. The fact that the latter is not accepted by English learners in their L2 Chinese grammars suggests that movement in L2 Chinese multiple *wh*-questions is an instance of *wh*-topicalization, i.e. movement to Spec-TopP.

As reported in Yuan and Dugarova (this volume), English learners can acquire Chinese *wh*-topicalization and thus the discourse requirement for Chinese *wh*-topicalization must be operative in the interlanguage grammars, i.e. only *wh*-topicalization in D-linked but not in non-D-linked *wh*-questions is possible in L2 Chinese. From this it does not seem implausible to assume that learners can make a distinction between D-linked and non-D-linked multiple *wh*-questions in their L2 Chinese and under the discourse condition, they rule out *wh*-topicalization in the latter and not in the former. That is, English learners seem to identify Chinese multiple *wh*-questions in Table 3 as non-D-linked and as such they do not meet the discourse requirement on Chinese *wh*-topicalization in the interlanguage grammars. Multiple *wh*-questions in Table 4 are treated by learners as D-linked and, therefore, the lower *wh*-element is allowed to undergo topicalization in their L2 Chinese. However, in contrast to native Chinese speakers, such movement in L2 Chinese D-linked multiple *wh*-questions is optional. I assume that English learners do not determinately reject the ungrammatical movement of the lower *wh*-element to Spec-TopP due to the residual L1 influence. That is, it seems that learners are uncertain about whether movement to Spec-TopP in their L2 Chinese D-linked multiple *wh*-questions should obey superiority given that the movement of the lower *wh*-element to Spec-ForceP in this question type is not subject to superiority in English L1. The continuing effect of the L1 seems to be visible even at a very advanced level in Chinese interlanguage grammars, which results in residual optionality in L2 Chinese.

In order to find out whether superiority can be applied to L2 Chinese D-linked multiple *wh*-questions, individual analyses have been conducted. That is, I have identified English learners who consistently (i.e. three tokens out of three) accept grammatical D-linked and non-D-linked multiple *wh*-questions with the *wh*-elements in-situ and at the same time consistently reject ungrammatical D-linked and non-D-linked multiple *wh*-questions in which the lower *wh*-element is topicalized. It has been found that five English learners exhibit this behavior pattern. This suggests that the topicalized *wh*-element is the result of movement in these learners' L2 Chinese multiple *wh*-questions. Such movement in the non-D-linked type does not meet the discourse requirement for Chinese *wh*-topicalization which is effective in the interlanguage grammars, while in the D-linked type it violates superiority. From this it follows that English learners are able to apply the superiority constraint to *wh*-topicalization in their L2 Chinese grammars.

4.3. Wh-questions featuring reconstruction

In Table 5 are the results of the groups' interpretations of binding relationships in Chinese *wh*-questions.

Table 5. *Percentage of subjects' interpretations of binding relationships in Chinese wh-questions*

	English	NS
Type 1: *Wh-questions with ziji inside the in-situ wh-NP*		
Coreferential reading (i.e. *ziji* refers to its antecedent)	100	100
*Disjoint reading (i.e. *ziji* does not refer to its antecedent)	0	0
Type 2: *Wh-questions with ziji inside the topicalized wh-NP*		
Coreferential reading (i.e. *ziji* refers to its antecedent)	95	98
*Disjoint reading (i.e. *ziji* does not refer to its antecedent)	5	2
Type 3: *Wh-questions with an r-expression inside the in-situ wh-NP*		
*Coreferential reading (i.e. r-expression refers to pronoun)	0	0
Disjoint reading (i.e. r-expression does not refer to pronoun)	100	100
Type 4: *Wh-questions with an r-expression inside the topicalized wh-NP*		
*Coreferential reading (i.e. r-expression refers to pronoun)	5	2
Disjoint reading (i.e. r-expression does not refer to pronoun)	95	98

From the data in Type 1 in Table 5, it can be seen that both groups choose a coreferential reading for the reflexive *ziji* 'self' in the in-situ *wh*-questions in every case (i.e. 100%). This means that in both native and non-native Chinese grammars, *ziji* inside the in-situ *wh*-NP is bound by its c-commanding antecedent within its governing category, which is expected under Binding Principle A. The data in Type 2 show that English learners behave similarly to native speakers in that a coreferential

interpretation for the reflexive is chosen in 95% of cases and the choice of a disjoint reading does not exceed 5%. This implies that *ziji* refers to its antecedent despite the fact that *ziji* is not c-commanded by its antecedent, which is in accordance with Principle A. From the percentage in Type 3 it can be seen that the groups choose a disjoint reading for the r-expression in the in-situ *wh*-questions in every case (i.e. 100%). This indicates that the r-expression in this question type is not coreferent to the pronoun but refers to someone outside the structure, which is anticipated under Binding Principle C. The data in Type 4 show that learners behave in a native-like manner in that they select a disjoint interpretation for the pronoun in 95% of cases and a coreferential interpretation is chosen in 5% of cases.[1] This implies that in both native speakers' and learners' Chinese grammars, the r-expression does not refer to the pronoun in the structure, even if it c-commands the pronoun, which conforms to Principle C. Thus the data in Table 5 show that English learners exhibit target-like performance in interpreting the binding relationships of the reflexive and the r-expression both in in-situ *wh*-questions and topicalized *wh*-questions. The fact that learners can accurately establish the binding relationships suggests that reconstruction is possible in English learners' L2 Chinese *wh*-questions. As reconstruction implies movement, it can thus be claimed that the *wh*-topic is derived by movement in L2 Chinese topicalized *wh*-questions.

5. Conclusion

The findings of this study suggest that overt movement is involved in English speakers' L2 Chinese *wh*-topicalization and such movement is sensitive to complex NP island, reconstruction and superiority effects. The study also detects persistent L1 transfer in non-native judgements of Chinese D-linked multiple *wh*-questions, which causes residual optionality in English-Chinese interlanguage grammars.

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[1] Since there are only 5% of cases with incorrect interpretations of the reflexive and the r-expression, these data are trivial and negligible and are not considered representative of English speakers' L2 Chinese.

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