Focus intervention effects

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1 Introduction Focus intervention effects (FIEs) refer to the phenomenon that interrogative wh-phrases cannot be preceded by focus elements. FIEs have been attested in numerous languages, including German (Beck 1996), English (Pesetsky 2000), Korean (Kim 2002), Japanese (Tomioka 2007), and Mandarin (Yang 2012). Many interesting semantic proposals have been developed to explicate FIEs. Examples include the neo-Hamblin semantics of questions (Beck 2006, Beck & Kim 2006, Cable 2010), the information structure approach (Tomioka 2007, Eilam 2010) and the presupposition mismatch approach (Mayr to appear). However, these studies have ignored a more fine-grained contrast in (1): namely that FIEs arise if the c-command domain of a focus particle contains a focused phrase as well as a wh-phrase, as in (1a), but not if the c-command domain of a focus particle only contains a wh-phrase, as in (1b) (see also Eilam 2010, Xie 2008, Yang 2012).

(1) a. *[Q … focus particle […] [XP]f1 … wh-phrase]]
   b. [Q… focus particle […] wh-phrase]]

Based on this contrast, we propose the following formal condition of FIEs.

(2) FIEs arise iff a focus particle composes with a semantic object of type α whose focus value denotes a set of sets of α.

2 Data FIEs are attested when a focus particle c-commands not only a focused phrase but also a wh-phrase, as evidenced by (3) (all examples in this abstract come from Mandarin, but see Kim 2002, Beck 2006, Tomioka 2007, Yang 2012, a.o., for similar patterns in other languages).

(3) *Libai zhi zai [qiuji] qu nali?
Libai only in fall go where
‘What is the place x such that Libai goes to x only in fall?’

However, when the focus particle only c-commands the wh-phrase, FIEs do not arise, as in (4).

(4)Libai zhi zai shenme jijie qu Beijing?
Libai only in what season go Beijing
‘What is the season x such that Libai goes to Beijing only in x?’

The stark contrast between (3) and (4) provides the empirical basis for (1). We shall show how (1) is intimately related to the formal condition of FIEs in (2).

3 Proposal Adopting Hamblin’s (1973) semantics, we assume that a wh-phrase only has an ordinary value, i.e. a set of alternatives, and no focus value. Based on this assumption, we analyze FWHA and FIEs as follows:

(I) FWHA The LF structure of (4) is (5) (the English gloss is used for simplicity). Since we do not assume that the wh-phrase has a focus value, Rooth’s (1992) ~ operator is not used. The composition proceeds as in (6). The wh-phrase and the VP qu Beijing ‘go Beijing’ are also found in other languages, such as English (Aoun & Li 1993) and German (Slade 2011, from Mayr to appear).

(5) [CP [IP Libai [VP2 only (C) [VP1 in what season go Beijing]]]]

(6) a. [what season]α = {x | x is a season}
   b. [VP1]α = {λy. y goes to Beijing in x | x is a season}
   = {λy. y goes to Beijing in fall, λy. y goes to Beijing in winter, …}

Also, FFA allows only (zhì) to apply to each member of (6b), forming another set (7). Here, the (boxed) domain of quantification of only, i.e. the contextual variable C, is identical to the set of properties denoted by VP1 (see Roberts 1996/1998, Marti 2001).

(7) only (C) (VP1)α
   = {only (C) (λy. y goes to Beijing in fall), only (C) (λy. y goes to Beijing in winter), …}

Finally, the subject Libai is applied, forming a set of propositions, which is equivalent to the interpretation of (4).

(II) FIEs In (3), since there is a focused phrase, the sentence must be interpreted at two levels, namely
the ordinary and the focus semantic levels, and the ~ operator must be used for focus interpretation. Hence, the LF structure of (3) would be (8). Building on Kratzer (1991), we can compositionally interpret (3) in the steps in (9).

(8) \[
[CP [if Libai [VP3 only (C) [VP2 ~C [VP1 in [fall]F1 go where]]]]]
\]

(9) a. \[
[VP1]^g = \{\lambda y. y \text{ goes to } x \text{ in fall} \mid x \text{ is a place}\}
\]

b. \[
[VP1]^p = \{\lambda y. y \text{ goes to } x \text{ in } h(1) \mid x \text{ is a place}\}
\]

c. \[
[VP1]^f = \{\lambda y. y \text{ goes to } x \text{ in } z \mid x \text{ is a place} \mid z \in D_c\}
\]
d. \[
[VP2]^g = [VP2]^p = [VP2]^f \text{ if } C \subseteq [VP1]^f
\]

At the level of the focus semantic evaluation, the set of alternatives contributed by the focused phrase induces a set of sets of properties, as in (9c) (see also Eckardt 2007). The ~ operator resets the focus value to the ordinary value, if the contextual variable C is the subset of the focus value of VP1. Since the focus value is a set of sets of properties, \textbf{C is a set of sets of properties}. VP3 adds the contribution of only (zhì). Along the lines of FFA, only is applied to each member of the set denoted by the ordinary value of VP1, resulting in the set in (10).

(10) \[
\{\lambda y. \forall P \subseteq C \exists P(y) = 1 \rightarrow P(y) = y \text{ goes to Beijing in fall},
\lambda y. \forall P \subseteq C \exists P(y) = 1 \rightarrow P(y) = y \text{ goes to Hong Kong in fall}, \ldots\}
\text{wh-phrase in the scope of the focus particles, as in (13). Following Wold’s (1996)
selective binding analysis, we briefly derive the values of } C_1 \text{ and } C_2 \text{ as in (14-a-b).}

\begin{align*}
\text{(11) Libai zhi} & \quad [vp \text{ song } shenme shu gei shei] ?
\text{ Libai only send what book to who}
\text{ ‘What was the pair } <x, z> \text{ such that Libai only sent } x \text{ to } z?’
\end{align*}

Note that the domain of quantification C is inappropriate. In (10), what only quantifies are properties, but its domain of quantification is a set of sets of properties. The composition is illicit. As a result, (3) is uninterpretable, giving rise to FIEs.

\textbf{4 Prediction 1} According to (1) and (2), we predict that FIEs do not arise when a focus particle c-commands multiple wh-phrases, as evidenced by the grammaticality of (11).

(11) Libai zhi [vp song shenme shu gei shei] ?
Libai only send what book to who
‘What was the pair <x, z> such that Libai only sent x to z?’

Our account views (11) as a subcase of FWHA. Since the two wh-phrases denote sets of properties on the ordinary semantic level, the two sets interact with each other. According to FFA, the interaction of the two sets at one level yields a set rather than a set of sets, resulting in the single-pair interpretation (see Hågstrom 1998, Eckardt 2007). Hence, the denotation of the VP is (12), i.e. a set of properties.

(12) \[
[VP]^g = \{\lambda y. y \text{ sent } x \text{ to } z \mid x \in \{\text{what book}\}^g, z \in \{\text{who}\}^g\}
\]

Since the VP does not denote a set of sets of properties, FIEs do not arise when the focus particle \textit{only} is applied to this VP.

\textbf{5 Prediction 2} In a sentence with multiple focus particles, we can observe grammatical overlapping focal dependencies (Križka 1991, Rooth 1996, Wold 1996; cf. Beck 2006, Beck & Vasishth 2009), as long as there is no wh-phrase in the scope of the focus particles, as in (13). Following Wold’s (1996) selective binding analysis, we briefly derive the values of C1 and C2 as in (14a-b).

(13) Ta hai\textsc{z}zi (C2) [VP2 ~C2 zhi\textsc{h}i (C1) [VP1 ~C1 song [xiaoshuo]F1 gei [Libai]F2]].
he also only send novel to Libai
‘Libai was another person that he only sent novels to.’

(14) a. \[
C_1 \subseteq [VP1]^g = \{\lambda y. y \text{ sent } x \text{ to Libai} \mid x \in D_c\};
\]

b. \[
C_2 \subseteq [VP2]^g = \{\lambda y. \forall P \subseteq C_1 \exists P(y) = 1 \rightarrow P(y) = y \text{ sent novels to } z \mid z \in D_c\}
\]

Note that the well-formedness of (13) is predicted by our proposal, but not by previous studies of FIEs that rely on the unselective binding nature of the ~ operator (e.g. Beck 2006). In addition, we correctly predict that (1) and (2) become relevant if any one of the focused phrases in (13) is replaced by a wh-phrase, as in (15). Based on our proposal, the value of C2 is derived as in (16b), which is a set of sets of properties. Therefore, when \textit{also} is applied to VP2, FIEs arise.

(15) *Ta hai\textsc{z}zi (C2) [-C1 [VP2 zhi\textsc{h}i (C1) [VP1 song [shenme]F1 gei [Libai]F2]]? he also only send what to Libai
‘What is x such that Wangwei is another person that he only sent x to?’

(16) a. \[
C_1 = [VP1]^g = \{\lambda y. y \text{ sent } x \text{ to Libai} \mid x \text{ is a thing}\};
\]

b. \[
C_2 \subseteq [VP2]^g = \{\lambda y. \forall P \subseteq C_1 \exists P(y) = 1 \rightarrow P(y) = y \text{ sent } x \text{ to } z \mid x \text{ is a thing} \mid z \in D_c\}
\]

\textbf{6 Conclusion} With the help of the formal condition of FIEs, we have successfully set FIEs (1a) apart from FWHA (1b) and multiple focal dependencies. To the extent that this alternative analysis of FIEs is on the right track, we have motivated to return to Hamblin’s (1973) original formulation of wh-questions.