

Who triggers focus intervention effects?

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1 Introduction This paper concerns focus intervention effects (FIEs) in Chinese. Specifically, when *wh*-words are preceded by focus particles and their focused associates, *wh*-questions become ungrammatical (1) (focus particles are boldfaced and their focused associates are underlined throughout).

- (1) *_{[CP Q-Op [IP1 **zhiyou** [IP2 ~Op [IP3 Libai mai shenme]]]]?}
only Libai buy what

Intended ‘What did only Libai buy?’

Based on Rooth (1992), Beck (2006) argues that FIEs are induced by the focus interpretation operator ~ (~Op). In (1), the focus particle is associated with the focused constituent via ~Op, which adjoins to IP3 and intervenes between the question operator (Q-Op) and the *wh*-word. According to Beck, Q-Op cannot skip ~Op to evaluate the *wh*-word, so the *wh*-question is uninterpretable. Beck’s account has inspired many recent studies, for example, Beck & Kim (2006), Kim (2006), Eckardt (2006), Tomioka (2012).

In this study, we examine FIEs in Chinese and show that Beck’s analysis cannot explain association between focus particles and *wh*-words (FWHA). We propose that the trigger of FIEs is not ~Op, but a focus particle which is not associated with a *wh*-word. Then, we develop an alternative semantic analysis for both FWHA and FIEs.

2 FWHA It is well known that focus particles must be associated with focused constituents in their c-command domain. In Chinese, according to Aoun & Li (1993), focus particles can be associated with not only focused constituents but also *wh*-words (2a-b).

- (2) a. [Q-Op [**zhiyou** [~Op [shei lai le]]]]? b. [Q-Op [Libai [**zhi** [~Op [mai shenme]]]]?
only who come SFP Libai only buy what

‘Who is x such that only x come.’

‘What is x such that Libai only buys x?’

FWHA is a counterexample for Beck’s (2006) analysis. According to her, the Q-Ops in (2a-b) cannot skip ~Ops to evaluate the *wh*-words. Therefore the *wh*-questions should be ruled out by FIEs, contrary to fact.

In addition, Beck assumes that *wh*-words have focus values (F-value), i.e. sets of alternatives, but lacks ordinary values (O-value). The F-value of *wh*-words cannot be interpreted by ~Op, because the latter must use both the O-value and the F-value. Therefore, it is predicted that focus particles cannot associate with the *wh*-words via ~Op. However, this prediction is falsified by FWHA in Chinese.

3 FIEs FIEs appear when focus particles are associated with focused constituents rather than with *wh*-words in their c-command domains, as in (3a-b).

- (3) a. *Libai **zhi** zai na ci bisai zhong de-le shenme jiang?
Libai only at that Cl game in obtain-Asp what prize
Intended ‘What prize did Libai obtain only in that game?’
b. *Libai **zhiyou** zai tushuguan cai neng kan shenme shu?
Libai only at library just can read what book
Intended ‘What can Libai read only in library?’

The stark contrast between (2) and (3) points to a descriptive generalization—focus particles which intervene between *wh*-words and the Q-Op induce FIEs only when they are not associated with the *wh*-words.

4 Semantic account Adopting Hamblin’s (1973) study, we assume that a *wh*-word denotes a set of individuals, and we follow Eckardt (2006) in treating the denotation of the set as the O-value, rather than the F-value, of *wh*-words. Based on these assumptions, we analyze FWHA and FIEs as follows:

(I) **FWHA** The *wh*-word *shenme* ‘what’ in (2b) denotes a set of non-human individuals (4a). The *wh*-word and the verb *mai* ‘buy’ are composed in a pointwise manner (Rooth 1996, Kratzer & Shimoyama 2002), and form a set of properties (4b). Also in the pointwise manner, the focus particle *zhi* ‘only’ is applied to each member of (4b), forming another set (4c).

- (4) a. $[[shenme \text{ ‘what’}]]^O = \{\text{books, vegetables ...}\}$
 b. $[[mai \text{ shenme ‘buy what’}]]^O = \{y \text{ buys books, } y \text{ buys vegetables ...}\}$
 c. $[[zhi \text{ mai shenme ‘only buy what’}]]^O = \{\text{only}(y \text{ buys books}), \text{only}(y \text{ buys vegetables})..\}$

In (4c), *zhi* is associated with each member of the set (4b) and its semantics is computed as follows: for “**only**(y buys books)”, the individual property “y buys books” provides the O-value for “only”, while the whole set in (4b) provides the F-value for “only”. In this way, (4c) can be represented as (5). Finally, the subject *Libai* in (2b) is applied, forming a set of propositions, which is equivalent to the semantics of (2b).

- (5) $\left\{ \begin{array}{l} \lambda y. \forall p \in \{y \text{ buys books, } y \text{ buys vegetables ...}\} \ \& \ p = 1 \rightarrow p = y \text{ buys books} \\ \lambda y. \forall p \in \{y \text{ buys books, } y \text{ buys vegetables ...}\} \ \& \ p = 1 \rightarrow p = y \text{ buys vegetables ...} \end{array} \right\}$

(II) **FIEs** As shown in (6), the O-value of IP3 in (1) is a set of propositions through expansion of the set denoted by the *wh*-word. Suppose (7a) represents the F-value of the focused constituent *Libai*. Then, (7b) represents the F-value of IP3, which is a set of sets of propositions.

- (6) $[[IP3]]^O = \{\text{Libai buys books, Libai buys vegetables ...}\}$

- (7) a. $[[Libai]]^F = \{\text{Libai, Wangwei ...}\}$

- b. $[[IP3]]^F = \left\{ \begin{array}{l} \{\text{Libai buys books, Libai buys vegetables ...}\}, \\ \{\text{Wangwei buys books, Wangwei buys vegetables ...}\}, \dots \end{array} \right\}$

Since the focus particle *zhiyou* ‘only’ is associated with *Libai* rather than the *wh*-word, it must take (6) and (7b) as arguments, yielding (8).

- (8) $\forall p \in [[IP3]]^F \ \& \ p = 1 \rightarrow p = [[IP3]]^O$

Here, “ $p = [[IP3]]^O$ ” indicates that “p” does not denote a single proposition (see (6)), incongruent with “ $p = 1$ ”. Therefore, (8) is uninterpretable.

5 Stressed focus In my account, FIEs are due to the failure of the application of focus particles, but not directly related to $\sim Op$. It predicts that $\sim Op$ alone does not trigger FIEs. The prediction is verified by the fact that FIEs do not occur when *wh*-words are preceded by stressed foci without focus particles, as exemplified by (9B) in the dialog (9).

- (9) A: Wo zhidao Libai jian-guo shei. B: Na WANGWEI jian-guo shei?
 I know Libai see-Asp who then Wangwei see-Asp who
 ‘I know who Libai saw.’ ‘Then, who did WANGWEI see?’

According to Kadmon (2001) and Eckardt (2006), the F-value of the *wh*-question in (9B) is a set of questions (10a), and its O-value is (10b). Now, $\sim Op$ is applied to interpret the focus feature of the stressed focus. According to Rooth (1992), $\sim Op$ introduces to the logical form of (9B) a set C (10c) defined in the context, and it requires the set be a subset of the F-value of (9B) and contain the O-value of (9B). Obviously, the requirement is satisfied.

- (10) a. $[[(9B)]]^F = \{\text{who did Wangwei see, who did Libai see, ...}\}$
 b. $[[(9B)]]^O = \{\text{who did Wangwei see}\}$
 c. $C = \{\text{who did Wangwei see, who did Libai see}\}$

6 Summary Empirically, this study shows that FWHA is possible in natural languages. This has the effect of calling into question the lines of research initiated by Beck (2006) which predict that FWHA is impossible. We further argue that the culprit of FIEs is not $\sim Op$, but a focus particle which intervenes between a *wh*-word and Q-Op without undergoing FWHA. Theoretically, we offer an alternative semantic formulation of FIEs which captures this generalization.

Selected references Aoun, J. and A. Li. 1993a. *Wh*-elements in situ: Syntax or LF? *Linguistic Inquiry* 24.

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