

## Intervention effects and *wh*-construals

Barry Chung-Yu Yang

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**Abstract** The exploration on *wh*-intervention effects generally suffers from distributional variations both across and within languages. In this study, a specific, clear divide with respect to *wh*-intervention effects in Mandarin Chinese is investigated, which in turn sheds light on the puzzling variations in general. I show that the variations of intervention effects cannot be handled in a uniform way. They can be at best captured if we categorize them into two types of syntactic effects, i.e., minimality effect and competition effect, each of which is triggered by independent factors. Meanwhile, to cover the intervention effects crosslinguistically, it is essential to take into account the typological difference of in-situ *wh*-construals. The various distributions of intervention effects are, then, a natural result of the interplay between the different types of intervention effects and *wh*-construals.

**Keywords** Intervention effect · *Wh*-construal · Competition effect · Minimality effect · *Wh*-movement · Feature movement · Phrasal movement

### 1 Introduction

Research on the covert operations of in-situ *wh*-construals has been one of the central topics in the field of Chinese linguistics since the 1980s. A case in point is the mechanism behind the contrast between English and Chinese *wh*-construals. It is well known that a *wh*-element in English typically moves to sentence-initial position

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B. C.-Y. Yang (✉)  
National United University, 1 Lienda, Miaoli 36003, Taiwan  
e-mail: barryyang@nuu.edu.tw

to mark its scope as in (1), whereas its counterpart in Mandarin Chinese remains in-situ as in (2).

- (1) What<sub>i</sub> did John eat  $t_i$ ?
- (2) Zhangsan chi-le shenme?  
 Zhangsan eat-Perf. what  
 ‘What did Zhangsan eat?’

Huang’s (1982) pioneering work shows that the difference between *wh*-movement and *wh*-in-situ languages is only apparent. That is, all of these languages involve some kind of *wh*-movement. The former applies it on the surface whereas the latter does it at the level of Logical Form, LF. By so doing, Huang successfully bridges the seeming discrepancy between these two types of languages in a uniform way.

In the 1990s, with the advancement of the Minimalist Program, which is encoded with the notion of Economy (Chomsky 1991, 1993, 1995), issues of covert *wh*-movement are re-examined with respect to “last resort” and “least effort”. Accordingly, studies from and Li (1993a) and Tsai (1994) suggest that even at LF no movement should occur (see also Baker 1970; Pesetsky 1987; Cole and Hermon 1994; Reinhart 1998), at least to the in-situ *wh*-arguments in Chinese-type languages. Their scope marking or interpretation, in turn, is determined by a base-generated Q-operator (Q-Op) which is directly merged to CP and binds a variable introduced by the in-situ *wh*-argument in an unselective binding fashion.<sup>1</sup>

In the mid-1990s, a tool useful for approaching issues of *wh*-in-situ—i.e., the intervention effect—comes to the fore, providing a new perspective into the nature of in-situ *wh*-construals without resorting to structure-dependent mechanisms such as (strong) island effects or the Empty Category Principle (ECP). Although the term “intervention effect” is originally derived from split constructions (Obenauer 1976) and later adopted in weak island constructions (de Swart 1992; Szabolcsi and Zwarts 1993), its role in diagnosing covert *wh*-movement (Beck 1996; Beck and Kim 1997; Pesetsky 2000, among many others) has brought much attention recently. In this study I limit the discussion of intervention effects to covert operations on in-situ *wh*-construals.

Generally speaking, the *wh*-intervention effect addressed here refers to a linguistic phenomenon where, as exemplified in (3), an in-situ *wh*-phrase (marked with boldface) cannot follow a quantifier or scope-bearing element, SBE (marked with underline).

(German: Beck 1996; Beck and Kim 1997)

- (3) a. \*Wer hat niemanden wo angetroffen?  
 who has nobody where met
- b. Wer hat wo<sub>i</sub> **niemanden**  $t_i$  angetroffen?  
 who has where nobody met  
 ‘Who didn’t meet anybody where?’

<sup>1</sup> *Wh*-adverbs, on the other hand, still maintain their LF-movement property since they are genuine quantifiers distinct from the *wh*-arguments.



Take the German example as an illustration. In (3a) the intervention effect is observed when the in-situ *wh*-element *wo* ‘where’ LF-moves across an intervening negative quantifier *niemanden* ‘nobody’. In (3b), however, when *wo* ‘where’ precedes the negative quantifier *niemanden* ‘nobody’, no intervention effect occurs since subsequent LF-movement of the former is not blocked by the latter.

Such an observation becomes inspiring in the study of Chinese *wh*-constructions if the intervention effect can detect LF-movement. As exhibited below, Chinese *wh*-arguments do not exhibit the intervention effect in (9) when preceded by quantifiers, as has long been observed by Huang (1982, pp. 263–267); whereas Chinese *wh*-adverbs do in (10–11).<sup>2</sup> (See also Aoun and Li 1993a, b; Cheng and Rooryck 2002; Soh 2005; Tsai 2008; Yang 2008.)

- (9) a. {Suoyoude/meige ren} dou mai-le shenme?  
 all /every person all buy-Perf. what  
 ‘What did all people/everyone buy \_\_\_?’  
 b. {Meiyouren/henshaoren} gan gen shei dajia? (Soh 2005)  
 nobody/few.person dare with who fight  
 ‘Who do(es) nobody/few people dare to fight with?’

(Reason-‘why’)<sup>3</sup>

- (10) a. Ta weishenme cizhi?  
 he why resign  
 ‘Why did he resign?’  
 b. \*{Suoyouderen/meigeren} dou weishenme cizhi?  
 all.people/every.person all why<sup>adv</sup> resign  
 ‘Why did all the people/everyone resign?’  
 c. \*{Meiyouren/henshaoren/zuiduo liang-ge ren} weishenme cizhi?  
 nobody/few.person/at.most two-Cl person why<sup>adv</sup> resign  
 ‘Why did nobody/few people/at most two people resign?’

<sup>2</sup> The *wh*-adverbs discussed here are restricted to the reason-*why* and the manner-*how* which are genuine quantifiers and subject to island effects. The same morphological makeup can also be used as the purpose-*why* and the method-/instrument-*how* which are encoded with nominal elements and are not subject to island effects (see Tsai 1994, 1999, for a detailed discussion). For ease of exposition, I add a superscript “<sup>adv</sup>” on the gloss of the *wh*-adverbs to distinguish themselves from the nominal-encoded purpose-*why* and method-/instrument-*how*.

<sup>3</sup> One might suggest that the reason-*why* in *wh*-in-situ languages should be directly merged to CP (Ko 2005) so that (10b–c) are ruled out simply because it is wrongly merged to IP. The following examples show that the intervention effect is still observed when the reason-*why* is merged to the embedded CP.

- (i) a. \*{Suoyoude/meige} ren dou renwei [weishenme Lisi hui cizhi]?  
 all/every person all think why<sup>adv</sup> Lisi will resign  
 ‘Why do(es) all the people/everyone think Lisi will resign \_\_\_?’  
 b. \*{Meiyouren/henshaoren/zuiduo liang-ge ren} renwei [weishenme Lisi hui cizhi]?  
 nobody/few.person/at.most two-Cl person think why<sup>adv</sup> Lisi will resign  
 ‘Why do(es) nobody/few people/at most two people think Lisi will resign?’

(Manner-‘how’)

- (11) a. Ta zenme dun niurou?  
he how<sup>adv</sup> stew beef  
‘How did he stew beef?’
- b. \*{Suoyouderen/meigeren} dou zenme dun niurou?  
all.people/every.person all how<sup>adv</sup> stew beef  
‘How do/does all the people/everyone stew beef?’
- c. \*{Meiyouren/henshaoren/zuiduo liang-ge ren} zenme dun niurou?  
nobody/few.person/at.most two-Cl person how<sup>adv</sup> stew beef  
‘How does nobody/few people/at most two people stew beef?’

This amounts to saying that Chinese *wh*-arguments do not move even at the level of LF, a claim which sides with Aoun and Li (1993a) and Tsai (1994) (see also Reinhart 1998). Nonetheless, as studies on the intervention effect accumulate more and more, what contributes to the intervention effect becomes controversial, which, again, blurs the status of Chinese *wh*-construals. For example, Pesetsky (2000) proposes that we should distinguish two types of “invisible” *wh*-movement, i.e., feature movement and covert phrasal movement, and only the former is sensitive to the intervention effect. Given this, a natural prediction is that Chinese *wh*-arguments belong to the latter type (Soh 2005), a return going back to Huang (1982).<sup>4</sup>

On the other hand, the exploration on intervention effects generally suffers from distributional variations across languages. For instance, whereas *wh*-arguments in Korean and Japanese are sensitive to the intervention effect, they are not in Chinese, as demonstrated above. However, when subjects are associated with focus, as in (12), the *wh*-arguments turn out to be sensitive to the intervention effect. The subject *Zhangsan* is marked by the contrastive focus marker *shi* in (12a), the restrictive focus marker *zhiyou* ‘only’ in (12b), and the additive focus marker *lian* ‘even’ in (12c). (See, for example, Zhang 1997; Lee 2005, for more discussion on these focus types). In (12d) the additive focus marker *ye* ‘also’ is intended to focus the subject as in ‘John ate an apple; Bill also ate an apple.’ In (12e) the two subjects *Zhangsan* and *Lisi* are marked by an alternative conjunction marker *haishi* ‘or’ which also involves focus in the sense of Rooth (1985, 1992) and von Stechow (1991).

- (12) a. \*Shi Zhangsan chi-le shenme?  
SHI Zhangsan eat-Perf. what  
Lit. ‘What was x such that it was Zhangsan who ate x?’
- b. \*Zhiyou Zhangsan chi-le shenme?  
only Zhangsan eat-Perf. what  
‘What did only Zhangsan eat?’
- c. \*Lian Zhangsan dou chi-le shenme?  
even Zhangsan all eat-Perf. what  
‘What did even John eat?’

<sup>4</sup> See Sect. 4.4 for arguments not to endorse covert phrasal movement in Chinese.

- d. \*Zhangsan ye chi-le shenme?  
 Zhangsan also eat-Perf. what  
 ‘What did Zhangsan (besides someone else) also eat?’
- e. \*Zhangsan haishi Lisi chi-le shenme?  
 Zhangsan or Lisi eat-Perf. what  
 ‘What did Zhangsan or Lisi eat?’

Meanwhile, Pesetsky (2000) observes that English *wh*-in-situ elements behave differently in the intervention context with respect to their relative positions. In (13a) when the *wh*-subject is in-situ, the sentence is ruled out. In (13b) when the *wh*-object is in-situ, the sentence is fine. Note that (13a) cannot be attributed to the superiority effect since the D(iscourse)-linked *wh*-elements typically do not exhibit superiority effects as in ‘Which book did which person read?’

- (13) a. \*Which book didn’t which person read \_\_\_?  
 b. Which person didn’t read which book?

Furthermore, speaker judgment is also reported to be inconsistent. It is suggested that the reference of the *wh*-elements should also play a role. Specifically, various studies (Lee 2001; Kim 2003; Kuno and Kim 2004; Kuno and Whitman 2004; Miyagawa 2004; Miyagawa and Endo 2004) show that D-linking or specificity can cancel or weaken intervention effects, as in (14).

(Japanese: Miyagawa 2004)

- (14) a. ???(Hotondo) daremo-ga dare-o kirat-te-iru no?  
 (almost) everyone-nom who-acc hate Q  
 ‘Who does almost everyone hate?’
- b. ?John-to Henry-to Mike-no uti,  
 John-and Henry-and Mike-and among  
 (Hotondo) daremo-ga dare-o kirat-te-iru no?  
 (almost) everyone-nom who-acc hate Q  
 ‘Among John, Henry, and Mike, who does almost everyone hate?’

Another puzzling case derives from embedded context. It has been pointed out that under embedded context the intervention effects can be cancelled or at least weakened as the contrast in (15) and (16) shows (see Tomioka 2007).

(Japanese)

- (15) a. ??Daremo-ga nani-o yon-da-no?  
 everyone-nom what-acc read-past-Q  
 ‘What did everyone read?’
- b. Kimi-wa<sub>CP</sub> daremo-ga nani-o yon-da-to] omotteiru-no?  
 you-top everyone-nom what-acc read-past-comp think-Q  
 ‘What do you think that everyone read?’

(Korean)

- (16) a. ??Nwukwuna-ka mues-ul ilk-ess-ni?  
 everyone-nom what-acc read-past-Q  
 ‘What did everyone read?’
- b. Ne-nun [<sub>CP</sub> nwukwuna-ka mues-ul ilk-ess-ta-ko] sayngkakha-ni?  
 you-top everyone-nom what-acc read-past-dec-comp think-Q  
 ‘What do you think that everyone read?’

For the past several decades, numerous works have contributed to the postulation of at least three types of “invisible *wh*-movement” for in-situ *wh*-construal: covert phrasal movement, feature movement, and non-movement; and all of them have yielded fruitful results. Therefore, the main concern of this study is not to propose a certain mechanism underlying the in-situ *wh*-construal since it has been well studied. Instead, this study is intended as an exploration of the principles underlying the intervention effect in order to see to what extent such an exploration can contribute to the typology of in-situ *wh*-construal and to the principles governing the covert component of grammar. In other words, this study takes the intervention effect as a new tool to reinvestigate and thus to determine the mechanism behind in-situ *wh*-construal. The discussion hereafter is limited to the variant intervention phenomena and suggests that they cannot be handled in a uniform way. More specifically, with evidence from Mandarin Chinese I show that they can be at best subsumed into two independent syntactic effects, i.e., the minimality effect and the competition effect, if we consider the parametric mechanisms of in-situ *wh*-construal encoded in different languages accordingly. Section 2 introduces previous analyses relevant to the study. Section 3 illustrates an interesting divide in Chinese, which paves the way for the categorization of intervention effects. Section 4 deals with the weak intervention effect and suggests a minimality approach toward it. Section 5 turns to the strong intervention effect and proposes a competition approach. Section 6 concludes this study.

## 2 Previous analyses

This section reviews some of the major approaches toward *wh*-intervention effects. Please note that it does not intend to be a thorough review covering all studies on intervention effects. Instead, it will be conducted following the main thread of this study—the covert operations on *wh*-construals—to see what role the intervention effect can play in helping us understand *wh*-construals and relevant operations. For each approach, a brief review will be made with some potential problems that follow.

### 2.1 LF-intervention effects

As briefly mentioned in the introduction, Beck (1996) and Beck and Kim (1997) suggest that the intervention effect should result from the Quantifier-Induced Barrier

(QUIB) which blocks the LF-movement of in-situ *wh*-expressions due to the Minimal Quantified Structure Constraint (MQSC):

- (17) Quantifier-Induced Barrier (QUIB)  
The first node that dominates a quantifier, its restriction, and its nuclear scope is a quantifier-induced barrier.
- (18) Minimal Quantified Structure Constraint (MQSC)  
If an LF trace  $\beta$  is dominated by a quantifier-induced barrier,  $\alpha$ , then the binder of  $\beta$  must be dominated by  $\alpha$ .

Simply put, an in-situ *wh*-element cannot scope over a QUIB due to the restrictions of MQSC. In this sense, the intervention effect can serve as a diagnostic on LF-movement because it depicts a general constraint where LF-movement of a *wh*-element is blocked by an intervening quantifier or a scope bearing element, SBE (see also Ko 2005).

There are several problems that the LF-movement approach may encounter. The first one is on English in-situ *wh*-elements. Pesetsky (2000) points out that some English in-situ *wh*-elements do not exhibit the intervention effect as in (19), whereas evidence from ACD licensing in (20) suggests that these *wh*-elements still undergo LF movement (for more elaboration, see Sect. 2.2).<sup>5</sup> It follows that (19) should in principle be ruled out, contrary to fact.

(Pesetsky 2000, p. 61)

- (19) a. Which book did no one give \_\_\_ to which student?  
b. Which picture did very few children want to show \_\_\_ to which teacher?  
c. Which girl did only Mary introduce \_\_\_ to which boy?

(ACD licensing, Pesetsky 2000, due to Fiengo and May 1994)

- (20) a. Which girl invited [which student that John did [<sub>VP</sub>  $\Delta$ ]]?  
b. I need to know who can speak [which languages that Ken Hale can [<sub>VP</sub>  $\Delta$ ]]?  
c. Which spy-master suspected [which spy that Angleton did [<sub>VP</sub>  $\Delta$ ]]?

Secondly, such an approach cannot explain the quantifier/focus divide with respect to intervention effects in Chinese. Recall that when the subject interveners are quantifiers, they cannot rule out *wh*-arguments as in (9), whereas when they are associated with focus, the *wh*-arguments are ruled out as in (12). The LF-movement approach would predict that the *wh*-arguments in (12) undergo LF-movement whereas the same ones in (9) do not, which is self-contradictory.

<sup>5</sup> These are the so-called “non-*wh*<sub>1</sub>’s-in-situ”. They are in contrast to the “*wh*<sub>1</sub>-in-situ”. The *wh*<sub>1</sub>-in-situ refers to the highest *wh*-phrase in the underlying structure of a multiple *wh*-construction before movement and it remains in-situ on the surface form. For example, in the question ‘Which book did which person buy?’ the underlying structure before *wh*-movement is ‘which person bought which book’. The *wh*<sub>1</sub>-in-situ is ‘which person’ because it is the highest *wh*-phrase in the underlying structure and it remains in-situ on the surface form. On the other hand, the “non-*wh*-in-situ” refers to the rest of in-situ *wh*-phrase(s).



Another problem is on the cancelling/weakening effect in embedded context as exhibited in (15) and (16) (Tomioka 2007). The *wh*-elements in the embedded context should still be able to LF-move to the matrix CP to take scope, which in principle should be blocked by an intervening SBE, contrary to fact.

## 2.2 The Separation Principle

In English, D-linked *wh*-elements do not exhibit superiority effects, as in (21). Pesetsky (2000) shows that when an intervener precedes the in-situ *wh*-elements, the superiority effect seems to surface again as in (22) (data from Pesetsky 2000).

- (21) a. Which diplomat should I discuss which issue with \_\_\_?  
 b. Which student did Mary give which book to \_\_\_?  
 c. Which teacher did the children want to show which picture to \_\_\_?  
 d. Which boy did Mary introduce which girl to \_\_\_.
- (22) a. ??Which diplomat should I not discuss which issue with \_\_\_?  
 b. ??Which student did no one give which book to \_\_\_?  
 c. ??Which teacher did very few children want to show which picture to \_\_\_?  
 d. ??Which boy did only Mary introduce which girl to \_\_\_.

Pesetsky suggests that these should be cases of intervention effects. With evidence from ACD licensing, he shows that the in-situ *wh*-phrases in (22), termed “*wh*<sub>1</sub>-in-situ”, are in fact undergoing feature movement.<sup>6</sup> ACD as in (23) is generally assumed to involve an elided VP which has to be licensed in a QR fashion (May 1985; Larson and May 1990). Under the requirement of parallelism in licensing ellipsis, the elided VP requires an identical antecedent. However, it would lead to infinite regress if we simply restore the elided VP “ $\Delta$ ” by copying the matrix VP phrase ( $\Delta$  = [invited everyone that I did  $\Delta$ ]). May (1985) proposes that the whole quantifier phrase ‘[everyone that I did  $\Delta$ ]’ has to undergo QR as in (24a) so that the elided VP can be restored under parallelism as in (24b) and the ACD is licensed.<sup>7</sup>

- (23) Mary invited everyone that I did [<sub>VP</sub>  $\Delta$ ]
- (24) a. [everyone that I did [<sub>VP</sub>  $\Delta$ ]<sub>i</sub> Mary invited  $t_i$   
 b. [everyone that I [<sub>VP</sub> invited  $t$ ]<sub>j</sub> Mary invited  $t_j$

Now the fact that ACD licensing in (25) below fails suggests that somehow the whole *wh*-chunk ‘[which boy that Mary (also) did  $\Delta$ ]’, a *wh*<sub>1</sub>-in-situ, cannot undergo QR to license the VP trace. Pesetsky suggests that the *wh*<sub>1</sub>-in-situ can then undergo (*wh*-)feature movement.

<sup>6</sup> See footnote 5 for the definition of “*wh*<sub>1</sub>-in-situ”.

<sup>7</sup> The lower VP can serve as an antecedent for the elided VP in ACD constructions (Larson and May 1990).

- (25) \*I need to know which girl Sue ordered [which boy that Mary (also) did  $\Delta$ ] to congratulate \_\_\_\_.  
 ‘I need to know for which girl  $x$  and [which boy  $y$  such that Mary ordered  $y$  to congratulate  $x$ ], Sue also ordered  $y$  to congratulate  $x$ .’  
 [i.e., I need to know the girl-boy pairs such that both Sue and Mary ordered the boy to congratulate the girl.]

By analogy, since the in-situ *wh*-elements of the illformed examples in (22) are also the  $wh_1$ 's-in-situ, they should undergo feature movement which, in turn, is subject to the universal characterization on intervention effects in (26) (hereafter termed as the “Separation Principle” for ease of exposition).

- (26) Intervention effect (universal characterization)  
 A semantic restriction on a quantifier (including *wh*) may not be separated from that quantifier by a scope-bearing element. (Pesetsky 2000, p. 67)

More specifically, in (22) the moved *wh*-feature (or Q-feature) is separated from the semantic restriction of the in-situ *wh*-phrase by an intervening SBE, hence the intervention effect (see also Honcoop 1997).

On the other hand, Pesetsky also provides examples such as (27) that do not exhibit any intervention effect. He suggests that it be due to the fact that these in-situ *wh*-phrases are not the  $wh_1$ 's-in-situ. They are the “non- $wh_1$ 's-in-situ” which undergo covert phrasal movement and are not subject to the intervention effect per Pesetsky's Separation Principle, as is evidenced by (28) where the ACD is licensed with these in-situ elements (cf. (25)).

- (27) a. Which issue should I not discuss \_\_\_\_ with which diplomat?  
 b. Which book did no one give \_\_\_\_ to which student?  
 c. Which picture did very few children want to show \_\_\_\_ to which teacher?  
 d. Which girl did only Mary introduce \_\_\_\_ to which boy?
- (28) I need to know which girl \_\_\_\_ordered [which boy that Mary (also) did  $\Delta$ ] to congratulate Sarah.  
 “I need to know for which girl  $\times$  and [for which boy  $y$  such that Mary ordered  $y$  to congratulate Sarah ],  $\times$  also ordered  $y$  to congratulate Sarah.  
 [i.e., I need to know the girl-boy pairs such that both the girl and Mary ordered the boy to congratulate Sarah.]

In sum, for Pesetsky (2000) the “invisible” movement of *wh*-expressions should at least be distinguished as two types: feature movement and covert phrasal movement. The *wh*-expressions which exhibit intervention effects should be those that undergo feature movement. English  $wh_1$ 's-in-situ are of this type. As for those *wh*-expressions that do not exhibit intervention effects, they undergo covert phrasal movement so that the Separation Principle is not violated. English non- $wh_1$ 's-in-situ

belong to this type. In this respect, the contrast between *wh*<sub>1</sub>'s-in-situ in (22) and non-*wh*<sub>1</sub>'s-in-situ in (27) is attributed to the different types of movement.

Still, the separation approach has its limit. First, the quantifier/focus divide in Chinese is still pending. According to the Separation Principle, we would expect the *wh*-arguments in (9) to undergo covert phrasal movement while the same ones in the same position in (12) would undergo feature movement (cf. Soh 2005). Yet, since only one *wh*-element appears in each sentence, there is no way to distinguish the *wh*<sub>1</sub>-in-situ from the non-*wh*<sub>1</sub>-in-situ in these sentences. Given this, there shouldn't be any distinction between (9) and (12), contrary to fact.

Second, when the focus elements in Chinese serve as VP adverbials as in (29), the intervention effects are gone (cf. (12) above). The separation approach has to explain this contrast.

- (29) a. Zhangsan shi [<sub>VP</sub> chi-le shenme]?  
 Zhangsan SHI eat-asp what  
 'What was x such that it was eating x that Zhangsan did?'
- b. Zhangsan zhi [<sub>VP</sub> chi-le shenme]?  
 Zhangsan only eat-asp what  
 'What did Zhangsan only eat?'
- c. Zhangsan shenzhi [<sub>VP</sub> chi-le shenme]?<sup>8</sup>  
 Zhangsan even eat-asp what  
 'What did Zhangsan only eat?'

Third, the separation approach cannot explain why an embedded context can cancel/weaken the intervention effect. The Separation Principle in (26) is not sensitive to the root-embedded contrast, whereas such a contrast does exist (Tomioka 2006, 2007). Furthermore, it has been noted that D-linking or specificity can cancel/weaken the intervention effect. The Separation approach has to explain why D-linking/specificity can remedy the intervention effect on the one hand while it also has to explain why the intervention effect in the English examples in (22) is not cancelled/weakened on the other hand since those *wh*'s-in-situ are already D-linked.

### 2.3 Focus intervention effect

In their later studies, Kim (2002a, 2005), Beck (2006), and Beck and Kim (2006) extract a core set of intervention effects, i.e., focus effect, as depicted in (30) which enjoys a stable blocking phenomenon across languages since even Chinese *wh*-arguments are subject to such an effect.

- (30) \*<sub>[CP Q<sub>i</sub> [FocP [...*wh*-phrase<sub>i</sub> ...]]]</sub> (Beck 2006, due to Kim 2002a)  
 A focused phrase (e.g., *only*+NP) may not intervene between a *wh*-phrase and its licensing complementizer.

<sup>8</sup> The adverbial counterpart of *lian* 'even' is *shenzhi* 'even'.

According to Beck (2006), both the in-situ *wh*-phrase and the focus phrase involve a focus semantic value since they both denote a set of alternatives (see Hamblin 1973; Karttunen 1977 for question interpretation, and Rooth 1985, 1992 for focus interpretation). They differ in that the focus phrase further involves an ordinary semantic value contributed by its focus operator. When the in-situ *wh*-phrase is c-commanded by the focus operator, the focus operator will reset the focus semantic value of both the *wh*-phrase and the focus phrase to the ordinary semantic value. However, the Q-Op associated with the question is the only binder for the in-situ *wh*-phrase serving as a distinguished variable which uses just the focus semantic value. The focus effect occurs when the intervening focus operator wrongly resets the focus semantic value of the *wh*-phrase to the ordinary semantic value so that the Q-Op has nothing to license, leading to nonconvergence. Such an approach avoids the issue of covert *wh*-movement and is subject only to focus sensitive constructions. It follows that the cross-linguistic in-situ *wh*-construals can be subsumed into the focus effect without resorting to any movement mechanism.

Kim (2005) explains the focus effect in a similar fashion. According to her, the focus intervention effect occurs when an intervening focus phrase wrongly assigns a value to the in-situ *wh*-phrase and thus checks off its uninterpretable focus feature [*uF*] which is supposed to be checked by a higher interrogative C-head as illustrated in (31). Since the checking/valuation does not involve movement here, the focus effect need not be sensitive to movement.

(31) \* $[_{CP} C_{[iQ,iF]} [\dots \text{Foc}_{[iF]} \dots [\dots wh_{[uQ,uF]} \dots]]]$  (adapted from Kim 2005)

Although the focus effect is cross-linguistically more stable, several potential problems still arise. First of all, it leaves the *wh*-adverbs in (10–11) in Chinese unaccounted for, since they are still ruled out by preceding quantifiers in contrast to the *wh*-arguments in (9). Next, the contrast between the *wh*<sub>1</sub>-in-situ in (22d) and the non-*wh*<sub>1</sub>-in-situ in (27d) in English, repeated below as (32a) and (32b) respectively, needs more explanation. In (32b) the non-*wh*<sub>1</sub>-in-situ is not sensitive to the focus context whereas the *wh*<sub>1</sub>-in-situ in (32a) is. This leaves us wondering to what extent the focus effect approach can apply.

- (32) a. ??Which boy did only Mary introduce which girl to \_\_\_\_\_. (*wh*<sub>1</sub>-in-situ)  
 b. Which girl did only Mary introduce \_\_\_\_ to which boy? (non-*wh*<sub>1</sub>-in-situ)

Moreover, as is already known, VP focus adverbials in Chinese do not trigger the focus effect. Under the focus approach we have no idea why the in-situ *wh*-arguments are not wrongly checked/valued by the focus adverbials.<sup>9</sup> Another problem is on the cancelling/ weakening effect of the embedded context. The focus approach cannot explain this phenomenon since the embedded context still falls within the same schema which rules out the in-situ *wh*-phrases in root clauses.

<sup>9</sup> One might want to say that semantically these adverbials are modifying the in-situ *wh*-phrases. Yet, still the focus conflict approaches should apply and these sentences should be ruled out.

## 2.4 Antitopicality effect

Tomioka (2007) suggests that what cause intervention effects are in fact the so-called “Anti-Topic Items” (ATI’s). They are termed so because topics usually denote old (or GIVEN) information whereas the ATI’s are just the opposite: They serve as focus, denoting new information. His evidence comes from the observation that these ATI’s in Japanese and Korean typically cannot be topic-marked:

(Tomioka 2007)

- |      |                            |                               |
|------|----------------------------|-------------------------------|
| (33) | <u>Japanese</u>            | <u>Korean</u>                 |
| a.   | *daremo-wa<br>anyone-top   | *amuto-nun<br>anyone-top      |
| b.   | *daremo-wa<br>everyone-top | *nwukwuna-nun<br>everyone-top |
| c.   | *dareka-wa<br>someone-top  | *nwukwunka-nun<br>someone-top |

He further addresses that the information structure of a *wh*-question should involve two parts (see also Krifka 2001): the non-*wh* part and the *wh*-part. The former is discourse-old (Prince 1981) or GIVEN (Schwarzschild 1999), whereas the latter serves as focus. In ‘What did John read?’ the *wh*-phrase ‘what’ is the informational focus while the rest of the sentence denotes the salient proposition ‘John read *x*’ which is discourse-old (or GIVEN) as sketched in (34).

(34) Information structure of a *wh*-question (English gloss, order irrelevant)

<u>John read</u>	<u>what</u>
<u>GIVEN</u>	<u>new information</u>

According to Tomioka, the intervention effect occurs when an ATI fails to serve as the old/background information of a sentence (recall that it cannot be topic-marked), conflicting with the requirement of the information structure of a *wh*-construction.

To explain the cancelling effects of *wh*-scrambling, Tomioka (2007, p. 1580, (23)) proposes a generalization, observing the properties of nominative subjects:

(35) Nominative subjects tend to be (a part of) focus unless it is included in the prosodically reduced portion.

Since *wh*-scrambling helps place the ATI’s in the phonologically reduced part of a sentence (i.e., the *ground* in Information Packaging theory (Vallduví 1992, 1995)), the intervention effects are thus nullified. As for the embedded context which also cancels (or at least weakens) the intervention effect, Tomioka extends the above generalization to the embedded context by suggesting that the interveners, as subjects in the embedded context, can be put into ground naturally without any structural manipulation such as *wh*-scrambling, hence the cancelling/weakening effect.

Although the embedding problem is handled nicely, there are still some problems remaining. First, Miyagawa and Endo (2004) suggest that the embedding effect in

Japanese/Korean should be attributed to the D-linking property because D-linking can cancel the basic intervention cases even in root clauses, as already demonstrated in (14). They further observe that when the non-D-linking environment is forced in the embedded context, intervention effects surface again, as exhibited in (36–38).

(Miyagawa 2004)

(36) [<sub>CP</sub> Hotondo daremo-ga nani-o yonda koto]-ga mondai na no?  
 [<sub>CP</sub> almost everyone-nom what-acc read fact]-nom problem Q  
 ‘What is the problem that almost everyone read?’

(37) ?\*[<sub>CP</sub> Hotondo daremo-ga ittai nani-o yonda koto]-ga  
 [<sub>CP</sub> almost everyone-nom world what-acc read fact]-nom  
 mondai na no?  
 problem Q  
 ‘What in the world is the problem that almost everyone read?’

(38) Tokorode,  
 by the way  
 \*[<sub>CP</sub> Hotondo daremo-ga nani-o yonda koto]-ga mondai na no?  
 [<sub>CP</sub> almost everyone-nom what-acc read fact]-nom problem Q  
 ‘By the way, what is the problem that almost everyone read?’

Second, as already known, Chinese *wh*-arguments do not exhibit intervention effects when the subject interveners do not involve focus. There is no need to resort to *wh*-scrambling or the embedded context. The antitopicality approach would still predict them to be ill-formed, contrary to fact.

Third, it cannot explain why intervention effects are not cancelled/weakened for Chinese *wh*-adverbs like *weishenme* ‘why’ or *zenme* ‘how’ when they are embedded.

- (39) a. \*{Suoyouderen/Meigeren} dou renwei [<sub>CP</sub> Lisi weishenme/zenme cizhi]?  
 all.people/everyonehe all think Lisi why<sup>adv</sup>/how<sup>adv</sup> resign  
 ‘Why<sub>i</sub>/How<sub>i</sub> did all people/everyone think Lisi would resign *t<sub>i</sub>*?’  
 b. \*{Meiyouren/Hensaoren} renwei [<sub>CP</sub> Lisi weishenme/zenme cizhi]?  
 nobody/few.people think Lisi why<sup>adv</sup>/how<sup>adv</sup> resign  
 ‘Why<sub>i</sub>/How<sub>i</sub> did nobody/few people think Lisi would resign *t<sub>i</sub>*?’

Meanwhile, the contrast between the *wh*<sub>1</sub>’s-in-situ (22) and the non-*wh*<sub>1</sub>’s-in-situ (27) in English is still not accounted for. The sentences in (22) should in principle be remedied, not the other way around.

Finally, in German the embedded context (40–41) does not cancel/weaken the intervention effects (Andreas Haida, p.c.), which is not predicted by the antitopicality approach.

- (40) a. (Root clause)  
 \*Wann hat Niemand wen besucht?  
 when has no one who.acc visited  
 Intended: ‘When did no one visit who?’

## b. (Embedded clause)

\*Wer glaubt, dass niemand wen besucht hat?  
 who thinks that no one who.acc visited has  
 Intended: ‘Who thinks that no one visited who?’

## (Embedded V2-clause)

(41) a. Wer glaubt, Maria habe wen besucht?  
 who thinks Maria has.subj who.acc visited  
 ‘Who thinks Maria visited who?’

b. \*Wer glaubt, niemand habe wen besucht?  
 who thinks no one has.subj who.acc visited  
 Intended: ‘Who thinks no one visited who?’

In sum, I have reviewed some approaches to the intervention effect from the viewpoints of LF-movement, Separation Principle, focus, and antitopicality. At first, the intervention effect can serve as a diagnostic on LF-movement (Beck 1996; Beck and Kim 1997). Yet it fails to cover the distinction between feature movement and covert phrasal movement. Meanwhile, while the Separation Principle (Pesetsky 2000, see also Honcoop 1997) can account for the feature/covert-phrasal movement distinction, it cannot explain the quantifier/focus divide in Chinese and the embedding problem. Furthermore, both approaches fail to explain the focus intervention effect across languages. On the other hand, although Kim (2002a, 2005) and Beck (2006) can account for the focus intervention effect within the realm of alternative semantics, they cannot explain the cancelling effect observed by Tomioka (2007). In turn, Tomioka proposes an antitopicality approach which handles the cancelling effect nicely, but it is challenged by the D-linking issue raised by Miyagawa and Endo (2004). The following table presents a clear picture where three major phenomena, investigated in each approach, interact with the four approaches.

(42)

	LF-movement	Separation	Focus effect	Antitopicality
Quant/Foc divide	*	*	ok	*
<i>Wh</i> <sub>1</sub> - vs. non- <i>wh</i> <sub>1</sub> -in-situ	*	ok	*	*
Embedded context	*	*	*	ok

(\* = unaccountable; ok = accountable)

This does not mean that the above approaches are not on the right track. It may be the case that the domain to which they apply is too restricted. Or taking a different view, the term “intervention effect” itself may be too broad in meaning so that it is hard for us to categorize it in a uniform way. So far, readers may have found that there are some major splits in the distribution of the intervention effect: *wh*-arguments versus *wh*-adverbs, *wh*<sub>1</sub>-in-situ versus non-*wh*<sub>1</sub>-in-situ, focus versus quantifier interveners, embedded versus root clauses, and D-linking versus non-D-linking. In the following section, I show that the split between *wh*-arguments and *wh*-adverbs

on the one hand, and that between focus and quantifier interveners on the other, provide us a clear cut-point to reinvestigate the intervention effect and hence to help us sort out the puzzling distributional variations.

### 3 The weak/strong divide

Returning to the intervention paradigm in Chinese, one would easily find that it exhibits a clear weak/strong divide with respect to the intervention effect, which, in turn, provides us with a clear picture to sort out the puzzling distributions in general. More specifically, when the interveners are quantifiers, the intervention effect seems to be weak in the sense that only the *wh*-adverbs are sensitive to it as already shown in (10–11), whereas the *wh*-arguments are not, as shown in (9). On the other hand, when the interveners are associated with focus, the intervention effect turns out to be so strong that both the *wh*-arguments in (12) and the *wh*-adverbs in (43) are ruled out. The table in (44) illustrates what has been observed so far.

- (43) a. \*Shi Zhangsan weishenme/zenme cizhi?  
           be Zhangsan why<sup>adv</sup>/how<sup>adv</sup> resign  
           Lit. ‘Why/How was it such that it was Zhangsan who resigned?’  
       b. \*Zhiyou Zhangsan weishenme/zenme cizhi?  
           only Zhangsan why<sup>adv</sup>/how<sup>adv</sup> resign  
           ‘Why/How did only Zhangsan resign?’  
       c. \*Lian Zhangsan dou weishenme/zenme cizhi?  
           even Zhangsan all why<sup>adv</sup>/how<sup>adv</sup> resign  
           ‘Why/How did even John resign?’  
       d. \*Zhangsan ye weishenme/zenme cizhi?  
           Zhangsan also why<sup>adv</sup>/how<sup>adv</sup> resign  
           ‘Why/How did John also resign?’

(44)

	<i>Wh</i> -argument	<i>Wh</i> -adverb
Weak/Quantifier-induced intervention effect	ok	*
Strong/Focus-induced intervention effect	*	*

(\* = sensitive; ok = insensitive)

In the spirit of the non-movement analysis for in-situ *wh*-arguments (Aoun and Li 1993a; Tsai 1994; Cole and Hermon 1994; Reinhart 1998), the weak/quantifier-induced intervention effect is expected if we follow the suggestion that the *wh*-intervention effect should be a diagnostic on LF-movement (Beck 1996; Beck and Kim 1997) or feature movement (Pesetsky 2000). However, following the same vein, the strong/focus-induced intervention effect is unexpected because even the *wh*-arguments are ruled out. In fact, as is evident from the table in (42), there is no single approach that can handle the weak/strong contrast uniformly. Recall that the focus effect does not have a say on the weak/quantifier-induced intervention effect



for the *wh*-adverbs, and neither the separation approach nor the antitopicality approach distinguishes the weak/strong contrast for *wh*-arguments. Given this, it is natural to speculate that the weak/strong paradigm may be attributed to independent factors. That is, it cannot be handled in a uniform way.

A similar pattern can also be observed in Vietnamese. Bruening and Tran (2006) show that Vietnamese *wh*-questions employ two strategies to take their scopes: unselective binding in questions with a question particle as in (45a), and LF movement in questions without a question particle as in (45b).

(Adapted from Bruening and Tran 2006, without diacritics)

- (45) a. Tan mua gì the?  
 Tan buy what PRT  
 ‘What did Tan buy?’  
 b. Tan mua gì?  
 Tan buy what  
 ‘What does/will Tan buy?’

These two types of scope-taking strategies have a direct bearing on the intervention effects. In (46) the combination of a *wh*-expression *ai* ‘who’ and *cung* expresses universal quantification and can be interpreted as ‘everyone’. When it precedes a *wh*-object in (46b), the sentence is ruled out. When the question particle *thế* is added in (46c), the sentence turns out to be grammatical. Bruening and Tran propose that the *wh*-object in (46b) be subject to LF movement which is blocked by the subject intervener, whereas the *wh*-object in (46c) should be subject to unselective binding which is insensitive to the intervention effect.

(Bruening and Tran 2006)

- (46) a. Ai cũng thích bóng đá.  
 who CUNG like football  
 ‘Everyone likes football.’  
 b. \*Ai cũng thích cái gì?  
 who CUNG like what  
 ‘What does everyone like?’  
 c. Ai cũng thích cái gì thế ?  
 who CUNG like what PRT  
 ‘What did everyone like?’

Nonetheless, the following data show that with focus subjects intervention effects are always observed, no matter whether the question particle *thế* is present or not (Ta Hong Thuong, p.c.).

- (47) a. \*Chỉ (có) Tân thích gì (thế)?  
 only (have) Tân like what PRT  
 ‘What does only Tân like?’  
 b. \*Cả Tân cũng thích gì (thế)?  
 also Tân CUNG like what PRT

- ‘What does Tân, too, like?’
- c. \*Đến Tân cũng thích gì (thế)?  
 even Tân CUNG like what PRT  
 ‘What does even Tân like?’
- d. \*Là Tân đã ăn gì (thế)?  
 COP Tân ANT eat what PRT  
 ‘What x is such that it is Tân that ate x?’

Inspired by the strong/weak divide in Chinese, in what follows I would like to suggest that at least two types of intervention effects should be categorized in order to better account for the distributional variations (cf. Kim 2002b). The weak/quantifier-induced intervention effect should be regulated by a locality condition which employs feature movement (Pesetsky 2000) in the same vein of Rizzi’s (2004) Revised Relativized Minimality. Meanwhile, the strong/focus-induced intervention effect should be derived from the traditional notion “one-slot-per-Comp”. Though not new, this simple idea elegantly explains the embedding problem of the focus effects (Tomioaka 2007) and it fits nicely with the Miyagawa and Endo’s (2004) D-linking remedial effects. We will start from the weak intervention effect.

#### 4 Minimality (weak/quantifier-induced) effect

Recall that the weak intervention effect only rules out the *wh*-adverbs in Chinese. This is very much reminiscent of the LF-movement property of *wh*-adverbs. It is well known that Chinese *wh*-adverbs pattern with English ones in that they are all sensitive to island effects, whereas Chinese *wh*-arguments are not.

(*wh*-adverb)

- (48) a. \*Ta xihuan [<sub>CP</sub> [<sub>DP</sub> Zhangsan weishenme xie ] de shu]?  
 he like Zhangsan why<sup>adv</sup> write DE book  
 ‘Why does he like the book(s) that Zhangsan writes *t*?’
- b. \*Ta xihuan [<sub>CP</sub> [<sub>DP</sub> Zhangsan zenme dun ] de niurou]?  
 He like Zhangsan how<sup>adv</sup> stew DE beef  
 ‘How does he like the beef that Zhangsan stewed *t*?’

(*wh*-argument)

- (49) Ta xihuan [<sub>CP</sub> [<sub>DP</sub> shei xie ] de shu]?  
 he like who write DE book  
 ‘Who does he like the book(s) that *t* wrote?’

Given this, a natural speculation is that the weak intervention effect may also be attributed to LF-movement. The fact that A-not-A questions in Chinese also exhibit the intervention effect, as in (51), indicates that such a speculation is reasonable, because the A-not-A question has long been assumed to involve an LF-moving operator which is subject to island constraints, as shown in (52) (see Huang 1982).

(A-not-A question)

(50) Zhangsan qu-bu-qu Taipei?  
 Zhangsan go-not-go Taipei  
 ‘Will Zhangsan go to Taipei or not?’

(51) a. \*{Suoyouderen/Meigeren} dou qu-bu-qu Taipei?  
 all.people/everyone all go-not-go Taipei  
 ‘Will all people/everyone go to Taipei or not?’  
 b. \*{Meiyouren/Hensaoren} qu-bu-qu Taipei?  
 nobody/few.people go-not-go Taipei  
 ‘Will nobody/few people go to Taipei or not?’

(52) \*Ta xihuan [<sub>CP</sub> [<sub>DP</sub> Zhangsan xie-bu-xie ] de shu]?  
 he like Zhangsan write-not-write DE book  
 ‘Does he like the book(s) that Zhangsan writes or not?’

With this in mind, we may proceed to the discussion of the core spirit of the weak intervention effect, and I will suggest that it is the blocking of feature movement that is at work here.

#### 4.1 Feature intervention

As noted above, Beck (1996) and Beck and Kim’s (1997) LF-intervention effect is nice because it is able to account for the weak intervention effect in Mandarin Chinese if we assume with Tsai (1994), among many others, that Chinese *wh*-adverbs and A-not-A operators undergo LF-movement while the *wh*-arguments do not. However, the first problem we encounter is the contrast between the *wh*<sub>1</sub>-in-situ and the non-*wh*<sub>1</sub>-in-situ in English, as reviewed in Sect. 2. Pesetsky’s (2000) separation approach can be regarded as a refined version of Beck (1996) and Beck and Kim’s (1997) approach, and it explains the contrast in English nicely. But, still, it has to solve some other problems, for example, the canceling/weakening effect in embedded contexts. In what follows, Pesetsky’s (2000) observation on the distinction between feature movement and covert phrasal movement is maintained since his evidence from ACD licensing is quite convincing. Yet, his Separation Principle is not adopted as the triggering factor of intervention effects. Instead, a minimality account can handle things easily.

The minimality account runs as follows. As illustrated in (53), the dependency between X and Y is blocked by an intervening Z which bears the feature of the same kind as X and Y (cf. Starke 2001 and Rizzi 2004).

(53) \*[… X<sub>[α]</sub> … […Z<sub>[α]</sub> …[…Y<sub>[α]</sub> …]]]

In minimalist terms, the intervention effect occurs when feature movement of an interpretable feature  $[iF_1]$  of  $Y$  is blocked by an intervening  $Z$  bearing the same feature  $[iF_1]$ .

(54) Minimality Effect

$$*[[iF_1] X_{[iF_1]} \dots [Z_{[iF_1]}] \dots [\dots Y_{[\_, iF_2, iF_3]} \dots ]]$$

↑-----↓

Given this, the weak intervention effect in Chinese is a natural consequence. Recall that in Chinese only LF-moving *wh*-adverbs and A-not-A operators are subject to (weak) intervention effects. In minimalist terms, these *wh*-items are subject to feature movement where their Q-feature (or *wh*-feature) is probed by  $C$  and thus undergoes feature movement to  $C$  in order to check the uninterpretable feature  $[uQ]$ . It is during feature movement that an intervening SBE bearing a feature of the same type, i.e., operator feature  $[Op]$ , blocks such movement, as illustrated in (55a), hence the intervention effect. On the other hand, since no movement occurs with in-situ *wh*-arguments, no intervention effect is observed, as in (55b).

(55) a. (Chinese *wh*-adverb/A-not-A, feature movement)

$$*[[CP C_{[uQ]} [IP SBE_{[Op]} \dots \text{why/how/A-not-A}_{[iQ, \dots]}]]]$$

↑-----↓

b. (Chinese *wh*-argument, non-movement)

$$[[CP C_{[iQ]} [IP SBE_{[Op]} \dots \text{who}_x/\text{what}_x \dots ]]]$$

↑  
Q-Op<sub>x</sub>

Note that although Pesetsky's (2000) feature movement is the key to intervention effects, this study departs from his in that the minimality approach depends on the blocking of movement whereas Pesetsky's approach is subject to the Separation Principle. More specifically, the minimality approach rules out the sentence when movement of  $[iF_1]$  from  $Y$  to  $X$  is blocked by  $Z$  right on the spot along the movement path. It has little to do with the residue at  $Y$  after movement. On the contrary, in the separation approach the residue, i.e., the semantic restriction of a quantifier, at  $Y$  plays an important role because it cannot be separated from its quantifier by an SBE.

The difference between Pesetsky's approach and the minimality approach has a direct bearing on Chinese *wh*-arguments. That is, Pesetsky's approach would predict that they undergo covert phrasal movement to escape the separation effect, whereas

the minimality account allows them to remain in-situ at LF. More specifically, in an in-situ *wh*-construal like (55b), if the in-situ *wh* remains down there, it violates the Separation Principle. Since Chinese *wh*-arguments are not sensitive to (weak) intervention effects, the Separation Principle will require the covert phrasal movement of the whole *wh*-chunk (Soh 2005). On the other hand, the minimality approach addressed here does not endorse such a requirement because the Q-Op (or Q-feature) in Chinese can be directly merged to CP (Aoun and Li 1993a; Tsai 1994) and there is no movement involved in such a construal. I will show in detail that the prediction on the covert phrasal movement for Chinese *wh*-arguments is, in effect, not attested so that we will still stick to the non-movement mechanism (see Sect. 4.4). Before that, let's see how the minimality effect fares with the problems raised in previous sections.

#### 4.2 Feature movement versus covert phrasal movement

Rizzi (2006b) proposes an interesting account for the argument/adjunct asymmetry with respect to the *wh*-island effect shown in (56), where the angled bracket “<>” indicates the launching site of the *wh*-phrase (see also Rizzi 2006a). He suggests that the embedded ‘how’ in (56a) does not block the movement of ‘which problem’ because ‘how’ does not fully match the feature specification of ‘which problem’, as illustrated in (57a). On the other hand, (56b) is out because ‘which problem’ can fully match the feature specification of ‘how’, as illustrated in (57b). This means that when the moved element is a subset of the intervener with respect to feature specification, the movement is blocked.

- (56) a. Which problem did John wonder how to solve <which problem>?  
 b. \*How did John wonder which problem to solve <how>?
- (57) a. [CP Which problem Q+Top ... [CP how Q ...<which problem> ]]  
 b. \*[CP How Q ... [CP which problem Q+Top ...<how> ]]

Although the above observation is on overt *wh*-movement, we may abstract its spirit and have it applied to the contrast between feature movement and covert phrasal movement. I suggest that the Maximal Matching Filter is at work here (see also the Maximization Principle (Chomsky 2001) which requires the feature matching be maximized under Agree):

- (58) Maximal Matching Filter  
 Let X and Y be bundles of features in a sequence of [...X...Y...]; Y cannot cross X when Y is maximally matched by X.

For instance, in a sequence of feature bundles as in (59), moving [F<sub>1</sub>] across the feature bundle [F<sub>1</sub>, F<sub>2</sub>] is blocked in (59a) because [F<sub>1</sub>] is maximally matched by the feature bundle [F<sub>1</sub>, F<sub>2</sub>]. In (59b), the movement is fine because the feature bundle [F<sub>1</sub>, F<sub>2</sub>] is not maximally matched by [F<sub>1</sub>] (see also Starke 2001).



- b. Nani- $o_i$  daremo-ga  $t_i$  yon-da-no?  
 what-acc everyone-nom read-past-Q

#### 4.3 D-linking and *wh*-construal

As already noted, D-linking can cancel/weaken the intervention effect. How does the minimality effect approach fare with such a phenomenon? In the spirit of Pesetsky (1987), the D-linked *wh*-construal in Japanese/Korean type-languages may employ a base-generated Q-Op at CP which binds the in-situ *wh*-items, as sketched in (62) (see also Hirose 2003).

- (62) [<sub>CP</sub> Q-Op<sub>x</sub> [<sub>IP</sub> ... *wh*<sub>x</sub>... ]] (simplified version)

In this sense, it becomes transparent why D-linking can remedy the intervention effect in Japanese/Korean type-languages. That is, since the D-linked *wh*-items do not involve any movement across the intervener, no minimality is violated, hence no intervention effect.

Note that this structure is exactly what is proposed in Tsai (1994) for Chinese (non-D-linked) *wh*-arguments. In his work, Tsai (1994) does not distinguish D-linked *wh*-items from non-D-linked ones. To avoid confusion, we may slightly refine Tsai's (1994) model to accommodate the D-linkedness by the Split-CP hypothesis (Rizzi 1997, 2001, 2004). As illustrated in (63), I assume that in Chinese-type languages, the *wh*-argument has its Q-Op directly merge to the Focus head of FocP in the CP domain in order to check the relevant focus feature. Then, to derive the D-linkedness, it has to move up to the Topic head of TopP to check the topic feature (cf. Hirose 2003 and Boeckx and Grohmann 2004).

- (63) D-linked *wh*-construal in *wh*-in-situ languages (Japanese/Korean/Chinese)

$$[\text{TopP Q-Op}_x [\text{FocP } t [\text{IP} \dots \textit{wh}_x \dots ]]]$$

↑  
-----↓

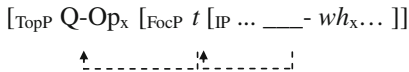
This refined version of D-linked *wh*-construal does not have any impact on the remedial effect for the weak intervention discussed above, while it distinguishes itself from the non-D-linked *wh*-argumental construal in Chinese in (64). Nevertheless, it has a direct impact on the strong/focus intervention effect. We will leave it for a moment and return to it in section 5.

- (64) Non-D-linked *wh*-construal in Chinese (base-generation of Q-Op)

$$[\text{TopP} [\text{FocP Q-Op}_x [\text{IP} \dots \textit{wh}_x \dots ]]]$$

One may find that the above mentioned D-linked *wh*-construal is hard to maintain in English. Recall that the *wh*-in-situ cases in English mentioned before are mainly D-linked, and we follow Pesetsky (2000) by assuming either feature movement (for *wh*<sub>1</sub>'s-in-situ) or covert phrasal movement (for non-*wh*<sub>1</sub>'s-in-situ). A base-generation approach for D-linked *wh*'s-in-situ would wrongly predict all of them to be immune from intervention effects, contrary to fact. Therefore, I would like to entertain the possibility of a parametric mechanism for English D-linked *wh*'s-in-situ. Specifically, as illustrated in (65) the *wh*<sub>1</sub>'s-in-situ still employ the feature movement mechanism where the Q-Op/-feature is encoded in the lexicon with the D-linked *wh*<sub>1</sub>-in-situ and then undergoes feature movement to the Focus head to check the relevant focus feature. It further moves to the Topic head to check the topic feature and derive the D-linkedness (cf. Hirose 2003; Boeckx and Grohmann 2004). It follows that the intervention effect still occurs when feature movement is blocked in the first cycle. This accounts for the ill-formed examples in (22a–c).<sup>10</sup>

(65) English D-linked *Wh*<sub>1</sub>-in-situ



As for the non-*wh*<sub>1</sub>'s-in-situ, they follow in the same vein, only they undergo covert phrasal movement so that whole *wh*-chunks are moved at LF, and such movement does not violate the minimality effect by the Maximal Matching Filter (58). This accounts for the wellformed examples in (27a–c).<sup>11</sup> In this sense, it is akin to the covert counterpart of the D-linked *wh*-item in Boeckx and Grohmann (2004).

In the meantime, the D-linked in-situ *wh*-construal of the Japanese/Korean type is perfectly in line with the cancelling/weakening effect of the embedded context if we follow Miyagawa (2004) and Miyagawa and Endo (2004). That is, in a D-linking context, the Q-Op of a *wh*-in-situ directly is merged to the matrix CP to check the relevant features (the focus feature and then the topic feature) so that there is no movement across the intervening quantifier phrase, hence no intervention effect. On the other hand, when a non-D-linking environment is forced, the non-D-linked *wh*-construal resorts to Q-Op/-feature movement as in (66) (Watanabe 1992; Tsai 1994). The intervention effect thus surfaces again.<sup>12</sup>

<sup>10</sup> For (22d), I show that it is independently ruled out by the competition effect, as discussed in Sect. 5.4.

<sup>11</sup> For (27d), I show that it can be independently regulated by the Spec-head difference, as discussed in Sect. 5.4.

<sup>12</sup> The *wh*-argument/-adverb asymmetry regarding island effects in Japanese/Korean has been well studied over the past decades. An influential view on this issue is to include the pied-piping of the whole NP-island to Spec,CP at LF (Nishigauchi 1986, 1990, 1999; Choe 1987; Watanabe 1992, 2003; Richards 2000, 2001). The feature movement approach can be incorporated into this view either by way of feature percolation, which turns the whole NP-island into a WhP (Nishigauchi 1990, 1999) or by the lack of other intervening heads encoding a similar sort of Q-/Wh-feature (Ginsburg 2006; Ginsburg and Fong 2007) or else by merging to the whole NP-island a Q-operator which subsequently moves to its scope position, CP (Tsai 1994).





Nonetheless, there are reasons not to take Soh's (2005) claim as conclusive. First, as Soh herself admits, ACD licensing is highly restricted in Chinese. For instance, the ACD examples above show that they can only occur with some dynamic modals together with the contrastive negation. They are ruled out if these modals are replaced with epistemic modals as in (69).

- (69) a. \*Ta yinggai zuo [na-yi-jian wo bu yinggai de shi]?  
 he should do which-Num-Cl I not should DE thing  
 'Which is the thing x such that he should do x and I shouldn't do x?'  
 b. \*Ta keneng zuo [na-yi-jian wo bu keneng de shi]?  
 he likely do which-Num-Cl I not likely DE thing  
 'What is the thing x such that he is likely to do x and I am not likely to do x?'

The verb is also restricted to the light verb *zuo* 'do'. For verbs other than *zuo* 'do', the verb has to be obligatorily present in the anaphoric clauses, as in (70).

- (70) a. Ta gan chi [mei-dao wo bu gan \*(chi) de cai].  
 he dare eat every-Cl I not dare eat DE dish  
 'He dares to eat every dish I don't dare to (eat).'  
 b. Ta gan chi [mei-dao wo bu gan \*(chi) de cai].  
 he dare eat every-Cl I not dare eat DE dish  
 'He dares to eat every dish I don't dare to (eat).'

Meanwhile, both modals (the one in the antecedent clause and the one in the anaphoric clause) in Soh's examples must be present in identical pairs. The examples turn out to be awkward if one modal is missing, as in (71), or is replaced with other modals, as in (72).

- (71) ??Ta zuo-guo [na-yi-jian wo bu neng/gan de shi]?  
 he do-Exp which-Num-Cl I not can/dare DE thing  
 'Which is the thing x such that he did x and I can't/dare not do x?'  
 (72) a. ??Ta gan zuo [na-yi-jian wo bu neng de shi]?  
 he dare do which-Num-Cl I not can DE thing  
 'Which is the thing x such that he dares to do x and I can't do x?'  
 b. ??Ta neng zuo [na-yi-jian wo bu gan de shi]?  
 he can do which-Num-Cl I not dare DE thing  
 'What is the thing x such that he can do x and I dare not do x?'

Lin and Tang (1995) suggest that modals in Chinese should be treated as verbs. Given this, the modal support in the Soh's case is more like "verb support", as in

(73), which has little to do with ACD. This explains why the modals in Soh's example have to be identical and neither of them can be deleted.<sup>13</sup>

- (73) Ta chi-guo [na-yi-dao wo mei chi-guo de cai]?  
 he eat-Exp which-Num-Cl I not eat-Exp DE dish  
 'Which is the dish x such that he ate x and I didn't ate x?'

Second, in Mandarin Chinese VP-ellipsis can be licensed by the copular *shi* 'be', as in (74). Yet, the fact that ACD cannot be licensed by the copular *shi* 'be', as in (75), suggests that the seeming ACD construction may only be apparent.

- (74) Zhangsan zuo-guo zhe-jian shi, Lisi ye shi.  
 Zhangsan do-Exp this-Cl thing Lisi also be  
 'Zhangsan did this before, and Lisi did, too.'

- (75) \*Ta zuo-guo [na-yi-jian wo ye shi de shi]?  
 he do-Exp which-Num-Cl I also be DE thing  
 'Which is the thing x such that he did x and I did x too?'

Third, Cheng and Rooryck (2002), due to Nissenbaum (2000), show with evidence from anaphoric binding that Chinese *wh*-arguments do not undergo covert phrasal movement. As (76) shows, covert phrasal movement feeds condition A. The whole in-situ *wh*-phrase 'which picture of himself' in (76a) must undergo covert phrasal movement to the matrix clause so that the reflexive 'himself' can be co-indexed with the matrix subject 'who' without violating binding condition A.

- (76) a. Who<sub>i</sub> thinks Mary was looking at which picture of himself<sub>i</sub>?  
 b. Which boy thinks Mary<sub>j</sub> wants him to buy which picture of herself<sub>j</sub>?

Turning to Chinese, Cheng and Rooryck (2002) show that under the same pattern, the reflexive in the embedded clause cannot be co-indexed with the matrix subject in (77). This suggests that the covert phrasal movement does not apply to Chinese.

<sup>13</sup> Still, modal support here does not behave exactly the same as verbs do. For example, in (i) the verbs need not be identical, as a reviewer points out.

- (i) Ta chi-guo [na-yi-dao ta hen you xingqu zuo de cai]?  
 he ate-Exp. which-one-dish he very have interest do DE dish  
 'Which is the dish x such that he ate x and he was not interested in making x?'

This is absolutely true as the example above suggests itself. In fact, though Lin and Tang (1995) suggest that modals in Chinese should be treated as verbs, it does not mean they share identical behaviors. For example, whereas verbs can be attached with aspectual markers, modals cannot; whereas verbs can stand alone in out-of-the-blue context, modals cannot. Therefore, the "verb support" addressed here suggests that whether or not Chinese does allow ACD constructions which heavily rely on modal support is inconclusive and therefore cannot be used as direct evidence of covert phrasal movement in Chinese.

(Cheng and Rooryck 2002)

- (77) Hufeij yiwei Huangrong<sub>i</sub> na-le na-yi-zhang taziji<sub>i/\*j</sub> de zhaopian  
 Hufeij Think Huangrong take-Perf. which-one-CL himself DE picture  
 ‘Which picture of herself/\*himself did Hufeij think that Huangrong took?’

Fourth, Wu (1999, pp. 16–17) shows that in conjunctive *wh*-construals, the in-situ *wh*-argument in (78) behaves differently from the overtly fronted one in (79). Only the overtly fronted *wh*-argument has the across-the-board interpretation. This suggests that no movement is involved with the in-situ *wh*-arguments.<sup>14</sup>

(In-situ *wh*-arguments)

- (78) Zhangsan xihuan shenme, Lisi bu xihuan shenme?  
 Zhangsan like what Lisi not like what  
 a. #‘What does Zhangsan like but Lisi does not like?’  
 b. ‘What does Zhangsan like and what does Lisi not like?’

(Overtly fronted *wh*-arguments)

- (79) Shenme Zhangsan xihuan  $e_i$ , Lisi bu xihuan  $e_i$ ?  
 what Zhangsan like Lisi not like  
 a. ‘What does Zhangsan like but Lisi does not like?’  
 b. #‘What does Zhangsan like and what does Lisi not like?’

If the above reasons are plausible, covert phrasal movement is less preferable for Chinese *wh*-arguments. Then, following Pesetsky’s Separation Principle, we cannot explain why Chinese *wh*-arguments do not exhibit the intervention effect. On the other hand, the minimality effect approach explored in this study is simply a condition on (feature) movement. If we assume with Tsai (1994), among many others, that Chinese *wh*-arguments employ unselective binding schema, which does not involve any movement at all, their lack of intervention effects is easily accounted for.

In sum, from the distributions of intervention effects across languages, we have come up with the following conclusion: In weak/quantifier-induced intervention contexts, what underlies the intervention effect is feature movement. I showed that the reason why feature movement leads to the intervention effect is not because of the Separation Principle, but the feature intervention (the minimality effect) as sketched in (54). On the other hand, the lack of intervention effects for covert phrasal movement cases in English are due to an independent constraint, the Maximal Matching Filter, which is perfectly in line with the minimality effect addressed here. Meanwhile, the cancelling/weakening effect can also be explained by the minimality effect, assuming a parametric version of in-situ D-linked *wh*-construals.

<sup>14</sup> Wu (1999, pp. 17–18) further observes that Chinese in-situ *wh*-arguments do not license parasitic gaps, which is supposedly licensed by A’-movement. He regards this as another piece evidence to show that no movement is involved with Chinese in-situ *wh*-arguments. However, I am not sure whether covert movement, instead of overt movement, can license the parasitic gap, so I will not add this test to the evidence against the covert movement approach.

The minimality effect approach mainly concerns the movement path. In what follows I will deal with the strong/focus-induced intervention effect and show that it results from a factor concerning the landing/merging site and can be better captured by the competition effect.

## 5 Competition (strong/focus-induced) effect

To recapitulate, strong/focus intervention refers to a construction where an in-situ *wh*-element is ruled out by a preceding focus element. Such an effect is so strong that even Chinese *wh*-arguments are ruled out. Yet, as demonstrated above, its distribution still varies and none of the previous approaches can explain it satisfactorily. In what follows I show that the variation can be better captured by the competition effect, which is derived from the traditional notion “one-slot-per-Comp”.

### 5.1 One-slot-per-Comp

In this study, I assume with Kim (2005) and Beck (2006) that the focus intervention effect results from focus conflict. Nonetheless, while Kim (2005) and Beck (2006) attribute the effect to the checking/licensing condition of in-situ *wh*-items, I attribute the effect to the competition between a focus operator and an in-situ *wh*-item for a single slot. Specifically, I assume with them that the focus element introduces a focus operator. I depart from them by the following two assumptions:

- (80) a. The focus operator, F-Op, is merged to the head of CP (to be refined later in (96)).  
 b. The focus intervention effect occurs when the Q-operator, Q-Op, of a *wh*-expression and the F-Op compete for the same slot, namely, the head of CP.

The gist of this framework is that whether in-situ *wh*-construals involve Q-Op movement as in Japanese/Korean (Watanabe 1992, cf. Tsai 1994) or non-movement as in Chinese (Cheng 1991; Aoun and Li 1993a; Tsai 1994; Cole and Hermon 1994; Reinhart 1998, among others), they are all subject to the competition effect. More specifically, for Chinese I assume that the *wh*-argument should employ the non-movement mechanism where a Q-Op is base-generated at C-head and binds the in-situ *wh*-argument (recall that the phrasal movement is not applicable in Chinese). It follows that this Q-Op will compete with the F-Op, introduced by the focused subject, for the same slot, C-head, and the derivation thus crashes, as illustrated in (81).

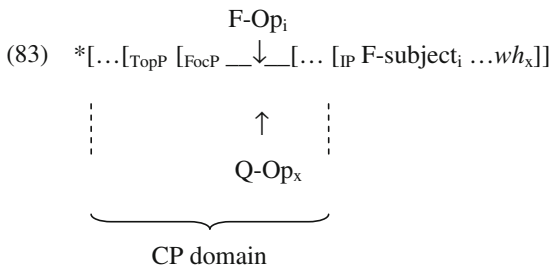
(Chinese type, base-generated Q-Op)

$$(81) \quad \begin{array}{c} \text{F-Op}_i \\ *_{[CP \ \underline{\quad} \downarrow \underline{\quad} \ [IP \ \text{F-subject}_i \ \dots \text{wh}_x]] \ \dots} \\ \uparrow \\ \text{Q-Op}_x \end{array}$$

Given a SplitCP (Rizzi 1997, 2001, 2004), where different elements target their designated projections as in (82), the F-Op can sit in the projection labeled FocP (presumably the Foc-head) in the left periphery of CP. Meanwhile, given that *wh*-expressions typically involve focus (see, for example, Hamblin 1973; Karttunen 1977 for question interpretation and Rooth 1985, 1992 for focus interpretation), it is natural to have the Q-Op of an in-situ *wh*-argument merged into FocP as well. Consequently, the competition effect occurs in the FocP, reflecting the focus effect as addressed in Kim (2002, 2005) and Beck (2006).

(82) Force Top\* Int Top\* Focus Mod\* Top\* Fin [ IP ... ]

Therefore, an elaborated version has the following structure, where the competition occurs in FocP, which is part of the CP domain (see also (64) and (66)):



The overt realization of the incompatibility between a focus phrase and a *wh*-item in Italian in (84–85) (see Rizzi 1997, 2001) lends further support to the competition effect elaborated in this section. Rizzi (1997, 2001) shows that the *wh*-items in matrix sentences “cannot cooccur with a focus, in either order”:

- (84) a. \*A chi QUESTO hanno ditto (non qualcos’altro)?  
 ‘To whom THIS they said (not something else)?  
 b. \*QUESTO a chi hanno ditto (non qualcos’altro)?  
 ‘THIS to whom they said (not something else)?
- (85) a. \*A GIANNI che cosa hanno detto (non a Piero)?  
 ‘TO GIANNI what they said (not to Piero)?  
 b. \*Che cosa A GIANNI hanno ditto (non a Piero)?  
 ‘What TO GIANNI they have said (not to Piero)?

Rizzi suggests that these sentences are ill-formed owing to the competition between a *wh*-item and a focused constituent for the same position, FocusP. This

provides a piece of overt evidence for the competition effect addressed in this study, only that such an “overt” competition differs from the “covert” one here in that the former involves full-fledged XPs targeting the Spec of FocusP whereas the latter only involves “covert” operators targeting the head of FocusP (or CP as a cover term).

Evidence from Cantonese sentence-final particles, SFPs, suggests that the head-competition approach is promising. In Cantonese, focus can be expressed by three Sentence-Final particles (SFPs): *laa3* ‘emphatic inchoative’, *zaa3* ‘only’ and *tim1* ‘also/even’. They are generally treated as heads and they sport a syntactic hierarchy as *laa3* >> *zaa3* >> *tim1* (Mou 2008; cf. Law 2002; Tang 1998). Interestingly, with these SFPs only the second one, *zaa3*, is subject to the intervention effect as in (86):

(Law 2002)

- (86) a.      bingo faan zo lai laa3?  
               who return ASP come SFP  
               ‘Who has come back?’
- b.      ??/\*nei sik zo matje zaa3?  
               you eat ASP what SFP
- c.      nei sik zo matje tim1?  
               you eat ASP what SFP  
               ‘What else did you eat?’

With previous approaches, it is hard to imagine how (86) would fall out. Nonetheless, it becomes transparent with the competition effect approach. That is, given the competition effect explored above, the SFP *zaa3* may well take the Focus head of the CP domain while *laa3* takes a higher head, e.g., that of EmphP, and *tim1* a lower head, the Focus head of TP domain. It follows that only *zaa3* exhibits the intervention/competition effect.<sup>15</sup>

Turning to Japanese/Korean, I follow Watanabe (1992) that their in-situ *wh*-construals involve Q-Op/-feature movement to CP. The Q-Op/-feature then competes with the F-Op introduced by the focused subject and the derivation crashes as sketched in (87).

<sup>15</sup> This paper is mainly concerned with three types of in-situ *wh*-construal, i.e., those that undergo covert phrasal movement, or feature movement, or no movement at all. The first type is XP movement (or categorial movement) which targets the Spec position since it involves maximal projections. The second type presumably targets the head position since it is not phrasal movement. The third type involves a base-generated Q-Op which is also merged to a head position. The restriction for the landing/merging site of these *wh*-elements depends on which type of movement the in-situ *wh*-construal involves. The XP movement relies on the number of Spec positions of a projection that a language allows (see Richards 2001 for such a view). The latter two types target the head position which is strictly limited to one slot, hence the competition elaborated in this study.

(Japanese/Korean, moved Q-Op)

- (87) F-Op<sub>i</sub>  
 \*<sub>[CP</sub> ↓ <sub>[IP</sub> F-subject<sub>i</sub> ... \_\_\_\_ - wh<sub>x</sub>]]  
 ↑  
 Q-Op<sub>x</sub>

The above demonstration shows that whether *wh*-in-situ construals employ the non-movement mechanism as in Chinese or the movement mechanism as in Japanese/Korean, they are all subject to the competition effect. This explains why the focus intervention effect enjoys a stable distribution across languages.

## 5.2 The root-embedded contrast

In Japanese/Korean the strong/focus intervention effect is also weakened in embedded contexts, as the contrast between (88) and (89) illustrates (data from Tomioka 2007).

- (88) a. ?\*John-sika nani-o yom-ana-katta-no. (Japanese)  
 John-except what-acc read-neg-past-Q  
 ‘What did no one but John read?’  
 b. ?\*Amuto mues-ul ilkci-anh-ass-ni. (Korean)  
 anyone what-acc read-neg-past-Q  
 ‘What did no one read?’
- (89) a. (? )Kimi-wa [<sub>CP</sub> John-sika nani-o yom-ana-katta-to] omotteiru-no  
 (Japanese)  
 you-top John-except what-acc read-neg-past-comp think-Q  
 ‘What do you think that no one read?’  
 b. (? )Ne-nun [<sub>CP</sub> amuto mues-ul ilkci-anh-ass-ta-ko] sayngkakha-ni  
 (Korean)  
 you-top anyone what-acc read-neg-past-dec-comp think-Q  
 ‘What do you think that no one read?’

Although Miyagawa and Endo (2004) suggest that it is D-linking that is at work here, Tomioka (2006) points out that in root clause “the intervention effect is still felt” even in D-linking contexts. In the following sub-sections, I show that this can be explained by the competition approach with the parametric D-linking *wh*-construal in (62–63).

### 5.2.1 The embedded context

Miyagawa and Endo (2004) observe that the cancelling/weakening effect of the embedded context is in fact the D-linking effect. Given this, with the D-linking mechanism in (62–63), it is easy to perceive that the intervention effect can be



weakened in (89), since in embedded contexts the F-Op takes the embedded Comp (or to be precise, Foc-head of FocP in the CP domain) while the Q-Op of a D-linked *wh*-phrase is merged to the matrix Comp to take matrix scope as illustrated in (90).

- (90) The embedded context  
 [<sub>CP</sub> Q-Op<sub>j</sub> [<sub>IP</sub> ... [<sub>CP</sub> F-Op<sub>i</sub> [<sub>IP</sub> F-subject<sub>i</sub> ... *wh*-object<sub>j</sub>]]]

Note that what is presented here predicts that in Chinese no matter whether D-linking is involved or not, the embedded context can still weaken the focus intervention effect because Chinese non-D-linked *wh*-arguments also employ the unselective binding mechanism (Cheng 1991; Aoun and Li 1993a; Tsai 1994). Such a prediction is attested in (91). The intervention effect is weakened without presupposing a salient discourse domain for the *wh*-items to refer to.<sup>16</sup>

- (91) Dui-le,  
 By the way,  
 a. ?ni renwei [shi Zhangsan chi-le shenme]?  
 you think be Zhangsan eat-Asp what  
 Lit. 'What was x such that you think it was Zhangsan who ate x?'  
 b. ?ni renwei [zhiyou Zhangsan chi-le shenme]?  
 you think only Zhangsan eat-Asp what  
 'What do you think only Zhangsan ate?'  
 c. ?ni renwei [lian Zhangsan dou chi-le shenme]?  
 you think even Zhangsan all eat-Asp what  
 'What do you think even John ate?'  
 d. ?ni renwei [Zhangsan ye chi-le shenme]?  
 You think Zhangsan also eat-Asp what  
 'What do you think John also ate?'

<sup>16</sup> These sentences are still not perfect. Some of my informants think they are awkward. Yet, they all agree there is a contrast between the root clauses in (12) and the embedded ones here. In fact, with proper context these sentences become more natural, as in (i) (note that the *wh*-elements are still non-D-linked). It seems that what leads to the awkwardness is the incompleteness of the sentences. That is, these sentences are not completed. Once they are completed, they become more natural.

- (i) Dui-le,  
 By the way,  
 a. (?ni renwei [shi Zhangsan chi-le shenme] (cai hui duzi tong)?  
 you think be Zhangsan eat-Asp what then will belly hurt  
 Lit. 'What was x such that you think it was Zhangsan who ate x  
 (so that he had loose bowel)?'  
 b. (?ni renwei [zhiyou Zhangsan chi-le shenme (cai hui you huoli)]?)  
 you think only Zhangsan eat-Asp what then will have energy  
 'What do you think only Zhangsan eat (so that he can have energy)?'

An anonymous reviewer points out that the competition approach should in principle rule out the indirect questions in (92) whose grammaticality, however, is hard to confirm.

- (92) a. (\*)Wo xiang zhidao [shi Zhangsan chi-le shenme].  
 I want know be Zhangsan eat-Asp what  
 ‘I wonder what was x such that it was Zhangsan who ate x.’
- b. (\*)Wo xiang zhidao [zhiyou Zhangsan chi-le shenme].  
 I want know only Zhangsan eat-Asp what  
 ‘I wonder what only Zhangsan ate.’
- c. (\*)Wo xiang zhidao [lian Zhangsan dou chi-le shenme].  
 I want know even Zhangsan all eat-Asp what  
 ‘I wonder what even John ate.’
- d. (\*)Wo xiang zhidao [Zhangsan ye chi-le shenme]  
 I want know Zhangsan also eat-Asp what  
 ‘I wonder what John also ate.’

There may be at least two independent factors which blur judgments here. First, the interrogative predicate *xiang zhidao* ‘want know’ in Chinese is usually considered not quite equivalent to its English counterpart *wonder*. The former is composed of two independent predicates *xiang* ‘want’ and *zhidao* ‘know’ whereas the latter is a one-word predicate in itself. In this regard, speakers/hearers of Chinese may interpret *xiang zhidao* ‘want know’ as *xiang (yao) zhidao* ‘want to know’ whose interrogativity is contributed by the second predicate *zhidao* ‘know’. Given this, it is possible to interpret the *wh*-item in the above examples as taking matrix scope, just like as when taking a clausal complement with an embedded *wh*-phrase, the predicate *zhidao* ‘know’ itself may allow either embedded scope or matrix scope for the *wh*-phrase. It follows that no competition would occur in (92), if these sentences are judged acceptable by some speakers. Second, even if we want to treat *xiang zhidao* ‘want know’ as English *wonder*, the matrix scope reading for the *wh*-items above might still be pragmatically derived from context. For instance, after hearing speaker A utter a sentence like ‘I wonder who won the race,’ or ‘I wonder what time it is,’ speaker B may reply with “John” or “4:55” because s/he interprets speaker A’s utterances as soliciting an answer, which contributes to the grammaticality in (92). To avoid such confusion, one may try another interrogative predicate *wen* ‘ask’, as in (93), where a third person matrix subject *Lisi* together with a past time frame *zuotian* ‘yesterday’ are also added to help filter out pragmatic factors. The sentences turn out to be much degraded, as predicted by our analysis.

- (93) a. ??Lisi zuotian wen [shi Zhangsan chi-le shenme].  
 Lisi yesterday ask be Zhangsan eat-Asp what  
 ‘Lisi yesterday asked what was x such that it was Zhangsan who ate x.’
- b. ??Lisi zuotian wen [zhiyou Zhangsan chi-le shenme].  
 Lisi yesterday ask only Zhangsan eat-Asp what  
 ‘Lisi yesterday asked what only Zhangsan ate.’
- c. ??Lisi zuotian wen [lian Zhangsan dou chi-le shenme].  
 Lisi yesterday ask even Zhagnsan all eat-Asp what  
 ‘Lisi yesterday asked what even John ate.’

- d. ??Lisi zuotian wen [Zhangsan ye chi-le shenme].  
 Lisi yesterday ask Zhangsan also eat-Asp what  
 ‘Lisi yesterday asked what John also ate.’

### 5.2.2 The root clause

It is important to note that in root clauses the D-linking context cannot weaken the strong/focus intervention effect (Tomioka 2006), as in (94–95). This is in contrast to the weak/quantifier-induced intervention context where D-linking does cancel/weaken the intervention effect in root clauses (cf. (14)).

Japanese (Hiroki Narita, p.c.)

- (94) a. ?\*John-sika dare-o kiratteinai no?  
 John-except who-ACC hate.not Q  
 ‘Who does nobody except John hate?’  
 b. ?\*Jack-to Henry-to Mike-no uti,  
 Jack-and Henry-and Mike-and among  
 John-sika dare-o kiratteinai no?  
 John-except who-ACC hate.not Q  
 ‘Among Jack, Henry, and Mike, who does nobody except John hate?’
- (95) a. ?\*Daremo dare-o kiratteinai no?  
 any who-ACC hate.not Q  
 ‘Who does nobody hate?’  
 b. ?\*Jack-to Henry-to Mike-no uti,  
 Jack-and Henry-and Mike-and among  
 Daremo dare-o kiratteinai no?  
 Any who-ACC hate.not Q  
 ‘Among Jack, Henry, and Mike, who does nobody hate?’

The proposed D-linking *wh*-construal in previous sections (see (62–63)) can account for this easily since the base-generated Q-Op still competes with the F-Op for the same slot within CP (or Focus head).

Meanwhile, given (62–63) a natural consequence is that Chinese D-linked *wh*-arguments are without exception. The examples in (12) are still awkward even if a salient set of referents is presupposed in the discourse. This falls out nicely from the competition effect because Chinese D-linked *wh*-arguments employ the same construal as Japanese/Korean. Even with the refined version of D-linked *wh*-construal with the SplitCP hypothesis as in (63), it is still in line with the competition effect occurring at the Foc-head. That is, the F-Op is merged to the Foc-head of FocP and this position is also the designated position for the Q-Op/-feature of in-situ *wh*-items to merge to in the first place before it further moves up to TopP. The derivation hence crashes.

### 5.3 Non-subject interveners

As already shown in (29), in Chinese when the focus elements serve as VP adverbials, the focus effect is gone. Under the competition effect approach, this phenomenon can be accounted for with a slightly modified version of (80a). That is, the Focus projection need not be fixed in the left periphery of CP. It can also be projected in the left periphery of the  $\nu$ P domain (Belletti 1999, 2001, 2004). Since both CP and  $\nu$ P are phases in Minimalist terms (Chomsky 2000, 2001), the modified version adopts the notion of phase in (96).

- (96) The F-Op is merged to the closest phase edge c-commanding the focus element.

In this sense, when the focus adverbial modifies a VP and takes it as its scope domain, the F-Op can be merged to the edge of  $\nu$ P. The lack of intervention effects thus follows since the Q-Op of a *wh*-argument is merged to CP.

One may wonder, as a reviewer points out, if other non-subject focus phrases can trigger any effect. Though a bit complicated, the following paradigm makes use of the double object construction (DOC) in Chinese and the result shows that either the direct object (DO) or the indirect object (IO) can trigger the intervention effects.<sup>17</sup> The test is conducted under the object fronting construction since in Chinese the object, when attached by a focus modifier, must sit in the preverbal position as in (97), otherwise the sentence is totally out as in (98).

- (97) a. Ta shi shu<sub>i</sub> song-le Zhangsan *t<sub>i</sub>*.  
He SHI book give-Perf. Zhangsan  
'It was the book that he gave Zhangsan.'
- b. Ta lian shu dou song-le Zhangsan *t<sub>i</sub>*.  
he even book all give-Perf. Zhangsan  
'He gave Zhangsan even the book.'
- c. Ta zhiyou shu<sub>i</sub> song-le Zhangsan *t<sub>i</sub>*.  
he only book give-Perf. Zhangsan  
'He gave Zhangsan only the book.'
- (98) a. \*Ta song-le Zhangsan shi shu.  
he give-Perf. Zhangsan SHI book  
'It was the book that he gave Zhangsan.'
- b. \*Ta song-le Zhangsan lian shu.  
he give-Perf. Zhangsan even book  
'He gave Zhangsan even the book.'
- c. \*Ta song-le Zhangsan zhiyou shu.  
he give-Perf. Zhangsan only book  
'He gave Zhangsan only the book.'

<sup>17</sup> I thank one anonymous reviewer for bringing up this issue, which not only makes the distribution more complete but also sharpens the analysis in this study.

With (97) as the test ground, when the IO is replaced with a *wh*-phrase in (99), the sentence turns out to be ungrammatical.

[DO intervener]

- (99) a. \*Ta shi shu song-le shei?  
 he SHI book give-Perf. whom  
 ‘Who was the x such that it was the book that he gave x?’
- b. \*Ta lian shu dou song-le shei?  
 he even book all give-Perf. whom  
 ‘Who was the x such that he gave x even the book.’
- c. \*Ta zhiyou shu song-le shei.  
 he only book give-Perf. whom  
 ‘Who was the x such that he gave x only the book.’

On the other hand, the IO case is more complicated since the fronted IO *Zhangsan* (personal name) in (100b) cannot get the intended object reading due to its idiosyncratic property. Instead, it is reinterpreted as the subject whereas the original subject is reinterpreted as a topicalized phrase roughly as in ‘Him, Zhangsan gave (him) a box of books’. Nonetheless, when attached by a focus modifier, the fronted IO can somehow maintain its object reading in (101b,c), though for reasons unknown the fronted IO with the cleft focus marker *shi* in (101a) cannot. Please note that all the IO’s in (101) can be reinterpreted as the subjects while the original subjects can be reversely interpreted as the topicalized IO’s. Since this is not our concern here, we will skip this reading and only concentrate on the intended reading, i.e., the fronted IO with the object reading.

- (100) a. Ta song-le Zhangsan yi-xiang shu.  
 he giv-Perf. Zhangsan one-box book  
 ‘He gave Zhangsan a box of books.’
- b. \*Ta Zhangsan<sub>i</sub> song-le  $t_i$  yi-xiang shu.  
 he Zhangsan give-Perf. one-box book  
 Intended: ‘He gave Zhangsan a box of books.’
- (101) a. \*Ta shi Zhangsan<sub>i</sub> song-le  $t_i$  yi-xiang shu.  
 he SHI Zhangsan give-Perf. one-box book  
 Intended: ‘He gave Zhangsan a box of books.’
- b. Ta lian Zhangsan<sub>i</sub> dou song-le  $t_i$  yi-xiang shu.  
 he even Zhangsan all give-Perf. one-box book  
 Intended: ‘He gave even Zhangsan a box of books.’
- c. Ta zhiyou Zhangsan<sub>i</sub> song-le  $t_i$  yi-xiang shu.  
 he only Zhangsan give-Perf. one-box book  
 Intended: ‘He gave only Zhangsan a box of books.’

Now, since (101b,c) are fine, we may proceed the intervention test. Once again, when the DO is replaced with a *wh*-phrase, these two sentences turn out to be ungrammatical.

- (102) a. \*Ta lian Zhangsan<sub>i</sub> dou song-le t<sub>i</sub> shenme?  
 he even Zhangsan all give-Perf. what  
 'What was the x such that he gave even Zhangsan x?'  
 b. \*Ta zhiyou Zhangsan<sub>i</sub> song-le t<sub>i</sub> shenme?  
 he only Zhangsan give-Perf. what  
 'What was the x such that he gave only Zhangsan x?'

Such a paradigm still falls within the competition effect. In Chinese because the landing site for the fronted object has been suggested to be somewhere beyond vP in the IP domain (Zhang 1997; Shyu 2001; Paul 2005; cf. Ernst and Wang 1995), the F-Op introduced by the fronted focus objects in the above cases can then target CP, the next higher phase edge by (96). It follows that the competition occurs at the edge of the CP phase which both the F-Op and the Q-Op competed for.<sup>18</sup>

<sup>18</sup> A reviewer provides further examples relevant to our discussion. S/he suggests that the paper predicts (i) and (ii) to be equally good whereas (i) seems to be worse than (ii). It also predicts (iii) should be acceptable whereas (iv) should not, but the contrast is hard to confirm.

- (i) \*ta zai nali shi zuo henduo shi?  
 he at where be do much work  
 'Which place (x), he at (x) did much work?'  
 (ii) ?ta shi zai nali Zuo shenme?  
 he be At there do what  
 'What(x), he did x there?'  
 (iii) \*Zhangsan shi shu song le gei shei?  
 Zhangsan SHI book give Asp to whom  
 (iv) \*Shi Zhangsan shu song le gei shei?  
 SHI Zhangsan book give Asp to whom

Let's start with (iii–iv). I am of the opinion that they are equally bad; this can be explained by the revised account (96). That is, the F-Op introduced by either the focus subject or the fronted focus object is merged to CP by (96), whereas the same position is competed for by the Q-Op of the wh-phrase (see the reasoning in Sect. 5.3). As for (i–ii), I agree with the reviewer that (i) is worse than (ii). Yet, this may be owing to independent factors. Let me start with (ii) which can be attributed to the light verb property of *zai* 'at'. In Chinese, some preposition-like heads, e.g., *yong* 'use/with', *zai* 'locate/at', are categorized as light verbs (or coverbs). (See, for example, Lin 2001). If that is the case, the reason why (ii) is better is because the light verb *zai* 'at' can be located within vP so that the F-Op can sit at the edge of vP by (96), hence no competition occurs. Turning to (i), I admit that it is complicated and takes some time to judge. One reason for that may be due to the various interpretations of the predicate focus adverbial *shi*. *Shi*, as the following example shows, can have at least four targets. It can focus on the constituent within a predicate (v.a-c), or it can focus on the truth value of the proposition (v.d) (see, for example, Lee 2005).

- (v) Zhangsan shi mai-le yi ben shu.  
 Zhangsan SHI buy-Asp one CL book  
 a. 'Zhangsan BOUGHT a book (not sold a book).'  
 b. 'Zhangsan bought a BOOK (not a magazine).'  
 c. 'Zhangsan bought ONE book (not two books)'  
 d. 'It is true that Zhangsan bought a book.'

An immediate question arises when it comes to the non-subject intervener in Japanese as in (103) (Kensuke Takita, p.c.), which seems to be a counterexample to the competition effect. In (103) the focus IO intervener need not take the same scope as the *wh*-element, but the sentence is still ungrammatical. More specifically, the F-Op introduced by the indirect object *Hanako* may take the lower FocP (vP phase edge) while the Q-Op of the *wh*-object *nani* ‘what’ takes the higher FocP (CP phase edge). (Recall that this is how we deal with the focus adverbial cases in Chinese.) A similar observation is provided in Tomioka (2007):

- (103) \*Taroo-ga Hanako-ni-sika nani-o age-na-katta-no? (Japanese)  
 Taroo-nom Hanako-dat-only what-acc give-neg-past-Q  
 ‘What did Taroo give to only Hanako?’
- (104) a. ???Ken-wa dare-ni-mo nani-o mise-naka-tta-no (Japanese)  
 Ken-top who-dat-mo what-acc show-neg-past-Q  
 ‘What didn’t Ken show to anyone?’  
 b. ???Ken-wa Erika-ni-sika nani-o mise-naka-tta-no (Japanese)  
 Ken-top Erika-dat-except what-acc show-neg-past-Q  
 ‘What didn’t Ken show to anyone but Erika?’  
 c. ???Chelsu-ka amu-eke-to mues-ul cuci-anh-ass-ni (Korean)  
 Chelsu-nom anyone-dat what-acc give-neg-past-Q  
 ‘What didn’t Chelsu gave to anyone?’

Tomioka notices that this is unexpected on his approach since the interveners are not subjects. He then attributes this issue to the peculiarity of the NPI’s. That is, these NPI’s somehow either fail to be in the ground portion of a sentence or violate the phrasing preference constraint (see Tomioka 2007 for details).

For us, although these cases cannot be accounted by the competition effect, they can in effect be ruled out by the minimality effect. Specifically, the F-Op introduced

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Footnote 18 continued

The proposition reading (v.d) is not what we want since it conflicts with the denotation of a *wh*-question. That is, a speaker cannot question into a proposition which he himself commits to be true. Therefore, to facilitate the judgment, we have to get rid of the proposition reading. For reasons yet unknown, the reviewer’s example (i) denotes a strong interpretation focusing on the truth value of the proposition, which blurs the judgment. If we change the predicate as the following example, the sentence is improved as in (vi.a) (focusing on the constituent reading, not the proposition reading). This can also be applied to other focus markers as in (vi.b–c).

- (vi) a. ?ta zai nali shi mai-le yi ben shu?  
 he at where SHI buy-Asp one CL book  
 ‘Which place (x), he at (x) bought a book?’  
 b. ?ta zai nali zhi mai-le yi ben shu?  
 he at where only buy-Asp one CL book  
 ‘Which place (x), he at (x) only bought a book?’  
 c. ?ta zai nali shenzhi (hai) mai-le yi ben shu?  
 he at where even (still) buy-Asp one CL book  
 ‘Which place (x), he at (x) even bought a book?’

by the non-subject intervener can block the feature movement of the *wh*-phrase, leading to ungrammaticality. This, once again, justifies our claim that we should categorize at least two types of intervention effects to regulate the distributional variations.<sup>19</sup>

#### 5.4 The Spec-head difference

The competition approach also has a direct bearing on the cancelling effect of *wh*-scrambling. It is well known that overt *wh*-scrambling can cancel the intervention effect. The focus-induced intervention effect is of no exception.

- (105) a. ?\*John-sika dare-o kiratteinai no?  
           John-except who-ACC hate.not Q  
           ‘Who does nobody except John hate?’  
       b. Dare-o<sub>i</sub> John-sika t<sub>i</sub> kiratteinai no?  
           who-ACC John-except hate.not Q

The key to the cancelling effect lies in the different merging/landing sites of the scrambled *wh*-phrase and the F-Op target. The former involves XP (or categorical) movement which targets the Spec position, while the latter presumably merges the F-Op to the head position, hence the cancelling effect. The restriction for the landing/merging site of these elements depends on which type of movement they involve. The XP movement relies on the number of Spec positions in a projection that a language allows (see Richards 2001 for such a view). The merging of F-Op targets the head position which is strictly limited to one slot. The head-competition approach is also evidenced by the Cantonese examples in (86) which employ overt

<sup>19</sup> For now, I don't have a clear solution to account for it with the competition effect. I would like, however, to provide a tentative way out. Observe the licensing of the NPI subject first in (i). The subject NPI is situated out of the c-commanding domain of its licenser, the negative marker, which in principle should not be able to license the subject NPI.

- (i) a. John-sika Mary-o sikara-nakat-ta. (Japanese)  
           -only -Acc scold-Neg-Past  
           ‘Only John scolded Mary.’  
       b. Daremo Mary-o mi-nakat-ta. (Japanese)  
           anybody -Acc see-not-pas  
           ‘Anybody did not see Mary.’  
       c. Amuto Mary-lul ani mennessta. (Korean)  
           Anybody -Acc not met  
           ‘Anybody did not meet Mary.’

We may tentatively assume that the negative feature in such a construction is percolated high enough to license the NPI subject. Suppose further that this percolated feature together with the NPI forms a Negative Concord (cf. Watanabe 2004) which in turn introduces a F-Op into the FocusP of the CP domain, the next higher phase edge by (96); then it follows that the competition effect occurs in (103–104). I leave this issue open for further research.



sentence-final particles traditionally analyzed as heads merged to the Focus head (or C-head as a cover term).<sup>20</sup>

The Spec-head difference also has a covert version, as can be observed in the positional contrast in (32) in English. Assuming with Pesetsky (2000) where ‘which girl’ in (32a), being a *wh*<sub>1</sub>-in-situ, undergoes feature movement while ‘which boy’ in (32b), being a non-*wh*<sub>1</sub>-in-situ, undergoes covert phrasal movement, the feature movement of ‘which girl’ in (32a) targets the head of CP (or FocP), while the F-Op competes for the same slot. It follows that the competition effect occurs and the sentence is ruled out. On the other hand, in (32b) covert phrasal movement of ‘which boy’ has the whole *wh*-chunk target the Spec of CP (or FocP) while the F-Op targets the head of CP (or FocP). Since they take difference slots, no competition occurs.

## 6 Concluding remarks

In this study I showed that categorizing two types of intervention effects in tandem with parametric *wh*-construals helps sort out the puzzling variations in intervention effects both across and within languages. Each type should be modeled with independent triggering factors. The idea is inspired by the clear weak/strong divide observed in Chinese which cannot be handled in a uniform way. I proposed that the first type, i.e., the minimality effect, should be triggered during the movement path, while the second type, i.e., the competition effect, should be triggered at the landing/merging site. Specifically, for the former, I showed that feature movement of Y to X is blocked by an intervener Z which bears the same type of feature as Y, in the same vein of Rizzi’s (2004) Revised Relativized Minimality. As for the competition effect, it derives from the traditional notion of “one-slot-per-Comp”; it occurs when the F-Op introduced by a focus element and the Q-Op introduced by an in-situ *wh*-element compete for the same slot, the head of CP (or FocP). Though not new, this simple idea elegantly explains both the embedding problem of the focus effect and the D-linking problem of the pragmatic effect.

Investigation of the two types of intervention effects also sheds light on the internal structure of in-situ *wh*-construals. This study confirms that there are at least

<sup>20</sup> The *wh*-phrase does not have to occur in clause-initial position for intervention effects to be cancelled, as a reviewer points out:

- (i) Ken-wa nani-o<sub>i</sub> Hanako-ni-sika t<sub>i</sub> age-na-katta-no?  
 Ken-Top what-Acc Hanako-Dat-only give-Neg-Past-Q  
 ‘What did Ken give to only Hanako?’

Two alternatives may account for the above example. One alternative would assume with Belletti (1999, 2001, 2004) the existence of articulated functional projections in the left periphery of *v*P. The F-Op of the indirect object *Hanako* ‘personal name’ would then be merged to the FocP in the left periphery of *v*P whereas the scrambled *wh*-phrase *nani* ‘what’ would undergo feature movement to CP, hence no competition occurs. The other alternative would assume the *wh*-phrase *nani* is directly scrambled to CP. Once again, no competition is observed since the F-Op sits in the periphery of *v*P while the *wh*-phrase sits in CP. Due to space limitations, I leave this issue open for further research. I thank the reviewer for providing the Japanese data to bring about further discussion.

three scope-taking mechanisms employed by in-situ *wh*-construals, i.e., unselective binding, feature movement, and covert phrasal movement (see also Cheng and Rooryck 2002). The first is not sensitive to the weak/quantifier-induced intervention effect but is sensitive to the strong/focus induced intervention effect. The second is sensitive to both effects. And the third is sensitive to neither effect. This is illustrated below:

(106)

	Unselective binding	Feature movement	Covert phrasal movement
Weak/Quantifier-induced intervention effect	ok	*	ok
Strong/Focus- induced intervention effect	*	*	ok

(\* = sensitive; ok = insensitive)

I hope this study contributes to the general picture of intervention effects on the one hand, and that, on the other hand, it brings us a step closer to understanding typological differences between these languages.

One issue remains. Although the competition approach has a broader coverage in dealing with the strong/focus induced intervention effect, it is still pending why the embedded context cannot fully remedy it (see the examples in (89) with one question mark). It may be the case that either the focus effect or the pragmatic effect still has an impact there, just as both the ECP and the Subjacency were taken into account when we dealt with the *wh*-argument/-adjunct interaction in the 1980s. I leave the matter open for further research.

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