Minimal Sufficiency with Covert Even

Abstract: Exclusive particles (e.g. just) give rise to exclusivity inferences by negating focus alternatives to the sentence they modify. Grosz (2012) observes that they sometimes give rise to what he calls minimal sufficiency readings, which seem to affirm, rather than negate, focus alternatives, and proposes to analyze them in terms of the rank-order reading, a scalar inference that exclusive particles are independently observed to express. Coppock & Beaver (2014) put forward a similar analysis based on their unified semantics for different uses of exclusive particles. We point out that these previous accounts fail to capture the distribution of minimal sufficiency readings, and propose an alternative analysis where the scalar component of a minimal sufficiency reading comes from a covert version of even, rather than from the exclusive particle. Empirical support for this analysis comes from the generalization that an overt even can be added to sentences that have minimal sufficiency readings without changing the meaning, but not to sentences that do not allow for minimal sufficiency readings. We argue that our account not only captures the distribution of the minimal sufficiency reading, but also derives the inferences involved in the minimal sufficiency reading compositionally together with the standardly assumed semantics for even.

1 Introduction

Exclusive particles like only and just are so-called because they give rise to exclusivity inferences based on ‘focus alternatives’, as illustrated by (1). What is in focus is marked by a subscript F throughout this paper.

(1) a. Just one\textsubscript{F} cat is in the room.
     \implies \neg (two cats are in the room), \neg (three cats are in the room), ...

b. Only Patrick\textsubscript{F} is in the room.
     \implies \neg (Andy is in the room), \neg (Bojan is in the room), ...

The focus alternatives of (1a) are sentences of the form ‘ξ cats are in the room’ for a numeral in place of ξ, and those of (2a) are sentences of the form ‘ξ is in the room’ where a name occupies the place of ξ. The semantic function of an exclusive particle is to negate those alternatives that are not entailed by the sentence they modify (which is often called the ‘prejacent’). Consequently, (1a) entails that no more than one cat is in the room, and (2b) entails that no one other than Patrick is in the room.

Grosz (2012) observes that exclusive particles sometimes can be used to mean the opposite of an exclusivity inference, i.e. to affirm at least some alternatives are true. Following Grosz, we call such readings of exclusivity particles minimal sufficiency readings. To illustrate, consider the following example.

(2) Just one\textsubscript{F} cat will make Patrick happy.

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1 For ease of exposition we assume that focus alternatives are linguistic expressions, as proposed by Fox & Katzir (2011), rather than semantic objects, as assumed by Rooth (1985, 1992). As far as we can see, nothing crucial hinges on this. Also, following the current literature on alternatives, we include the prejacent itself as an ‘alternative’ to itself.
The focus alternatives of this sentence should be sentences of the form ‘\( \xi \) cats will make Patrick happy’, where \( \xi \) is a numeral. Besides a reading that is similar to (1), which entails that two or more cats will not make Patrick happy, it has another, perhaps more natural, reading, from which one can infer that at least some, if not all, of the alternatives are also true, i.e. multiple cats will also make Patrick happy.

Minimal sufficiency readings are observed with various kinds of foci, and in different grammatical positions, as demonstrated by (3).

(3)  
a. **Just** a letter\(_F\) from her makes me happy.  
b. Katie gets drunk with **just** one\(_F\) pint of beer.  
c. **Just** a [train to the airport]\(_F\) costs almost £20 in this city!

In all of these examples of minimal sufficiency readings, the relevant inference is intuitively *scalar* and *additive*: Roughly, the prejacent describes a relatively unlikely/surprising case for some event to happen or some state to arise, and implies other focus alternatives are also true, which are about conditions that are more likely to lead to the same event or state. Concretely, take the minimal sufficiency reading of (2), for example. The prejacent expresses that there being one cat is enough for Patrick’s happiness, although it’s relatively unlikely/surprising, and implies that there being more cats will also lead to the same state, which is not so unlikely/surprising. In the bulk of this paper we will focus mostly on (2) and (3a) as our representative examples, in order to minimize the length of the paper; but our proposal can explain (3b) and (3c), as the reader can verify.

There are two previous analyses of the minimal sufficiency reading, Grosz (2012) and Coppock & Beaver (2014). As explained in detail below, according to these authors, the minimal sufficiency reading is triggered by **just**, which by assumption takes scope within the phrase it is attached to and introduces a scalar inference at this level. We will argue, however, that such accounts make wrong predictions about the distribution of the minimal sufficiency reading. The main issue is comes from the fact that they are oblivious to other material in the same sentence, which we observe matters for the availability of the minimal sufficiency reading. For instance, they wrongly predict that examples like (1a) should also give rise to a minimal sufficiency reading, because its subject is identical to the subject of (2).

We will put forward an alternative account, according to which the minimal sufficiency reading of sentences like (2) is largely due to a covert version of the focus particle **even**, which takes a sentential scope. In support of this analysis, we put forward an empirical generalization that minimal sufficiency readings are possible exactly when an overt **even** can be added. By way of illustration, observe that (4a) is felicitous and has the same reading as (2), while (4b) is infelicitous and the corresponding sentence (1a) lacks a minimal sufficiency reading.

(4)  
a. **Even just** one\(_F\) cat will make Patrick happy.  
b. **#Even just** one\(_F\) cat is in the room.

We will explain in detail how the two focus sensitive particles, **even** and **just**, conspire to give rise to the minimal sufficiency reading.
The organization of this paper is as follows. In Section 2 we will review the two previous analyses and elaborate on the empirical challenge for them briefly described above. In Section 3 we will introduce the standard semantic analysis of *even* and explain how it can be used to generate the minimal sufficiency reading, and then in Section 4, we will consider how it can explain the lack of minimal sufficiency readings in sentences like (1a), as well as the infelicity of sentences like (4b) that contain overt *even*. Section 5 contains conclusions and further issues.

2 Previous Analyses

As far as we know, there are only two theoretical proposals about the minimal sufficiency reading, namely, those by Grosz (2012) and Coppock & Beaver (2014). Both analyses are based on the idea that the minimal sufficiency reading is a kind of rank-order reading, a reading that is independently observed for exclusive particles, e.g. (5).

(5) Patrick is *just* a postdoc

In this sentence *just* seems to introduce a scalar inference that being a postdoc is low on some contextually determined scale, e.g. the scale of academic jobs. To explain this reading, Grosz (2012) postulates a separate lexical entry for the rank-order reading of *just*, which introduces a presupposition that the prejacent is low on some contextually salient scale formed by its focus alternatives (and is vacuous with respect to the at-issue content). Coppock & Beaver (2014) aim at capturing this reading of *just* without postulating a separate lexical entry, but otherwise the idea is essentially the same as Grosz’s.

Grosz’s and Coppock & Beaver’s idea is to use the rank-order reading of *just* to explain the minimal sufficiency reading. Let us take (2) as an example.

(2) *Just* one_F cat will make Patrick happy.

They assume that *just* takes scope within the subject DP, so the prejacent of *just* is ‘one_F cat’. The focus alternatives to this then form a scale in (6).

(6) one cat < two cats < three cats ...

The presupposition that the prejacent is low on this scale is obviously met. Then the overall meaning of (2) would be something like ‘Something that is as unremarkable as one cat will make Patrick happy’. Note that it is crucial for these previous analyses to assume that *just* is interpreted at the level of the subject DP, because if it operated on the entire sentence, the inference would be that it is unremarkable for one cat to make Patrick happy, which is intuitively the opposite of what we want to derive.

As we mentioned in the introduction, however, this analysis fails to capture the distribution of the minimal sufficiency reading. Crucially for this analysis, *just* takes the subject DP as its argument and introduces a rank-order inference at this level. Then, it predicts that the material in the VP should not matter for the availability of the minimal sufficiency reading. This prediction is not borne out, however. More concretely, (1a),
repeated below, does not have a minimal sufficiency reading, and its only available reading is an exclusivity reading.

(1a) **Just** one<sub>F</sub> cat is in the room.

The previous analyses overgenerate here, because the subject DP is exactly the same as in (2), so just should be able to make use of the same scale as (6), in which case (1a) should be able to mean something like ‘Something that is as unremarkable as one cat is in the room’ (without an exclusivity inference, so the sentence should be compatible with there being more than one cat). This is clearly wrong. (1a) seems to only have an exclusivity reading that no more than one cat is in the room.

The same point can be made with the following pair of sentences: (3a) has a minimal sufficiency reading, while (7) does not.

(3a) **Just** a letter<sub>F</sub> from her makes me happy.
(7) **Just** a letter<sub>F</sub> from her arrived today.

These examples show that the availability of the minimal sufficiency reading is affected by the material outside of the phrase just seems to be modifying, and the previous accounts fail to capture this generalization. As mentioned above, furthermore, if just took sentential scope in (2) and (3a), it would derive a scalar inference that would intuitively sound the opposite of what it should be, which suggests that the rank-order reading of just is not what is behind the minimal sufficiency reading.

### 3 Minimal Sufficiency with Even

In order to develop a more empirically adequate analysis of the minimal sufficiency reading, we have to understand its distribution better. To this end, we would like to start with the following generalization: an overt even can be added felicitously to the above examples that have minimal sufficiency readings, but not to the examples that don’t have minimal sufficiency readings. To see this, consider the following versions of our primary examples. Notice the interpretive similarity between our original examples and (4a) and (8a).

(4) a. **Even just** one<sub>F</sub> cat will make Patrick happy.
   b. #**Even just** one<sub>F</sub> cat is in the room.

(8) a. **Even just** a letter<sub>F</sub> from her makes me happy.
   b. #**Even just** a letter<sub>F</sub> from her arrived today.

The same pattern is observed with the other examples of minimal sufficiency readings, (3b) and (3c), as the reader can verify. Notice also that essentially the same meanings can be conveyed without just in these sentences, suggesting that an exclusive particle is not even a necessary ingredient for the relevant inference.

(9) a. **Even** one<sub>F</sub> cat will make Patrick happy.
   b. **Even** a letter<sub>F</sub> from her makes me happy.
We take these observations to be suggesting that the minimal sufficiency readings of our original examples, (2) and (3a), do not come from _just_, but from a covert version of _even_. In the rest of this section, we will first demonstrate that the readings of (4a) and (8a), which contain an overt _even_, can be derived using the standardly assumed semantics of _even_, and then propose that examples without an overt _even_ like (2) and (3a) can have an inference comparable to (4a) and (8a) due to a covert mechanism that is similar in nature as _even_, which we call ‘covert _even_’. After that, we will come back to the question of how to capture the distribution of the minimal sufficiency reading in the next section.

### 3.1 The Semantics of Even

_Even_ is standardly analyzed as a focus sensitive particle that introduces two presuppositions based on focus alternatives, a scalar presupposition and an additive presupposition (Karttunen & Peters 1979, Rooth 1985, Kay 1990, Wilkinson 1996, Crnič 2011, among others). To illustrate, consider (10).

(10)    _Even Marten_\textsubscript{F} danced.

This sentence has a scalar presupposition that Marten was unlikely to dance, and also an additive presupposition that someone else also danced, and these inferences seem to be absent from the version of the sentence without _even_. Adopting the Roothian alternative semantics (Rooth 1985, 1992), we can formalize the semantic contribution of _even_ as follows.

(11)    ‘even \( \varphi \)’ presupposes:

a.      that \( \varphi \) is relatively unlikely among Alt(\( \varphi \))

b.      that there is \( \psi \) in Alt(\( \varphi \)) that is not entailed by \( \varphi \) and is true

Alt(\( \varphi \)) is the contextually relevant set of focus alternatives of \( \varphi \), each of which is built by replacing the F-marked constituent in \( \varphi \). Proposals differ as to how exactly the scalar presupposition in (11a) is characterized (Rooth 1985, Kay 1990, Herburger 2000, Greenberg 2017, etc.), but these details do not concern us here too much. Also it is known that the additive presupposition (11b) is not always observed, which has led to analyses where it is not inherent to the semantics of _even_, but as far as we can see, there is no theory at the moment that can fully explain when exactly the additive presupposition arises (see Rullmann 1997, 2007, Crnič 2011 for attempts), so we will stick to the above ‘classical analysis’, where it is encoded in the semantics of _even_.

Now, to see how the above semantics works, let us apply it to (10). The alternatives to the prejacent ‘Marten danced’ will be, for example, ‘Paul danced’, ‘Sophie danced’, ‘Sascha danced’, etc. The scalar presupposition amounts to that it was relatively unlikely among these alternatives that Marten would dance and the additive presupposition to that at least one more person danced, capturing the observed reading of (10).

### 3.2 Deriving Minimal Sufficiency with Even
We propose that the scalar presupposition of *even* accounts for the scalar component of the minimal sufficiency reading. Let us take (4a), repeated below, as an example.

(4a) *Even** just one_F cat will make Patrick happy.*

In this sentence there are two focus sensitive particles, *even* and *just,* but only one focused material (such examples have been discussed by Krifka 1991, among others). While this is potentially ambiguous with respect what exactly in the focus associate of *even,* let us assume for now that both *even* and *just* operate on the same set of focus alternatives, namely, alternatives to *one.* We will end up revising this assumption in Section 4, but it is heuristically useful to see how far we can go with it. Since *even* takes scope over *just,* the focus alternatives for *even* will include *just,* and look as follows.

(12)  
- a. *Just** one_F cat will make Patrick happy.*
- b. *Just** two_F cats will make Patrick happy.*
- c. *Just** three_F cats will make Patrick happy.*

There can potentially be more alternatives, but without loss of generality we will focus on these three. We assume that under the minimal sufficiency reading the semantic contribution of *just* is the exclusivity inference within the subject in these alternatives. For instance, (12a) means that it is generally the case that when there is exactly one cat, the cat will make Patrick happy. Note that *just* here should not introduce the exclusivity inference at the sentential level, because that would entail that two or more cats will not make Patrick happy, which is not consistent with the minimal sufficiency reading of (4a). It is crucial to assume that *just* can take scope within the DP it is modifying, as per the previous analyses, but unlike the previous analysis, we assume it to trigger an exclusivity inference, rather than a rank-order inference. For interested readers, we discuss the compositional details of the DP-internal scope of *just* in the Appendix.

With the alternatives in (12) at hand, let us now consider the presuppositions of *even.* The scalar presupposition is that (12a) is relatively unlikely among these alternatives, which accounts for the scalar component of the minimal sufficiency reading. Furthermore, the additive presupposition says that at least one more alternative is true, which captures the additive component of the minimal sufficiency reading.

Let us now turn to the version of the sentence without *just,* (9a), which allows for essentially the same interpretation.

(9a) *Even** one_F cat will make Patrick happy.*

Let us focus on the following three alternatives.

(13)  
- a. One cat will make Patrick happy.
- b. Two cats will make Patrick happy.
- c. Three cats will make Patrick happy.

There are several proposals about the semantics of numerals, in particular, some assume that numerals have ‘exact’ semantics (Breney 2008, for example), and others assume that they have ‘at least’ semantics (Horn 1972, for example) (some assume they
are ambiguous, e.g., Geurts 2006; see Spector 2013 for an overview). Under the ‘exact’ reading, one cat will mean ‘exactly one cat’, but in order to capture the intuitive reading of (9a), one has to be able to keep the upper-boundedness of the numeral within the subject DP, because otherwise the prejacent will entail that two cats will not make Patrick happy, conflicting with the intuitive meaning of the sentence. Therefore, if a numeral can have an ‘exact’ semantics with the upper-boundedness kept within the subject DP, then the analysis will be identical to what we saw above. But even if we assume that numerals always have ‘at least’ semantics, we can account for this example. Under the ‘at least’ semantics, (13a), for example, will mean ‘It is generally the case that when there is one or more cats, the cat or cats will make Patrick happy’. This does not entail (13b) and (13c), because the genericity operator is logically non-monotonic. The scalar presupposition of even then says that this is relatively unlikely, which captures the scalar component of the reading, and the additive presupposition captures the additive component that (13b) and/or (13c) are true.

Our other primary example, (8a) and (9b), can be analyzed analogously, although more contextual information is needed to determine the relevant set of alternatives in these cases.

(8a) Even just a letter\textsc{f} from her makes me happy.
(9b) Even a letter\textsc{f} from her makes me happy.

For instance, let us consider the following alternatives. Just will be included for (8a) but not of (9b).

(14) a. (just) a letter\textsc{f} from her makes me happy.
b. (just) a phone call\textsc{f} from her makes me happy.
c. (just) a video call call\textsc{f} from her makes me happy.

The scalar presupposition of even amounts to that (14a) is relatively unlikely, which captures the scalar component of the minimal sufficiency reading, and the additive presupposition accounts for the entailment that (14b) and/or (14c) are also true.

### 3.3 Minimal Sufficiency with Covert Even

Now, to analyze our initial examples, (2) and (3a), which do not contain an overt even, we propose to postulate a covert version of even that has the same semantics as its overt counterpart (cf. Chierchia 2013). Then the examples can be analyzed in a completely parallel fashion to what we saw for (4a) and (8a) above.

We furthermore would like to convince the reader that it is not too far-fetched to postulate a covert version of even. A growing body of research, at least since Groenendijk & Stokhof (1984), suggests that there is a mechanism that gives rise to an exclusivity inference without using an overt exclusive particle, although there is a heated debate about the nature of that mechanism in the current theoretical literature, especially with respect to whether or not the mechanism is purely pragmatic or present at the syntax-semantics interface (see, for example, Chierchia, Fox & Spector 2011, Geurts 2010, and references therein). Whatever the true nature of the mechanism,
however, exclusivity interpretations are clearly available for the following sentences, despite the fact that they do not contain an exclusive particle.

(15) a. Who danced? – Marten\textsubscript{F} did.
    b. How many people danced? – Ten\textsubscript{F} people did.

We will not go into the theoretical debate about exclusivity inferences (see the references above), but what is relevant for our purposes here is Chierchia’s (2013) idea that a similar mechanism exists that gives rise to scalar inferences.\textsuperscript{2} To illustrate this, he uses the following example.

(16) Really everybody came to my party. Imagine that my ex\textsubscript{F} came.

(Chierchia 2013: 109)

Here, the second sentence can be paraphrased by “Imagine that even my ex\textsubscript{F} came”, and has a scalar inference that is similar in nature to the scalar inference of even.

Part of the aforementioned debate in the literature on exclusivity inferences concerns whether the mechanism should be modeled by a silent operator that is syntactically and semantically real, or alternatively, seen as a kind of pragmatic reasoning, and the same question arises for scalar inferences of examples like (16). Although this question is certainly an important one to consider, fortunately, the main part of our claim is independent from it, because in our primary examples, whatever is responsible for the scalar inference operates on the entire sentence, so could be analyzed an operator applied to the top-most level or a pragmatic mechanism applied to the utterance level. For the ease of exposition, we will speak as if the relevant mechanism is a silent operator that has the same semantics as even, and call it covert even.

4 Blocking Minimal Sufficiency

We have just seen that covert even can be used to derive the minimal sufficiency reading. As stated above, it is also important to properly constrain the distribution of this reading. In particular, we want to account for why (1a) and (7) do not have minimal sufficiency readings.

(1a) Just one\textsubscript{F} cat is in the room.
(7) Just a letter\textsubscript{F} from her arrived today.

Recall that these sentences are incompatible with an overt even, as shown in (4b) and (8b), respectively, so however these examples are accounted for, we predict that they are incompatible with covert even as well, and since we assume that the minimal sufficiency reading requires even, we correctly capture the lack of minimal sufficiency readings here. That being said, it would be nice to be able to derive these results from the semantics of even given in the previous section. Let us see if this is possible.

\textsuperscript{2} Also relevant here are works on NPI licensing in terms of such a mechanism. See Lahiri (1998), Nakanishi (2006), Guerzoni (2003), (Chierchia 2013), for example.
4.1 Two Scopes of Just

Let us consider the following alternatives to (1a).

(17)  a. Just one\textsubscript{F} cat is in the room.
     b. Just two\textsubscript{F} cats are in the room.
     c. Just three\textsubscript{F} cats are in the room.

Note that a natural understanding of (17a) involves an exclusivity inference at the sentential level. That is, it entails that there is no more than one cat in the room. Similarly for (17b) and (17c). Then, it follows that the additive presupposition of a covert even will cause an issue. That is, the alternatives in (17) are logically mutually incompatible, so no more than one of them can be true at a time. In addition, the scalar implicature seems to be unnatural, if logically consistent. We could use these results, especially the additive presupposition, to account for the incompatibility of (1a) with a covert or overt even, which also explains the lack of a minimal sufficiency reading here.

However, notice that we are assuming that just takes a sentential scope here. This is arguably the only interpretation of (17a), or to put it conversely, (17a) cannot mean that there is \( x \) such that \( x \) consists of exactly one cat and \( x \) is in the room, which would be compatible with there being more than one cat in the room. Luckily, even if this reading were available, there is still a way to rule out the minimal sufficiency reading for (1a). Certainly the additive presupposition would be consistent, but this time the scalar presupposition would be inconsistent, because these alternatives would be ordered by entailment, with (17c) asymmetrically entailing (17b), which in turn would asymmetrically entail (17a). Then, logically, (17a) would be the most likely alternative, contradicting the scalar presupposition of even.

Thus, we can rule out the minimal sufficiency reading of (1a) from the standard semantics of even, but there are two further issues. Firstly, the reasoning in the previous paragraph crucially hinges on the likelihood-based semantics for even, especially the fact that likelihood is monotonic with respect to entailment: if \( p \) entails \( q \), then \( \Pi(p) \leq \Pi(q) \), where \( \Pi \) is a probability distribution over propositions. As mentioned in passing in the previous section, there is currently no consensus on how the scalar presupposition of even should be characterized. A number of examples have been raised that seem to be problematic for the likelihood-based semantics, and alternative proposals have been put forward that make use of ‘noteworthiness’ or some other gradable notion, which is not necessarily monotonic with respect to entailment (see Herburger 2000, Greenberg 2017, for example). Secondly, and more importantly, a similar explanation is unavailable for the other example, (7). Let’s consider the following alternatives for it.

(18)  a. Just a letter\textsubscript{F} from her arrived today.
     b. Just a voice message\textsubscript{F} from her arrived today.
     c. Just a video call\textsubscript{F} from her arrived today.

As before, if just introduces an exclusivity inference at the sentential level, the additive presupposition of even will be inconsistent with the prejacent, so we can safely rule out this parse. However, this time, the DP-internal scope of just would be consistent. Under this reading, (18a) would mean that there is an \( x \) such that \( x \) consists of nothing but a
letter from her and \( x \) arrived, and similarly for (18b) and (18c). Then the alternatives are mutually consistent, so the additive presupposition would not be an issue. Furthermore, one could imagine a context that satisfies the scalar presupposition. For instance, in the modern society, it is perhaps less likely to receive a letter than to receive a voice message or a video call. Consequently, the prediction would be that (7) should be compatible with (overt or covert) \textit{even}. Thus, we failed to block the minimal sufficiency reading here.

It is important to keep in mind that the core of our analysis is not affected by this issue, because, as shown in (8b), (7) is in fact incompatible with an overt \textit{even}. Rather, the issue is simply that the standard semantics of \textit{even} alone cannot explain the lack of minimal sufficiency reading for (7) and the infelicity of (8b) with an over \textit{even}. In order to achieve this, we think we have to better understand how the scope of \textit{just} is to be constrained. As a matter of fact, in sentences like (18), \textit{just} does not seem to be able to take a DP-internal scope. If we can explain why \textit{just} must take a sentential scope in these examples, we can explain the lack of a minimal sufficiency reading for (7) and the infelicity of (8b) by referring to the inconsistent additive presupposition of \textit{even}.

### 4.2 Distributivity and an Economy Constraint

What needs to be explained is the scope difference between pairs like the following, such that \textit{just} can take DP-internal scope in (3a) but not in (7) (while it can take sentential scope in both cases).

(3a) \textit{Just a letter} \( F \) from her makes me happy.
(7) \textit{Just a letter} \( F \) from her arrived today.

One might think that genericity is a necessary ingredient, but this is not the case, as \textit{just} in the following non-generic sentence can take DP-level or sentential scope.

(20) Just this teapot \( F \) costs \£3.

The DP-level scope say that if you buy the teapot alone, you will have to pay \£3, and is compatible with other relevant things costing \£3.

We claim that a primary factor that determines the scope of \textit{just} is \textit{distributivity}. A distributive predicate is a predicate \( P \) that supports the inference from \( P(a+b) \) to \( P(a) \).

As shown in (19), \textit{arrived today} is distributive, while \textit{makes me happy} is not distributive.

(19) a. \( A+B \) makes me happy \( \neq \) \( A \) makes me happy  
b. \( A+B \) arrived today \( \neq \) \( A \) arrived today

With this difference in mind, we propose that the scope constraints on \textit{just} should be understood as an economy condition that bans a use of \textit{just} that has no overall semantic contribution. Specifically, with a distributive predicate \( P \) the subject-internal scope of \textit{just} in ‘just \( a \) \( P \)’ will not contribute to the overall meaning, because it’s exactly identical to ‘\( a \) \( P \)’, which is compatible with an alternative like ‘\( b \) \( P \)’. On the other hand, the sentential scope will lead to a stronger reading, entailing that the alternatives ‘\( b \) \( P \)', \( c \) \( P \),
etc. are false. Consequently, the DP-internal scope reading is made unavailable, while the sentential scope reading is prominently perceived.

With a non-distributive predicate $P$, on the other hand, the DP-internal scope of *just* in ‘*just a P*’ is not completely vacuous. That is, the exclusivity inference of *just* makes it clear that in the eventuality described by ‘*a P*, no other (relevant) things are involved in that eventuality. Concretely, consider (20) above. The version of the sentence without *just* is intuitively compatible with a situation where you pay £3 for the teapot and some small things that come with it, e.g. some teacups. With *just*, it emphasizes that the teapot with nothing else is £3. Similar remarks apply to other non-distributive predicates like *carry the box, share this apartment*, etc. as well as to the predicate in (3a), *makes me happy*. In particular, due to its genericity, *just* makes a particularly clear semantic contribution. Without it the sentence means ‘Generally, in situations where there is a letter from her, the letter makes me happy’ while with *just*, it means ‘Generally, in situations where there is a letter from her and nothing else from her, the letter makes me happy’. Consequently, the DP-internal scope of *just* is not vacuous in (3a) and is licensed. The sentential scope of *just* is predicted to be licensed as well, but this seems to be a good prediction, given that all these sentences with minimal sufficiency readings are actually ambiguous between a minimal sufficiency reading and an exclusivity reading (although the latter reading might be less natural for extra linguistic reasons).

### 4.3 Revising the Focus Alternatives

Note that according to our account, the non-distributivity of the predicate is only a necessary condition for the availability of the minimal sufficiency reading, and is not by itself sufficient, because the presuppositions of (overt or covert) *even* also need to be satisfied. For example, it is not easy to read (20) with a minimal sufficiency reading, and correspondingly, (21) seems to be infelicitous given the world knowledge that £3 for a teapot is quite cheap.

(21)  #Even just this teapot costs £3.

If one assumes that £3 is not very cheap (for a teapot), then (21) will be felicitous, and in fact in such a situation, (20) will have a minimal sufficiency reading. Or if you like, you can think of the versions of these sentences where the price is £50, for example. Thus, again, compatibility with overt *even* tracks the availability of the minimal sufficiency reading.

However, it is important to notice that the standard semantics of *even* fails to explain the infelicity of (21), because the scalar presupposition will be that it is relatively unlikely that the teapot alone costs £3, and this can be satisfied if the alternatives are sentences like ‘the teacup costs £3’, ‘the milk jar costs £3’, etc. and the teapot is likely to be relatively expensive among the relevant items. Furthermore the additive presupposition could be satisfied too, if there is something else that costs (at least) £3. So our analysis so far cannot exclude (21) and correspondingly, (20) should be able to have a reading similar to this, contrary to fact.
What went wrong? Note importantly that the reading we derived just now is exactly what the version of the same sentence without just, (22), means (at least as a potential reading)

(22) Even this teapot$_F$ costs £3.

This observation suggests that the semantics of even itself is not completely wrong, and we do not want to give it up. In order to understand the difference between (21) and (22), we propose that we have to revise our assumptions about the focus alternatives of even in the configuration ‘even just DP VP’ (with some focus in the DP). We have so far been assuming that even and just associate with the same focus and so the alternatives for the prejacent of even are of the form ‘just DP’ VP’ where DP’ is derived from DP by replacing the focused item, but as we have just seen, we then fail to differentiate (21) and (22). We propose instead that even associates with ‘just DP’ as a whole, while just associates with one, while even associates with just one cat as a whole (such configurations are discussed by Krifka 1991). In particular, we assume that an alternative to just one cat is not just one cat, which basically means at least two.

With this, we can understand the difference between (21) and (22) as follows. In (21), the alternative for the prejacent of even mean the teapot + something else costs £3. Let us zoom in on a context where the teapot alone is cheaper or at least the same price as the teapot + something else, which is arguably a natural context. Then scalar presupposition of even in (21) will be that the teapot alone costing £3 is less likely than the teapot + something else costing £3. But this contradicts the contextual assumption, which can explain the infelicity of (21), and also the lack of a minimal sufficiency reading in (20). On the other hand (22) is felicitous because the alternatives here are sentences like ‘the teacup costs £3’, ‘the milk jar costs £3’, etc., and as explained above, it has a felicitous reading.

We can also explain the felicity of the version of the sentence where the price is £50, as in (23).

(23) Even just the teapot$_F$ costs £50.

This example is acceptable if £50 is expensive for a teapot. In a context where that is the contextual knowledge, £50 for a teapot with other things is more likely than the teapot alone being £50. Therefore the scalar presupposition makes sense in this example. Essentially, the presupposition here amounts to that the price needs to be assumed to be too high.

Now that we have changed our assumptions about the alternatives, we ought to reanalyze the examples with and without minimal sufficiency readings. Those examples with distributive predicates, (3a) and (7), which don’t have minimal sufficiency readings, can be analyzed as before: In these examples just must take sentential scope, and because the alternatives are mutually incompatible, the additive presupposition of even is bound to be inconsistent. More concretely, the prejacent of even in (1a) means that only one cat is in the room, while its alternative says that there is another cat in the room. Similarly the prejacent of even in (7) means that a letter from her arrived today
and nothing else from her did, but its alternative entails that something else from her also arrived today.

Furthermore, the analysis of the example in (2), which does have a minimal sufficiency reading, will not change too much either. The prejacent of even here means that one cat + nothing else will make Patrick happy, and the alternative means that two or more cats will make Patrick happy. The scalar presupposition that the former is unlikely captures the scalar component of the minimal sufficiency reading, and also the additive presupposition captures an entailment of this reading, as before. Likewise, the example in (3a) is also amenable to this analysis. The prejacent of even here says that a letter from her alone makes me happy, and the alternative means that a letter + something else from her also makes me happy. The scalar presupposition says that the former is less likely, which captures the scalar component of the minimal sufficiency reading of (3a), and the additive presupposition captures its additive component.

To be complete, let us also revisit the examples without just in (9).

(9)  a. Even one \( F \) cat will make Patrick happy.
    b. Even a letter \( F \) from her makes me happy.

We need not revise our assumptions about the alternatives of these examples, so their analyses will be the same as given in Section 3.2. Finally the versions of these examples with distributive predicates will pose no problems either.

(23)  a. \#Even one \( F \) cat is in the room.
    b. Even a letter \( F \) from her arrived today.

The alternatives to the prejacent of even in (23a) will be ‘\( \xi \) cats are in the room’ where \( \xi \) is a numeral. If the numerals have an ‘at least’ reading, then the scalar presupposition will be inconsistent, due to the monotonicity of likelihood with respect to entailment.\(^3\) If the numerals have an ‘exact’ reading, then the additive presupposition will be inconsistent.

On the other hand, (23b) has a felicitous interpretation, but this is not surprising. The relevant alternatives are sentences like ‘an email from her arrived today’, ‘a video call from her arrived today’, etc., and the reading derived by the standard semantics of even captures the intuitively available reading.

5 Conclusion and Further Issues

To summarize, the main empirical contribution of the paper is that the distribution of the minimal sufficiency reading of just is correlated with the compatibility with an overt

\(^3\) This point does not depend on the likelihood-based analysis of the scalar presupposition, because other analyses of the scalar presupposition are also designed to rule out cases like this, although space considerations prevent us from delving into this point. See the works cited in Section 3.
even. This generalization seems to us to be empirically solid and exceptionless.⁴ We proposed an account that directly captures this generalization by assuming that the minimal sufficiency reading requires an overt or covert even at the sentential level. We furthermore argued that the standard semantics of even can be used to understand the distribution of the minimal sufficiency reading with auxiliary assumptions about focus alternatives in the configuration ‘even just XP’.

Before closing, we would like to discuss some further empirical matters in light of our analysis. One puzzling property of the minimal sufficiency reading is that it is quite often observed with just, but it does not seem to be easily available with only, if not impossible. Coppock & Beaver (2014: 374) raise the following data involving these and other exclusive particles, including cases where an exclusive particle occurs inside the DP, as in (24b).

(24)  
(a) Just/merely/simply the thought of food makes me hungry.
(b) The mere thought of food makes me hungry.
(c) ?Only the thought of food makes me hungry.
(d) #Exclusively/purely/solely the thought of food makes me hungry.

A similar contrast obtains with numerals, (25b) seems to prefer an exclusivity reading.

(25)  
(a) Just one cat will make Patrick happy.
(b) Only one cat will make Patrick happy.

In light of our analysis, one possible analysis is to assume that different exclusivity particles have different scope properties and somehow only in (25b) prefers to take a sentential scope. However, as Coppock & Beaver point out, there are examples where only seems to give rise to a minimal sufficiency reading. They give the following example in p. 401.

(26)  
Only a small percentage would be enough for a big scale scam to take off.

Importantly, notice that (25b), but not (26), is compatible with an overt even, so our generalization is still valid. Similarly, our generalization about overt even holds for the examples in (24). We think that what needs to be understood is the scope properties of different exclusive particles, which we have to leave for future work.

Appendix

We observed that sentences like (20) are ambiguous with respect to the scope of just, and made crucial use of the DP-internal scope of just to derive the minimal sufficiency reading.

(20)  
Just this teapotF costs £3.

⁴ Grosz (2012) considers examples that involve even and an exclusivity particle, and conclude that minimal sufficiency readings cannot be accounted for in terms of even, but his reasoning hinges on the assumption that optative uses of the exclusive particles are instances of minimal sufficiency readings. We believe his conclusion should be reevaluated in light of the results of this paper, but we would like to leave it for another occasion.
In this Appendix we will spell out the compositional details of the DP-internal scope.

Firstly, since the DP-internal version of *just* arguably takes a non-propositional argument, we have to type-generalize its semantics. We start with the version for propositional arguments, given in (A1). Excl(φ) is the set of excludable alternatives to φ, which can be defined in various ways. In particular, one might want to use Fox’s (2007) notion of innocent exclusion, given in (A2), because in the general case Rooth’s original proposal for only runs into issues, as Fox & Katzir (2011) point out. That said, for our examples, one could understand it as the subset of Alt(φ) whose members are non-weaker than φ.

(A1) \[
\llbracket \text{just } \phi \rrbracket = \lambda w. \llbracket \phi \rrbracket(w) = 1 \text{ and for each } \psi \in \text{Excl(} \phi \text{)}, \llbracket \psi \rrbracket(w) = 0
\]

(A2) Excl(φ) = \bigcap\{S \mid S \text{ is a maximal subset of Alt(} \phi \text{) such that } \neg S \cup \{\phi\} \text{ is consistent}\}
where \neg S is the set of sentences each of which is semantically equivalent to the negation of a member of S.

Now we define generalized conjunction and generazlied negation for conjoinable types.

(A3) **Conjoinable types**

a. \( t \) is a conjoinable type.

b. If \( \sigma \) is a type and \( \tau \) is a conjoinable type, then \( <\sigma, \tau> \) is a conjoinable type.

c. Nothing else is a conjoinable type.

(A4) **Generalized conjunction:** Let \( x \) and \( y \) be of the same conjoinable type.

a. if \( x, y \in D_0 \), then \( x \sqcap y = 1 \iff x = y = 1 \)

b. if \( x, y \in D_{<\sigma, \tau>} \), then \( x \sqcap y = \lambda z \in D_\sigma, x(z) \sqcap y(z) \)

(A5) **Generalized negation:** Let \( x \) be of a conjoinable type.

a. if \( x \in D_0 \), then \( \neg x = 1 \iff x = 0 \)

b. if \( x \in D_{<\sigma, \tau>} \), then \( x = \lambda z \in D_\sigma, \neg x(z) \)

For any set \( S \) whose members are of the same conjoinable type, we write \( \sqcap S \) for the grand conjunction of the members of \( S \). Then, the type-generalized version of *just* will look as follows:

(A5) \[
\llbracket \text{just } \alpha \rrbracket = \llbracket \alpha \rrbracket \sqcap \{\llbracket \beta \rrbracket \mid \beta \in \text{Excl(} \alpha \text{)}\}
\]

If we define Excl(α) as non-weaker alternatives to α, it will be \( \{\beta \mid \beta \in \text{Alt(} \alpha \text{)} \text{ and it is not the case that } [\alpha] \Rightarrow [\beta]\} \). In order to define a type-generalized version of Innocent Exclusion, we need to make use of generalized contradiction, \( \bot \).

(A6) Excl(α) = \bigcap\{S \mid S \text{ is a maximal subset of Alt(} \alpha \text{) such that } \sqcap\{\llbracket \beta \rrbracket \mid \beta \in \neg S \cup \{\alpha\}\} \neq \bot\}

(A7) **Generalized contradiction:** Let \( x \) be of a conjoinable type.

a. if \( x \in D_0 \), then \( x = \bot \iff x = 0 \)

b. if \( x \in D_{<\sigma, \tau>} \), then \( x = \bot \iff \text{for each } z \in D_\sigma, x(z) = \bot \)
For cases with referring expressions like ‘just John’, we can type-lift the type-\( e \) denotation of ‘John’ to its generalized quantifier equivalent, whose type is conjoinable. Similarly for (20).

One way to derive the DP-internal scope of just in sentences (12a) is by giving it a scope within the NP.

(12a) Just one\( _E \) cat will make Patrick happy.

We assume that numerals are not determiners but NP-modifiers (cf. Krifka 1999) and the subjects of (12) contain a phonologically silent existential quantifier, \( \exists \), whose semantics is assumed to be the same as the standard existential quantifier in Generalized Quantifier Theory. Assigning the subject (12a) the structure [\( \exists [\text{just [one cat]}] \)] we derive the desired reading.

However, this analysis does not apply to cases where just attaches above a determiner, as in (20). One way to analyze such cases is by adopting neo-Davidsonian semantics and allowing just to take scope below the existential closure of the event argument. For instance, one could assign the following schematic structure to (20), where EC is the point at which existential closure applies: [EC [just the teapot] costs £3]). The subject bears some theta role (call it \( \theta \)) here that is introduced either by the predicate costs or by some head, e.g. \( v \). Whichever way one takes, we can derive the following reading where \( s \) denotes a state (we do not analyze the object term here to avoid unnecessary complications, and we assume ‘the teapot’ and ‘the milk jar’ to be the relevant alternatives): \( \exists s[\text{costs £3}(s) \& \theta([\text{this teapot}], s) \& \neg \theta([\text{the teacup}], s) \& \neg \theta([\text{the milk jar}], s)] \).

References


