Focus Intervention in Declaratives

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Early research into focus intervention effects, created by a certain class of operators preceding a *wh*-phrase in a *wh*-question or the disjunction of an alternative question, was dominated by syntactic (Pesetsky 2000) and semantic analyses (Beck 2006). However, recent evidence suggests that the phenomenon is information structural in nature (Tomioka 2007, Eilam 2010), reflecting failure to map a sentence onto a well-formed information structural representation. This paper provides new data involving the same operators in declaratives, which strongly supports an information structural explanation and has significant implications for theories of focus, as well as for questions regarding the place of information structure in the grammar.

Keywords: pragmatics, semantics, information structure, prosody, focus, intervention effects

1. Introduction

Although much current work in generative linguistics recognizes the significance of information structure (IS), questions regarding its precise representation and role in the grammar tend to be "swept under the rug", in the words of Chomsky (1995). In this paper I endeavor to address these sorts of questions, by tackling a specific phenomenon in which IS plays a crucial part, namely, focus intervention effects.

The phenomenon of focus intervention is illustrated in the *wh*-questions in (1) and (2), where a certain type of operator preceding the *wh*-phrase yields an unacceptable sentence. In (1) the operator is the Korean particle *man* 'only', while in (2) it is the negative polarity item (NPI) *daremo* 'anyone' in Japanese. *Man* and *daremo* are therefore categorized as intervention triggers.[1]

(1) *Minsu-man nuku-lûl po-ass-ni?
     Minsu-only who-ACC see-PAST-Q
     'Who did only Minsu see?'   (Beck 2006:3)

(2) ?*daremo nani-o   yom-ana-katta-no?
     anyone what-ACC read-NEG-PAST-Q
     'What did no one read?'   (Tomioka 2007:1571)

In questions involving a disjunction, intervention effects are manifested in the absence of an alternative question reading, rather than degradedness (Beck & Kim 2006). Thus, in (3), the intervention trigger *only* preceding a disjunctive phrase in English leaves the question with just a yes/no interpretation, allowing it to be answered as in (b), but not (a).

(3) Does only John like Mary or Susan?
     a. #Mary.   [*AltQ]
     b. Yes.   [✓Yes/NoQ]

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[1] Here I discuss only elements which are crosslinguistically stable intervention triggers, that is, the operators corresponding to English *only*, *even*, and *also*, and NPIs (see Kim 2002, Beck 2006). I label these *only*-type operators; the phrase consisting of the operator and its associate (*Minsu-man* 'only Minsu' in (1)) is the intervener.

Until recently, the general consensus was that these crosslinguistically robust patterns indicate syntactic ill-formedness, although the precise description of this ill-formedness remained a matter of debate (see Pesetsky 2000, Kim 2005, Grohmann 2006, a.o.). Beck (2006), however, notes that all of the syntactic analyses fail to accurately define the set of intervention triggers, or make use of a definition which is ultimately semantic. Accordingly, she pursues a semantic approach to intervention. The basic idea is that focus-sensitive operators interfere with the semantic relation between the question operator high in the clause and the *wh*-phrase or disjunction, because they take the place of the question operator in evaluating the alternatives introduced by the latter. Although this idea overcomes the abovementioned weakness of syntactic analyses, Tomioka (2007) points out various observations which both it and the syntactic alternatives are unable to explain. These include a great deal of interspeaker variability in judgments, and the amelioration of intervention effects when the intervener is an embedded subject or not a subject.

Eilam (2010) adds further evidence against syntactic and semantic analyses, showing that they derive incorrect predictions. First, intervention effects are not read off the hierarchical structure, as demonstrated by the fact that they may arise even when an intervener follows a *wh*-phrase or disjunction, i.e. when the allegedly necessary c-command relations do not hold. Second, intervention effects can be ameliorated or eliminated in certain contexts, which render the potential intervener a non-focus in IS terms, but do not change its semantic status. If this were a syntactic or semantic phenomenon, it should be immune to contextual changes. Moreover, this finding indicates that what underlies intervention effects is not the semantics of *only*-type operators, as per Beck (2006), but rather the IS notion of focus. These two observations strongly support an IS analysis of focus intervention, proposed in Tomioka (2007) and developed in Eilam (2010). *Wh*-questions and alternative questions are associated with a rigid informational articulation, in which the *wh*-phrase and disjunctive phrase, respectively, constitute the IS focus. Since just one such focus is allowed per sentence, any phrase including an *only*-type operator can be accommodated only if it is a non-focus in the informational articulation of the sentence. This accommodation may be mediated via the syntax, prosody, and/or context; various strategies and relevant examples of accommodation are provided below.

The goal of this paper is to corroborate the IS approach to intervention, by applying it to a set of data which has yet to be noted in the literature. That is, intervention effects are not limited to questions, but rather also arise when an *only*-type operator and IS focus co-occur in a declarative sentence. This is illustrated in the answer to a question in (4b-c) and the corrective context in (5), where italics mark associates of *only* and small caps indicate the pitch accent on the IS focus.

(4) a. What did only John drink?
    b. *Only *John* drank only BEER.
    c. ??Only *John* drank BEER.

(5) a. *It's not true that only John drank wine, only *John* drank only BEER.
    b. ??It's not true that only John drank wine, only *John* drank BEER.

As in the case of questions, the intervener—*only John* in (4) and (5)—can be accommodated through strategies which alter the informational articulation of the sentence. In English these include structures which place the IS focus before the *only*-type operator, such as passivization (6) and specificational copular constructions (7). When the IS focus is the subject, the accommodation comes "for free": the configuration in (8)-(9) is identical to that of (6)-(7). The properties of this configuration will be discussed in section 3.

(6) a. What did only John drink?
   b. Only *BEER* was drunk by only *John*.

(7) It's not true that only John drank wine, *BEER* was the only thing that only *John* drank.

(8) a. Who drank only beer?
   b. Only *JOHN* drank only *beer*.

(9) It's not true that Mary drank only beer, only *JOHN* drank only *beer*.

   The structure of the paper is as follows. Section 2 reviews the existing literature on intervention in questions, focusing on Beck's (2006) semantic theory and the IS theory developed in Eilam (2010). I show that the patterns found are consistent with the latter, rather than the former. In section 3 I analyze the novel data from declaratives, which is crosslinguistically robust and bears not only on speaker judgments but also on truth conditions. I demonstrate that the IS theory developed for questions naturally extends to declaratives, while syntactic and semantic approaches to intervention are inadequate. Section 4 concludes the paper by assessing the implications of the findings for theories of focus association and for the conception of IS in the grammar.

2. Intervention effects in questions

As noted in section 1, the discussion of intervention effects in the literature has centered on questions until now. Beginning with Hoji (1985), researchers have grappled with the proper analysis of this phenomenon, proposing syntactic, semantic, and IS explanations. A comprehensive review of this literature can be found in Eilam (2010); here I only highlight the primary types of approaches taken, in order to assess where we stand before moving on to the novel data from declaratives.

   Recall that an *only*-type operator preceding a *wh*-phrase in a question yields degradedness ((10a), (11a)), and one preceding a disjunctive phrase eliminates the alternative reading of the question (12). The examples below also illustrate possible "repair" strategies, used to convey the meaning of the unacceptable intervention configurations: scrambling of the *wh*-phrase over the intervener in (10b) and (11b), and clefting of the alternative question in (13).

(10) a. *Minsu-man nuku-lûl   po-ass-ni?
         Minsu-only who-ACC see-PAST-Q
      b. nuku-lûl   Minsu-man po-ass-ni?
         who-ACC Minsu-only see-PAST-Q
         'Who did only Minsu see?'

(11) a. ?*daremo nani-o   yom-ana-katta-no?
          anyone what-ACC read-NEG-PAST-Q
      b. nani-o   daremo yom-ana-katta-no?
         what-ACC anyone read-NEG-PAST-Q
         'What did no one read?'

(12) Does only John like Mary or Susan?
      a. #Mary.   [*AltQ]
      b. Yes.   [✔Yes/NoQ]

(13) Is it Mary or Susan that only John likes?
      Mary.   [✔AltQ]

Focus intervention effects of this type were initially treated as syntactic in nature. Beck (1996), for example, argues that in situ *wh*-phrases are prohibited from covertly moving across interveners, while for Kim (2005), the obstructed relation between C^0 and the *wh*-phrase does not involve movement but rather Agree. All of the syntactic analyses, however, suffer from a range of problems. First, they generally capture no more than a subset of the data; Pesetsky (2000), for example, is specifically geared for *wh*-questions. Second, syntactic analyses often assume that in situ *wh*-phrases undergo some type of movement; this assumption, however, is not adopted by much of the current work in syntactic theory (Cole & Hermon 1998, Reinhart 1998), and it is not clear how to extend a movement-based account to questions with a disjunction (Beck & Kim 2006). Third, it remains a mystery why the patterns observed differ from those triggered by other well-known syntactic constraints, such as islands: in the case at hand, only covert movement is proscribed. Fourth, as noted in the previous section, syntactic analyses either avoid defining the class of intervention triggers or provide a semantic definition.

Given these problems, Beck (2006) proposes a semantic theory of intervention in *wh*-questions. The key element in Beck's theory is the semantic notion of focus, i.e. the presence of alternatives in the semantics, which is a property common to interveners and *wh*-phrases. In intervention configurations, the focus operator that comes with the intervention trigger applies to a complement containing a *wh*-phrase. If the latter were a regular focused phrase, this would reset the focus value of the c-commanding node to its ordinary semantic value, and the semantic computation would proceed along the tree. *Wh*-phrases, however, have no ordinary semantic value. Thus, the c-commanding node has an undefined value, which is inherited by the larger structures in the course of the semantic derivation. Ultimately, the entire question ends up undefined, since the licensing question operator in C^0 requires a focus semantic value as its argument. A structure with an undefined semantic value is uninterpretable, and hence, according to Beck, ungrammatical. Beck and Kim (2006) show that the same semantic account is applicable to alternative questions, where the element introducing alternatives is not a *wh*-phrase, but rather a disjunctive phrase. Again, the focus operator interferes with the evaluation of alternatives by the question operator, and the structure as a whole cannot receive a defined question semantics. The yes/no reading is not affected because it does not involve alternatives to begin with.

Beck's semantic approach to intervention effects seems preferable over syntactic alternatives to the extent that the property underlying the effects is indeed the semantic notion of focus. However, there exists another notion of focus—information structural focus—which, despite often coinciding with the semantic category in a given sentence, is not identical to semantic focus. It is thus crucial to consider whether this might be the type of focus relevant to intervention effects.

A brief excursus on the informational articulation of sentences is in order. IS focus is one of the two major primitives making up the informational articulation of the sentence, along with the ground, following Vallduví (1990). The focus constitutes the informative part of the sentence, adding to or modifying the hearer's knowledge store. It is realized across many languages, if not universally, by obligatory intonational prominence. The ground is the complement to the focus; in informational terms, it is the portion of the sentence already established in the hearer's knowledge store. The ground is divided into a topic and tail;[2] the former points to the specific address in the hearer's knowledge store where the information contributed by the focus is to be

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[2] I replace Vallduví's term "link" with the more widely known notion of topic, because the category under discussion here, unlike a link, is not restricted to shifting topics or to sentence-initial position.

entered. The tail signals how the information is to be entered under a given address, and necessarily lacks intonational prominence. This informational articulation is illustrated with the English example from Vallduví (1990) in (14), where *the boss* constitutes the topic, *hates* is the focus, and *broccoli* is the tail. In this case, the hearer is instructed to go to the entry 'the boss' and substitute the new information 'hates' for V in the existing record 'The boss V broccoli'.

(14) The boss HATES broccoli.   (Vallduví 1990:64)

Returning to the issue of different notions of focus, we find that a semantic focus involving an operator like *only* or *even* tends to also be the IS focus of the sentence it occurs in, but does not have to be. This claim is discussed at length in Vallduví (1990) and Dryer (1994), and is illustrated in example (6b) above, where the first *only*-phrase is the IS focus and the second is not. The question, then, is what happens when an *only*-phrase, i.e. a potential intervener, is not the informative portion of the sentence. If intervention effects persist, we can conclude that semantic focus is the underlying cause, while absence or amelioration of the effects indicates that the IS notion of focus is the relevant one. The findings, presented in Tomioka (2007) and Eilam (2010), are unequivocal: intervention effects are ameliorated or eliminated in contexts where the intervener is not the IS focus. These contexts include *wh*-questions in which the intervener is an embedded subject or a non-subject, which were mentioned above, as well as the English example in (15)-(16). Here the potential intervener is provided in a context preceding an alternative question, as opposed to the absence of such a context in the standard unacceptable example in (17).[3]

(15) Context: The graduate students in linguistics took two preliminary exams, in syntax and phonology, last week. The results were surprising: there was one exam that all the students, including John, passed, but no one except John passed the other.

(16) Did only John pass syntax or phonology?   (Eilam 2009:243)

(17) *Does only John like Mary or Susan?   (=3)

Crucially, (16) does not differ from (17) in its syntax or semantics, but rather only in its information structure and concomitant prosody. The semantic focus *only John* is part of the backgrounded material in (16) and therefore does not bear prosodic prominence, enabling it to be accommodated in the alternative question and thus avoiding an intervention effect.

Having established that IS focus, rather than semantic focus, plays a role in intervention effects, the obvious question is why this is the case. In other words, what well-formedness condition(s) do intervention structures violate? The answer, originally given in Tomioka (2007) and elaborated on in Eilam (2010), is that an IS focus cannot be integrated in the informational articulation of *wh*-questions and alternative questions, which already has one such focus, namely, the *wh*-phrase or disjunctive phrase. Given that a sentence contains one and only one focus (Lambrecht 1994), any element outside the focus must be a topic or a tail. However, a phrase involving an *only*-type operator can be neither of the two. It cannot be a topic because it is non-referential (cf. Reinhart 1981), and it is incompatible with tailhood as long as it bears prosodic prominence (cf. Vallduví 1990). The resulting mismatch between the components of the sentence and the IS configuration derives judgments of degradedness, i.e. intervention effects.

In order to express the intended meaning of the sentences in question, it is necessary to transform the potential intervener into a non-IS focus, and this is precisely what the various

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[3] '*' indicates that the alternative question reading is unavailable.

repair strategies noted above do. For example, scrambling as in (10b) and (11b) places the intervener in the phonologically reduced domain which follows foci, including *wh*-phrases, allowing the intervener to function as (part of) the tail. The effect of phonological reduction, or deaccenting, can also be illustrated in English alternative questions. When the disjunction precedes the potential intervener *only Mary* in (18), the sentence is acceptable because the latter does not have a pitch accent, and can thus be in the tail. Attempting to mark *Mary* with a pitch accent, as would be expected of the associate of *only*, eliminates the alternative question reading (19). This refutes the claim of Beck and Kim (2006) whereby (18) bears out the role of c-command in intervention effects; on the contrary, together with (19) it confirms that the effects are not sensitive to hierarchical relations. This is obviously unexpected under a syntactic or semantic approach.

(18) Did John or Susan invite only *Mary*?   (Beck & Kim 2006:172)

(19) *Did John or Susan invite only MARY?

All in all, the case for an IS approach to intervention effects, based on *wh-* and alternative questions, is rather strong.[4] What would make the case even more compelling is data from environments other than questions. That is, if the ill-formedness of intervention configurations reflects basic constraints on the informational articulation of sentences, there is no reason to assume that intervention effects should be limited to questions. Indeed, we have already observed that they appear in declarative sentences; the next section takes up the relevant examples and shows that they decisively adjudicate in favor of an IS analysis. Again, it is the IS notion of focus, rather than the semantic one, which figures in these examples.

3. Intervention effects in declaratives

Examples of intervention effects in declaratives given in section 1 are repeated below, where the IS focus is a question/answer focus (20) or corrective focus (21).[5]

(20) a. What did only John drink?   (=4)
      b. *Only *John* drank only BEER.
      c. ??Only *John* drank BEER.

(21) a. *It's not true that only John drank wine, only *John* drank only BEER.   (=5)
      b. ??It's not true that only John drank wine, only *John* drank BEER.

The presence of the effect in these sentences, compared to its absence in similar examples, is exactly as predicted under the IS analysis of intervention effects put forward in the previous section. That is, the effect is correlated with the position of the potential intervener: when the latter precedes the IS focus, as in (20)-(21), the result is illicit, but if it follows the IS focus, the sentence is acceptable. The potential intervener can follow the IS focus in one of two constellations: when the IS focus is the subject (22)-(23), and when the IS focus is the (underlying) object, but the syntactic structure reverses its order vis-à-vis the potential intervener. In English this can be done inter alia via passivization (24) and specificational copular constructions (25), while in Catalan, for example, right-dislocation is possible (26).

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[4] See Eilam (2010) for a range of additional evidence for the IS approach and against its competitors.
[5] To the best of my knowledge, this data has not been previously discussed in the literature. The sole exception is Rooth (2010), who mentions an example analogous to (20) in the context of his theory of focus realization. However, he erroneously attributes the degradedness of (20) to an unspecified phonological constraint, and does not note its acceptable counterparts in (22)-(25).

These examples also show that there is nothing semantically or pragmatically wrong with the sentences in (20)-(21): the meaning can be conveyed via a different structure.

(22) a. Who drank only beer? (=8)
 b. Only *JOHN* drank only *beer*.

(23) It's not true that Mary drank only beer, only *JOHN* drank only *beer*. (=9)

(24) a. What did only John drink? (=6)
 b. Only *BEER* was drunk by only *John*.

(25) It's not true that only John drank wine, BEER was the only thing that only *John* drank. (=7)

(26) a. Què   va beure només el Joan?
     what drank   only   John
     'What did only John drink?'
 b. *Només el Joan va beure només cervesa.
      only   John   drank   only   beer
      'Only John drank only beer.'
 c. Només cervesa, va beure només el Joan.
      only   beer   drank   only   John
      'Only beer, only John drank.' (Laia Mayol, p.c.)

The parallelism between the declarative examples and the questions examined in section 2 is clear. First, the unacceptable baseline configurations and their acceptable variants are the same, as schematized in (27). The difference between the configurations is correlated with a word order change in the case of questions, whereas in the declarative examples it can either be a function of the IS alone, dictated by the preceding context and reflected in the prosody, or a structural change.

(27) a. */??[… *only* …] [… XP …]

 b. [… XP …] [… *only* …]

The set of intervention triggers in questions and declaratives is also the same; in addition to the examples with *only* above, it is possible to illustrate that intervention effects in declaratives are caused by NPIs in languages like Japanese. For lack of space I do not provide the relevant examples here. Lastly, as illustrated in Eilam (2010) with respect to questions, intervention effects in declaratives can be ameliorated in certain structures by virtue of their pragmatic properties, not necessarily mediated by the syntax or the prosody. Thus, placing the potential intervener in a pseudocleft derives a well-formed sentence, as in (28), because the content of the free relative, including the *only*-phrase, is presupposed and hence backgrounded.

(28) a. What did only John drink?
 b. What only *John* drank was BEER.

To complete the description of the declarative data and further illustrate its import, I introduce an observation made by Atlas (1991) regarding the truth conditions of the pair of sentences in (29). As noted by Atlas, (29b) entails that no one other than John eats rice (and that rice is the only thing that no one but John eats), while (29a) does not.

(29) a. Only John eats only rice.   ↛ No one other than John eats rice.
 b. Only rice is eaten by only John.   → No one other than John eats rice.

Atlas attributes the difference between the sentences to a putative semantic difference between the active and passive voice in English. Although there may be a variety of differences between the active and passive, I know of no independent evidence for a truth-conditional distinction between the two. Moreover, there is no need to ascribe the pattern in (29) to properties of the active or the passive; rather, it falls out from the possible questions under discussion (QUD) each sentence can answer, in accordance with the configurations described in (27). Thus, while (29a) can be an answer to the QUD *Who eats only rice* (30), and thus does not entail that John alone eats rice, it cannot answer the QUD *What does only John eat*; as illustrated in (31b), this would require the illicit configuration of (27a). (29b), however, can be the answer to the latter QUD, as shown in (31c), since the configuration is well-formed (cf. (27b)).

(30) a. QUD: Who eats only rice?
      b. Only *JOHN* eats only *rice*.   ↛ No one other than John eats rice.

(31) a. QUD: What does only John eat? / What is eaten by only John?
      b. *Only *John* eats only *RICE*.
      c. Only *RICE* is eaten by only *John*.   → No one other than John eats rice.

Decisive evidence that this difference between the sentences is not a function of the active/passive distinction is provided in (32), a specificational construction which has the same entailment as the passive in (31c).

(32) RICE is the only thing that only *John* eats.   → No one other than John eats rice.

The configurations schematized in (27) thus affect not only the judgments speakers give for a sentence, but also potentially its truth conditions. These configurations are information structural in nature, as they make crucial reference to the notion of IS focus, and should therefore be accounted for under the IS approach to intervention. However, there are certain aspects of the declarative data which distinguish them from questions and thus require further attention.

The key difference between the question and declarative contexts is the fact that in the latter case, the *only*-phrases—i.e. the interveners—are not IS foci. Rather, since they are material repeated from a lead-in sentence, whether an interrogative or a declarative, they are not potential candidates for focushood. Why are *only*-phrases nevertheless incompatible with the informational articulation of the declarative sentences under discussion? I argue that they cannot fulfill the role of the two available IS categories in these examples, topic and tail. They cannot be topics because of their non-referentiality, as discussed in section 2. The *only*-phrases in the declarative examples cannot be tails as well because subjects are default topics (Reinhart 1981, Lambrecht 1994, Erteschik-Shir 1997), and subjects preceding the nuclear stress are specifically incompatible with tailhood (Vallduví 1990). In order for a subject to be a tail, it typically has to appear in a postnuclear position, which is by and large not possible in English. In a language like Catalan this option is available and utilized, as in (33), where the object *de pa* is the topic, and the subject *mon germa* the tail. The awkward English translation, using right dislocation, reflects the lack of an appropriate equivalent in this language.

(33) De pa   no en_i MENJA, mon germà.
      of bread no OBJ eat.3S   my   brother
      'Bread he doesn't eat, my brother.'   (Vallduví 1990:135)

Independent evidence for the putative relation between subjecthood, topic status, and the occurrence of intervention effects comes from two types of sentences: those in which the

potential intervener is the subject but not the topic, and those in which it is not the subject, and therefore has no inclination to be the topic. The first type is provided in (34), a *there*-existential sentence, in which the subject, which also happens to be a potential intervener, is not the topic; rather, this role is filled by the implicit spatio-temporal parameters of the sentence (see Erteschik-Shir 1997).[6]

(34) a. Where are there only skyscrapers?
     b. There are only *skyscrapers* only in TOKYO.

The second type of sentence is illustrated in (35), where the potential intervener is the indirect object rather than the subject.

(35) a. What did Mary give only John?
     b. Mary gave only *John* (only) A BOOK.

As expected, both examples are considerably better than sentences in which the intervener is the subject. The first example shows that elements which are not necessarily topics do not create intervention effects, and the second that non-subjects do not trigger these effects; in other words, insofar as a potential intervener can be a tail, it will be innocuous in terms of intervention. Note also that the difference between the previous sentences and (34)-(35) constitutes further evidence for the IS analysis. There is no obvious syntactic or semantic distinction which would predict the attested patterns of acceptability.

    The proposed analysis for the unacceptable declarative examples allows us to also explain what underlies their acceptable counterparts in various languages. The case of subject IS foci, as in (36), is clear: the potential intervener is an object and unquestionably deaccented, meaning that nothing bars it from being the tail.

(36) a. Who drank only beer?   (=8)
     b. Only JOHN drank only *beer*.

The English passive in (37) places the potential intervener in the domain of deaccenting following the IS focus and demotes it in structural terms to a *by*-phrase, enabling it to be the tail. In the Catalan example in (38), right-dislocation is specifically used to mark elements as tails (see Vallduví 1990).

(37) a. What did only John drink?   (=6)
     b. Only BEER was drunk by only *John*.

(38) a. Què va beure només el Joan?   (=26)
       what drank   only   John
       'What did only John drink?'
     b. Només cervesa, va beure només el Joan.
       only   beer   drank   only   John
       'Only beer, only John drank.'

    There remains one example which must be considered in light of the IS analysis of intervention in declaratives. This analysis, if correct, seems at first glance to run into difficulties given (39)-(40), repeated from (15)-(16). In this case, an *only*-phrase is permitted in an alternative question because it has been introduced in a preceding context and thus does not compete for the status of IS focus.

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[6] I thank Satoshi Tomioka for suggesting this type of sentence.

(39) Context: The graduate students in linguistics took two preliminary exams, in syntax and phonology, last week. The results were surprising: there was one exam that all the students, including John, passed, but no one except John passed the other.

(40) Did only John pass syntax or phonology?

If prenuclear subjects generally resist being tails, and this is a key factor underlying the intervention effects in declaratives, why does it not yield ill-formedness in (40)? The reason, I argue, is that the context in (39) and the question itself unambiguously establish the exams, rather than the subject *John*, as the topic of the question. The question is a request for information regarding the exam which only one student, John, passed, not a request for information about John. Accordingly, the potential intervener *only John* can be the tail, despite its prenuclear subject status, and a clash between its semantic properties and topichood is avoided. The same is not true of the declarative examples, where no alternative to the subject as topic is set up.

The information structural approach to intervention has been successfully applied in this section to the novel data from declarative sentences. On a par with questions, intervention effects in these sentences result from incompatibility between the IS categories available in a sentence and the elements making up the sentence. The fact that the IS analysis proposed for *wh*- and alternative questions also captures the declarative examples strongly supports its validity as a general approach to intervention.

Let us briefly consider alternative syntactic and semantic approaches to intervention in light of the declarative data. First, this data refutes approaches which refer specifically to *wh*-phrases, such as Pesetsky (2000), because it shows that intervention is not a property of questions per se. Rather, *wh*-questions and alternative questions are a subclass of constructions in which intervention effects may surface, due to their IS and prosodic characteristics. More generally, it is not clear how any movement-based syntactic theory of intervention would account for the declarative examples. Given the well-motivated claim that licensing of IS focus does not involve covert movement (Rooth 1985, Newmeyer 2004), the acceptable and unacceptable declarative examples are syntactically identical and therefore should yield identical speaker judgments. There is also a class of syntactic theories of intervention effects which do not invoke movement, but rather view them as a mismatch between properties of the intervener and its position in the tree (Simpson & Bhattacharya 2003, Grohmann 2006). While these theories are closer to the IS approach in that they define interveners in IS terms, they adhere to a hierarchical view of intervention, and therefore generate incorrect structural predictions. In the case of the declarative examples, these syntactic theories are forced to assume that subjects in English generally occupy a topic position in the C domain, which is inaccessible to *only*-phrases. I am not aware of evidence that subjects are higher than SpecIP in standard English sentences.

As for the semantic approach to intervention, Beck (2006) notes its potential relevance for contexts other than questions and thus extends it to all phenomena involving the evaluation of alternatives in the semantics, including alternative questions and disjunctions in general, NPIs, and focus (see Beck 2007, Beck and Kim 2006, Beck and Vasishth 2009). The basic idea applicable to all these cases is that a focus operator blindly evaluates alternatives in its scope; thus, if this operator comes between a higher operator and its intended argument, the evaluation of the alternatives that the argument introduces by the higher operator is thwarted. Consequently, interpretations which depend on the higher operator evaluating the alternatives are unavailable, and when this is the only interpretation possible (e.g. in *wh*-questions), the result is ungrammatical. The generalization capturing all these cases is given in (41), where the operator

(Op) can be the operator found in questions, the operator evaluating question/answer congruence, or the operator associated with a particle like *only*. The intervening operator is any element that can give rise to a focus-affected reading, i.e. that comes with the ~ operator.

(41) General Minimality Effect MIN: The evaluation of alternatives introduced by an XP cannot skip an intervening ~ operator.
    *[*Op* [~C [$_\phi$ … XP …]]]   (Beck 2007:268)

This approach seems to fare no better than syntactic analyses, since it does not make the IS distinctions necessary to tell apart well-formed vs. ill-formed configurations involving potential interveners. In fact, given a further assumption Beck makes, which is crucial for her theory, the focus structures described here refute the constraint in (41). In the analysis of intervention in *wh*-questions, Beck assumes that *only*-type operators always attach to verbal projections and clausal nodes, even in cases of apparent DP adjunction. This derives the LF representations in (43) and (45) for the acceptable and unacceptable examples in (42) and (44), respectively (Q/A in these representations is the operator evaluating question/answer congruence).[7]

(42) Only *JOHN* drank only *beer*.

(43) [Q/A$_C$ [~C [only$_D$ [~D [only$_E$ [~E [John$_{F2}$ drank beer$_{F1}$]]]]]]]]

(44) *Only *John* drank only *BEER*.

(45) [Q/A$_C$ [~C [only$_D$ [~D [only$_E$ [~E [John$_{F2}$ drank beer$_{F1}$]]]]]]]]

The representations are identical, and in particular, there is no obvious way to predict the well-formedness of (42). Although Beck gives independent motivation for the assumed positions of the *only*-type operators in these representations, they are needed in any case in her theory. If *only*-type operators could attach locally to DP subjects, intervention effects in *wh*-questions would not be expected under the theory to begin with. That is, the potential intervener would evaluate the alternatives introduced by the DP subject and would not interfere with the relation between the higher question operator and *wh*-phrase. Furthermore, because focus association is not selective according to Beck (see fn. 7), the semantic computation cannot be fixed so as to avoid unintended associations. All in all, there seems to be no way to salvage the theory and still be able to capture the entire range of attested data.

Two types of potential non-information structural explanations for intervention in declaratives have been assessed here. Both fall short, because the acceptable and unacceptable sentences do not seem to differ in any relevant syntactic or semantic property. Rather, it is only their informational articulation, created by different preceding contexts and structures, and possibly reflected in the prosody, which tells them apart. Accordingly, only an IS approach of the type first proposed to account for intervention in questions is able to cover this data.

4. Conclusion and implications

This paper has sought to substantiate the information structural analysis of intervention effects, by demonstrating that it extends to a set of data hitherto unnoticed in the literature. The same basic phenomenon observed in *wh*- and alternative questions, where an *only*-type operator influences their acceptability or interpretation, is also found in declarative sentences. However,

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[7] In order to get the theory off the ground, Beck is forced to make the debatable assumption that ~ is not selective in choosing which foci to evaluate. See Wold (1996) for an alternative model, involving coindexing.

in order to detect this phenomenon in declaratives, it is necessary to set up a particular lead-in context, which in turn forces a specific informational articulation on the declarative sentence. Since each element of the sentence is then mapped onto a given IS category, any mismatch between properties of these elements and their IS label gives rise to degradedness, i.e. intervention effects.

Although the context-sensitivity of intervention effects is by itself an indication of their information structural nature, a range of potential syntactic and semantic explanations were nonetheless considered. These were found to be lacking, at times overly strong—predicting ungrammaticality for perfectly acceptable sentences—and in other cases weak, unable to rule out illicit configurations. By appealing to the IS approach proposed for intervention in questions in Tomioka (2007) and Eilam (2010), it is possible to cover the entire range of data.

The IS approach espoused here requires a strict separation between the semantic and IS notions of focus. A semantic focus, such as that associated with the *only*-type operators discussed above, is not always an IS focus. If it were, we would not be able to ameliorate intervention effects by backgrounding the *only*-phrase, as illustrated in English alternative questions, nor would we be able to differentiate the acceptable and unacceptable declarative examples. This supports pragmatic, or strong, theories of focus association (Vallduví 1990, Rooth 1992, Dryer 1994, a.o.), since they make the distinction between semantic and IS notions of focus. It contests the rival semantic, or weak, class of theories (Rooth 1985, Krifka 1992), which argue that operators like *only* need to associate with an IS focus because it alone provides the required quantificational structure. In such a theory, the crucial distinction between semantic and IS foci becomes moot.

The findings of this study also have significant implications for the conception of IS in the grammar. A particular phenomenon—intervention effects—was shown to reduce to well-formedness conditions which are exclusively information structural in nature. The uniqueness of focus and the incompatibility between *only*-phrases and topichood, for example, are generalizations which can be stated only in IS terms. The existence of such IS well-formedness conditions is robust evidence for the claim that IS is an autonomous level of organization of linguistic information (cf. Vallduví 1990). This level interacts with other levels of representation in the linguistic system, and imposes restrictions of its own on the output of the system. Future work may examine the form of IS representations, the way in which they are derived, and their relations with other levels of representation.

References

Atlas, Jay. 1991. Aboutness, fiction, and quantifying into intentional contexts: Prior, Quine, and Searle on propositional attitudes. Paper presented at the Symposium on Reference, University of Duisberg, Duisberg, Germany, March 1991.

Beck, Sigrid. 1996. Quantified structures as barriers for LF movement. *Natural Language Semantics* 4:1–56.

Beck, Sigrid. 2006. Intervention effects follow from focus interpretation. *Natural Language Semantics* 14:1–56.

Beck, Sigrid. 2007. The grammar of focus interpretation. In Uli Sauerland and Hans-Martin Gärtner (eds.), *Interfaces + Recursion = Language? Chomsky's Minimalism and the View from Syntax-Semantics*, 255–280. Berlin: Walter de Gruyter GmbH.

Beck, Sigrid, and Shin-Sook Kim. 2006. Intervention effects in alternative questions. *Journal of Comparative Germanic Linguistics* 9:165–208.

Beck, Sigrid, and Shravan Vasishth. 2009. Multiple focus. *Journal of Semantics* 26:159–184.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

Cole, Peter, and Gabriella Hermon. 1998. The typology of *wh*-movement: *Wh*-questions in Malay. *Syntax* 1:221–258.

Dryer, Matthew. 1994. The pragmatics of focus-association with *only*. Paper presented at the 1994 Winter Meeting of the LSA, Boston, Massachusetts.

Eilam, Aviad. 2009. The absence of intervention effects in Amharic: Evidence for a non-structural approach. *Brill's Annual of Afroasiatic Languages and Linguistics* 1:204–254.

Eilam, Aviad. 2010. The information structural basis of focus intervention effects. Ms., University of Pennsylvania.

Erteschik-Shir, Nomi. 1997. *The Dynamics of Focus Structure*. Cambridge: Cambridge University Press.

Grohmann, Kleanthes K. 2006. Top issues in questions: Topics-topicalization-topicalizability. In Lisa Lai-Shen Cheng and Norbert Corver (eds.), *Wh-Movement: Moving On*, 249–288. Cambridge, MA: MIT Press.

Hoji, Hajime. 1985. Logical Form Constraints and Configurational Structures in Japanese. Doctoral dissertation, University of Washington.

Kim, Shin-Sook. 2002. Intervention effects are focus effects. In Noriko Akatsuka and Susan Strauss (eds.), *Japanese/Korean Linguistics* Vol. 10, 615–628. Stanford: CSLI.

Kim, Shin-Sook. 2005. Focus intervention effects in questions. Paper presented at Theoretical East Asian Languages 3, Harvard University.

Krifka, Manfred. 1992. A compositional semantics for multiple focus constructions. In Joachim Jacobs (ed.), *Informationsstruktur und Grammatik*, 17–53. Wiesbaden, Germany: Westdeutscher Verlag.

Lambrecht, Knud. 1994. *Information Structure and Sentence Form: Topic, Focus, and the Mental Representations of Discourse Referents*. Cambridge: Cambridge University Press.

Newmeyer, Frederick J. 2004. On split CPs, uninterpretable features, and the "perfectness" of language. In Benjamin Shaer, Werner Frey, and Claudia Maienborn (eds.), *ZAS Working Papers 35: Proceedings of the Dislocated Elements Workshop*, 399–421. Berlin: ZAS.

Pesetsky, David. 2000. *Phrasal Movement and its Kin*. Cambridge, MA: MIT Press.

Reinhart, Tanya. 1981. Pragmatics and linguistics: An analysis of sentence topics. *Philosophica* 27:53–94.

Reinhart, Tanya. 1998. Wh-in-situ in the framework of the Minimalist Program. *Natural*

Language Semantics 6:29–56.

Rooth, Mats. 1985. Association with Focus. Doctoral dissertation, University of Massachusetts.

Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1:75–116.

Rooth, Mats. 2010. Second occurrence focus and *Relativized Stress F*. In Malte Zimmermann & Caroline Féry (eds.), *Information Structure: Theoretical, Typological, and Experimental Approaches*, 15–35. Oxford: Oxford University Press.

Simpson, Andrew, and Tanmoy Bhattacharya. 2003. Obligatory overt wh-movement in a wh-in-situ language. *Linguistic Inquiry* 34:127–142.

Tomioka, Satoshi. 2007. Pragmatics of LF intervention effects: Japanese and Korean wh-interrogatives. *Journal of Pragmatics* 39:1570–1590.

Vallduví, Enric. 1990. The Informational Component. Doctoral dissertation, University of Pennsylvania.

Wold, Dag. 1996. Long distance selective binding: The case of focus. In Teresa Galloway and Justin Spence (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) VI*, 311–328. Ithaca, NY: Cornell University.