Generalized focus intervention
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1 Introduction This study develops Li and Law's (2013) approach to focus intervention effects (FIEs), arguing that it makes desirable predictions regarding FIEs in alternative questions, sentences with indefinites, and contrastive topic constructions. Differing from previous analyses of FIEs, which unselectively ban *wh*-phrases in the scope of a focus operator (Beck 2006, Cable 2010, Mayr 2013), Li and Law (2013) take into consideration the grammaticality contrast between FIEs (1a) and focus association with *wh*-phrases (FWHA) (1b) in *wh*-in-situ languages (Mandarin examples are used for illustration).

(1) a. ?*Ta   zhi   rang   [Lee]$_F$ jian   shei?
　　　he   only   allow   Lee   meet   who
　　　'Who is the person x such that he allows *only Lee* to meet x?'
　　b. Ta   zhi   rang   shei jian   Lee?
　　　he   only   allow   who meet   Lee
　　　'Who is the person x such that he allows *only x* to meet Lee?'

Based on the contrast between FIEs and FWHA, they proposed that FIEs arise iff a focus operator scopes over a constituent that provides a set of sets as the quantificational domain for the focus operator.

2 Deriving FIEs The LF structure of (1a) is (2) (the English gloss is used throughout for simplicity). Following the flexible functional application (FFA) (Hagstrom 1998), *who* is composed in a pointwise manner. As a result, the ordinary value of VP1 is a set of properties (3a). The secondary value of VP1 is (3b), in which the assignment function h is activated to interpret [Lee]$_{F1}$ as a distinguished variable (Kratzer 1991). Therefore, the focus value of VP1 is (3c), which is a set of sets of properties.

(2) [$_{CP}$ [$_{IP}$ he [$_{VP2}$ only [$_{VP1}$ allow [Lee]$_{F1}$ meet who]]]]

(3) a. $\llbracket VP1 \rrbracket^g = \{\lambda y.\ y$ allows Lee to meet $x \mid x \in \{$John, Peter, …$\}\ \}$
　　b. $\llbracket VP1 \rrbracket^{g,h} = \{\lambda y.\ y$ allows $h(1)$ to meet $x \mid x \in \{$John, Peter, …$\}\}$
　　c. $\llbracket VP1 \rrbracket^f = \{\{\lambda y.\ y$ allows $h(1)$ to meet $x \mid x \in \{$John, Peter, …$\}\} \mid h \in H\}$

According to Kratzer (1991), the focus value of a given constituent provides the quantificational domain for a focus operator. In (2), *only* takes $\llbracket VP1 \rrbracket^f$ as its quantificational domain. At the level of the ordinary value, the composition of *only* with VP1 is facilitated by the FFA, which results in a new set (4).

(4) $\llbracket VP2 \rrbracket^g = \llbracket only\ VP1 \rrbracket^g$
　　$= \{\lambda y.\ \forall P \in \llbracket VP1 \rrbracket^f [P(y) \rightarrow P(y) = y$ allows x to meet Lee$] \mid x \in \{$John, Peter, …$\}\}$
　　$= \left\{ \begin{array}{l} \lambda y. \forall P \lambda \llbracket VP1 \rrbracket^f [P(y) \rightarrow P(y) = y \text{ allows John to meet Lee}], \\ \lambda y. \forall P \lambda \llbracket VP1 \rrbracket^f [P(y) \rightarrow P(y) = y \text{ allows Peter to meet Lee}], … \end{array} \right\}$

Note that the quantificational domain of *only* is inappropriate. In (4), *only* should quantify over properties, but *its quantificational domain is a set of sets of properties*. The composition is illicit, giving rise to FIEs.

3 Deriving FWHA The LF structure of (1b) is (5). Since no focused phrase is contained in the scope of *only*, the secondary value of VP1 is equivalent to its ordinary value, i.e., a set of properties (6).

(5) [$_{CP}$ [$_{IP}$ he [$_{VP2}$ only [$_{VP1}$ allow who meet Lee]]]]

(6) $\llbracket VP1 \rrbracket^g = \llbracket VP1 \rrbracket^{g,h} = \{\lambda y.\ y$ allows x to meet Lee $\mid x \in \{$John, Peter, …$\}\}$

Although h is not used to compute VP1, $\llbracket VP1 \rrbracket^{g,h}$ still denotes a set of alternatives by virtue of containing *who*. *Only* can directly take $\llbracket VP1 \rrbracket^{g,h}$ as its quantificational domain. At the level of the ordinary value, *only* is applied to each member of the set in (6), resulting in a new set (7).

(7) $\llbracket VP2 \rrbracket^g = \llbracket only\ VP1 \rrbracket^g$
　　$= \{\lambda y. \forall P \in \llbracket VP1 \rrbracket^{g,h} [P(y) \rightarrow P(y) = y$ allows x to meet Lee$] \mid x \in \{$John, Peter, …$\}\}$

$$= \begin{Bmatrix} \lambda y.\forall P \in \llbracket VP1 \rrbracket^{g,h}[P(y) \rightarrow P(y) = y \text{ allows John to meet Lee}], \\ \lambda y.\forall P \in \llbracket VP1 \rrbracket^{g,h}[P(y) \rightarrow P(y) = y \text{ allows Peter to meet Lee}], \dots \end{Bmatrix}$$

The quantificational domain of *only* is a set of properties; hence, the composition is licit.

4 Alternative questions The contrast between FIEs and FWHA can also be observed in alternative questions in English. (8a) shows that FIEs arise when both a focus and a disjunctive phrase fall in the scope of *only*; (8b) shows that FIEs does not arise when only the disjunctive phrase is in the scope of *only*.

(8) a.   *Did only [John]$_F$ drink [$_{DisjP}$ TEA or COFFEE]?   (Alt-Q)
    b.   Did John only drink [$_{DisjP}$ TEA or COFFEE]?   (Alt-Q)

If we take a disjunctive phrase to denote what a *wh*-phrase denotes, i.e., a Hamblin set, as suggested by von Stechow (1991) and Biezma and Rawlins (2012) (see also Beck and Kim 2006), the contrast between (8a) and (8b) follows straightforwardly from the analysis of FIEs and FWHA in the previous sections.

5 Indefinites We have observed that an indefinite in an intensional context fails to have a *de re* reading when it is in the scope of a focus-sensitive operator being associated with a focused phrase. As a consequence, the indefinite in (9a) fails to license the cross-sentential anaphora. (9b) shows that the *de re* reading of the indefinite is possible when *only* is not present.

(9) a.   Only [John]$_F$ wanted to watch *a movie*. #It's Titanic.
    b.   John wanted to watch *a movie*. It's Titanic.

We propose that the lack of the *de re* reading is due to FIEs. Inspired by Kratzer and Shimoyama (2002), we adopt Hamblin semantics to analyze indefinites. Specifically, *a movie* has the denotation in (10). The LF of (9a) is (11).

(10) $\llbracket a\ movie \rrbracket^g = \{x \text{ is a movie } \& x \in D_{<e>}\}$

(11) [$_{IP3}$ ∃   Only [$_{IP2}$ [John]$_{F1}$ wanted   [$_{IP1}$ to watch a movie]]

In order to get a *de re* reading, the expansion of the set denoted by the indefinite must be closed by an existential closure in IP3. Therefore, the ordinary value of IP2 denotes a set of propositions via set expansion (12a). Correspondingly, the secondary and focus values of IP2 are (12b) and (12c) respectively. Following the composition shown in section 2, FIEs arise when *only* takes $\llbracket IP2 \rrbracket^f$ as its quantificational domain.

(12) a. $\llbracket IP2 \rrbracket^g = \{[John]_{F1} \text{ wanted to watch } x \mid x \text{ is a movie } \& x \in D_{<e>}\}$
     b. $\llbracket IP2 \rrbracket^{g,h} = \{h(1) \text{ wanted to watch } x \mid x \text{ is a movie } \& x \in D_{<e>}\}$
     c. $\llbracket IP2 \rrbracket^f = \{\{h(1) \text{ wanted to watch } x \mid x \text{ is a movie } \& x \in D_{<e>}\} \mid h \in H\}$

6 Contrastive topic (CT) The current analysis also predicts that FIEs could appear in a CT constructions in Mandarin. Constant (2010, 2011) argues that the focus value of a CT construction denotes a set of sets. In (13a), for example, the second clause denotes a set of sets of propositions as its focus value, as in (13b).

(13) a.   Mama meitian hen   wan cai hui   jia, [$_S$ [Baba]$_{CT}$ ne, gancui jiu [bu   hui   jia]$_F$].
          mother everyday very late just return home father   NE simply just not return home
          'Every day, mom comes home very late, and Dad does not even come home at all.'
     b. $\llbracket S \rrbracket^f = \begin{Bmatrix} \{\text{Mom comes home late, Mom does not come home, \dots}\} \\ \{\text{Dad comes home late, Dad does not come home, \dots}\} \end{Bmatrix}$

Suppose that a focus operator scopes over the CT construction, it should take the set of sets in (13b) as its domain and trigger FIEs. (14) shows that this is indeed an illicit composition.

(14) *Zhiyou [$_S$ [baba]   ne, gancui jiu [bu   hui   jia]$_F$]
      only   father   NE simply just not   return home
      'Only Dad NE, does not even come back at all.'

5 Conclusion This paper has shed new light on the empirical domain of FIEs. Given that *wh*-questions, alternative questions and sentences with indefinites have all been argued to involve Hamblin sets, the fact that they are all sensitive to FIEs is unsurprising. This in turn provides strong motivation for adopting Hamblin's semantics as a general framework for analyzing FIEs.