On the scalar antonymy of *only* and *even*

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Abstract
An old observation about the focus sensitive particles *only* and *even* is that they are in some sense scalar antonyms. We examine three schematic proposals raised in the literature to capture this observation, namely that *only* vs. *even* presuppose that the proposition denoted by their prejacent, *p*, is lower vs. higher, respectively **(A)** than **what is EXPECTED/the default STANDARD** (the 'mirative/evaluative antonymy' view), **(B)** than **SOME (salient) alternative** in the set of contextually relevant focus alternatives, C, (the 'existential antonymy' view), or **(C)** than **ALL alternatives** in C (the 'superlative antonymy' view). To tease these views apart, we examine the behavior of *only* vs. *even* in a wide range of contexts and types of discourse, concentrating on the way previously uttered sentences and the salient QUD interact to constrain the C set of contextually relevant alternatives with *only (C) (p)* and *even (C) (p)*. Based on these examinations we argue for the preferability of the 'superlative antonymy' view of *only* and *even*. In contrast, we argue that the 'existential' antonymy and the 'mirative/evaluative' antonymy between *only* and *even* are apparent. The former only holds in specific contexts where one alternative to *p* is made maximally salient. As to the latter, we show that while an evaluative ('above the standard' / 'a lot') inference is hardwired into the scalar presupposition of *even*, alongside the superlative inference, the mirror imaged one ('below the standard' / 'a little') is cancellable for *only* and can be derived from the interaction of its superlative scalar presupposition and domain-based constraints on the alternatives in C.

Keywords *Only* · *Even* · Scales · Focus · Alternatives · Mirativity · Evaluativity · Contextual effects · Standards · QUD

1 Introduction

The semantics of the focus sensitive particle *only* has been a subject of continuous debates in the literature. In this paper, we take a specific perspective on some of these debates, one which focuses on the relationship of *only* to another well-studied and debated focus sensitive particle, namely *even*. In particular, we concentrate on the longstanding observation that *only* and *even* encode some sort of scalar opposites or are antonyms.

For example, Zeevat (2013: 301) writes that:

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> *Only* (and other exclusive particles like *just* or *merely*) expresses that the size of something is disappointingly small: one expected more. Similarly, *even* expresses that one expected less.

Similarly, Beaver and Clark (2008) cite the minimally contrasting pair in (1) and write:

(1) a. David **only** wears a bow tie when [teaching]$_F$.
b. David **even** wears a bow tie when [teaching]$_F$.

> whereas (1a) is appropriate if wearing a bow tie when teaching is less, e.g., eccentric than had been expected or previously indicated, (1b) is appropriate if wearing a bow tie when teaching is regarded as significantly more, e.g., eccentric than has been expected or previously indicated. (Beaver and Clark 2008: 71)

Another example illustrating the antonymy is (2):

(2) (Context: We are in a meeting evaluating John's and Bill's academic achievements, and only manage to hear the following):
a. …and Bill **only** wrote [5]$_F$ papers. (≈> John's number of papers is more than 5)
b. …and Bill **even** wrote [5]$_F$ papers. (≈> John's number of papers is less than 5)

The observation about the scalar antonymy of *even* and *only*, then, seems strong, and in this paper we provide much more data supporting it.[2] It is perhaps surprising, then, that the lexical entries most often used for these two particles in the literature do not reflect this antonymy. The reason may be that, as Beaver and Clark (2008: 71) point out, capturing this observation is not easy:

> in considering the meanings of *only* and *even*, one is tempted to say that they are, in some sense, opposites. Yet it is hard to put one's finger on the nature of this intuitive antonymy.… We suggest that *only* and *even* might best be labeled PRAGMATIC ANTONYMS. [Original emphasis]

In this paper, we try to make progress in 'putting our finger' on the nature of the scalar antonymy of *only* and *even.* To do that, we examine three views in the literature concerning this antonymy, for sentences of the form *only (C) (S)* and *even (C) (S),* where *S* is the prejacent of these particles that denotes a proposition, henceforth called *p,* and C is a contextually determined subset of the focus semantic value of *S*:[3] **(A)** the '**existential** antonymy' view, taking *only* vs. *even* to presuppose that the ordinary semantic value of its

[2] As Zimmermann (2014) points out, this pattern is supported by the fact that in many languages, *only*-like particles get *even*-like interpretations in downward-entailing environments.
[3] See Rooth (1992, 1996) for the way to compositionally derive the focus semantic value of *S* and the set C. Notice also that we take both *only* and *even* to take sentential scope, and the focus domain (in the sense of, e.g., Rooth 1992) is assumed to be the entire sentence in all examples below, even if the surface position of these particles is different.

prejacent (i.e., *p*) is lower vs. higher, respectively, than **some salient alternative proposition** in the set of contextually relevant alternatives, C, **(B)** the '**mirative/evaluative** antonymy' view, where *only* vs. *even* presuppose that *p* is lower vs. higher than **what is expected/the default contextual norm / standard**, and (C) the '**superlative** antonymy' view, where *only* vs. *even* presuppose that *p* is lower vs. higher than **all alternatives** in C.

As seen below, the differences between these views are subtle and in many contexts, the predictions they make empirically overlap. This makes teasing these views apart a challenging task. One goal of this paper, then, is to examine the felicity and interpretation of *only* and *even* in a wider range of contexts than has been done so far, so that we end up with better diagnostics for teasing apart the predictions of each of these views. Our second goal is to argue that this close examination supports the preferability of the **superlative** view over the **existential** and **mirative/evaluative** views. To achieve both goals, we take a close look at the way sentences uttered prior to the sentences with *only* and *even* interact with other contextual factors and thus affect the membership of alternatives in C.

The paper is structured as follows. After a short background on traditional entries for *only* and assumptions concerning contextual constraints on C, we examine in Sect. 2 the basic data motivating our preference for the **superlative** antonymy view over the **existential** and **evaluative** ones. This data concerns the mirror imaged infelicity of *only* and *even* in cases their prejacent, denoting *p*, is used in the presence of previously uttered sentences denoting propositions weaker than *p* (in the case of *only*) and stronger than *p* (in the case of *even*). Section 3 looks closely at the assumption that such previously uttered sentences lead to building alternatives that necessarily enter C. In Sect. 4, we argue that the evaluative antonymy between *only* and *even* (expressing 'a little' vs. 'a lot', respectively) is apparent, since while it is hardwired into the scalar presupposition of *even*, alongside the superlative requirement, it is cancellable for *only* and can be derived from the interaction of its superlative scalar presupposition and domain-based constraints on contextually relevant alternatives in C. Section 5 examines a challenge for the proposal with 'double *only*' cases. Section 6 concludes and points to some directions for future examination.

2 Basic motivation for the superlative antonymy view: The mirror imaged infelicity patten with *only* and *even*

2.1 A brief background on the semantics of *only* and on contextual constraints on C

Given traditional assumptions about *only*, this particle presupposes that its prejacent S (denoting a proposition *p*) is true[4] and asserts the exclusion of alternatives to *p* in the contextually restricted set C which meet certain conditions (are 'stronger', 'non-weaker', 'innocently excludable', etc.). We concentrate here on the view that the excluded alternatives are those that are 'stronger' than *p* on a scale (symbolized with >). The notion of 'stronger' here is a general one, discussed below. An entry along these lines is seen in (3) (see Horn 1969; Klinedinst 2005; Beaver and Clark 2008; Roberts 2011; Coppock and Beaver 2014; Alxatib 2013; Liu 2017 for variants of (3)):

[4] This is a debated assumption, but in this paper we follow it.

(3) $||\textbf{only C S}||^{g,c}$ = for all *q* in C such that $q > ||S||_O \rightarrow q=0$. Only defined iff $||S||_O(w)=1$

Following Rooth (1992), the C set is characterized as in (4) (see also Fox and Katzir 2011; Katzir 2014):

(4) C is a contextually restricted subset of the focus semantic value of the prejacent sentence *S*, containing, besides the ordinary semantic value of S, at least one other focus alternative to it.
Where a focus alternative to S is identical to its ordinary semantic value, except for the focused element which is substituted by an element of the same semantic type.

One way to look at C is as being similar to domain restrictions on quantifiers (von Fintel 1994). Such domain restrictions can be explicit, as in (5), from Rooth (1992), where the explicit mention of the individuals in the first clause causes the alternatives to the prejacent of *only* to involve just Tom and Harry (so the sentence would not be falsified if John introduces another person from the party to Sue). Another example is (6), which given the explicit mention of *in my class* would not be falsified by the presence of students from other classes who passed:[5]

(5) John brought Tom, Bill and Harry to the party, but he **only** introduced $[\text{Bill}]_F$ to Sue.

(6) In my class, **only** $[\text{John}]_F$ passed the exam.

In addition, and again similarly to what happens with quantifiers, domain restrictions on the set of alternatives can be implicit. For example, in discussing (7), Gotzner and Spalek (2019) point out that among the focus alternatives to *p*, of the form *John met X at the bar*, an alternative like *John met a dog at the bar* would probably not be included in C, since it is not a plausible alternative given our common assumptions about who one usually meets at the bar:

(7) John **only** met $[\text{Mary}]_F$ at the bar.

Gotzner and Spalek point out that the alternatives can be further contextually restricted. In the case of (7), for example, the alternatives in C may involve only John's friends and thus exclude the barkeeper.

In addition to such general domain and 'plausibility-based' restrictions, another kind of restriction on the set of alternatives concerns the Question Under Discussion (QUD) salient in the context (see Roberts 1996). In particular, various theories suggested that the alternatives in C can be only those that are contextually relevant with respect to the QUD, i.e., those that constitute a (partial) answer to the QUD (see Spector 2007; Trinh 2019). Given the Hamblin-like approach to questions as denoting sets of propositions as well, and

[5] Thanks to a reviewer for this example.

the view that focus should be congruent to the QUD (see Rooth 1992; Roberts 1996; Beaver and Clark 2008), the salient QUD in (5) can be taken to be *Who did John meet at the bar?*

Let us turn back now to the semantics of *only* in (3). Originally (in Horn 1969), this kind of entry was taken to capture the meaning of just a subset of the uses of *only*, as in (8)-(10):

(8) John is **only** a [clerk]$_F$. (He doesn't have a more prestigious profession, like being a manager.)

(9) I **only** wanted to [speak]$_F$ with John. (I didn't want to do anything more intimate with him, like kiss him.)

(10) John **only** won the [bronze]$_F$ medal. (He didn't win a higher medal, like the silver or gold ones.)

In later theories (Klinedinst 2005; Beaver and Clark 2008; Roberts 2011; Coppock and Beaver 2014), the **scalar** entry in (8) was argued to apply to all uses of *only*, including cases like (7) above, or like (11)-(12):

(11) **Only** [John]$_F$ arrived to the party.

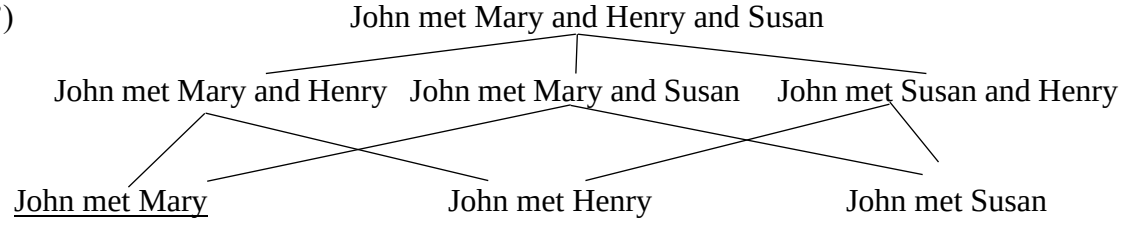
(12) John **only** introduced [Mary]$_F$ to Sue.

Under this suggestion, sentences like (8)-(10) differ from those in (5)-(7) and (11)-(12) in the type of scale along which the alternatives are ordered: in cases like 8)-(10), the scale is based on 'rank-order' or noteworthiness. For example, in (8) *only* asserts the negation of alternatives higher than *John is a clerk* on a scale measuring prestige, as in (8'). Here and below we underline the prejacent proposition, *p*:

(8') {<u>John is a clerk</u>, John is a manager, John is the head of the office, …}

In contrast, in (7) above, the negated alternatives are higher than *p* in that they asymmetrically entail it, as in (7') (see Beaver and Clark 2008):

(7')



Combining the truth of the assertion with the negation of these stronger alternatives in (7') correctly derives the inference John met Mary but no one else at the bar.[6]

Another component sometimes argued to be part of the semantics of this particle is what has been referred to as the 'scalar presupposition' of *only*, meant to capture the fact that in sentences like (13), the presence of *only* triggers the inference that the number of papers counts as 'a little':

(13) John **only** wrote $[3]_F$ papers.

The nature of this additional 'scalar presupposition' of *only* has been argued to be 'mirative' (following the terminology of DeLancey 1997), i.e., to require that *p* falls short of what is expected (Zeevat 2009), to be lower than most/sufficiently many alternatives (Klinedinst 2004, 2005), or to be lower than the expected answer to the Current Question (Beaver and Clark 2008). A wider characterization, suggested in Alxatib (2013), takes *only* to lead to an 'evaluative' inference (in the sense used in some of the literature on gradable adjectives, as in Rett 2015), i.e., to require that *p* indicates a quantity or degree that is below what ought to be the case, or below the contextual norm or standard on a relevant scale. Thus, (13) can be felicitous in a context where writing three papers is actually expected and not surprising given what we know about John and/or the average number of papers that people of his academic status havewritten, but that this number of papers is nonetheless lower than the contextual norm (e.g., the one required for getting a certain position in a new institution).

A second motivation for hardwiring a mirative/evaluative component into the semantics of *only* has been its infelicity in cases where *p* indicates 'a lot' or 'more than expected'. For example, Beaver and Clark (2008: 252) argue that "the presence of an expectation that something stronger than the prejacent is true is an essential part of the meaning of *only*" and support this idea with the felicity contrast in (14):

(14) a. I really expected a suite but **only** got a single room with 2 beds. [web example]
b. #I really expected a single room with 2 beds but **only** got a suite. [constructed variant]

Similar illustrative examples can be seen in (15)-(16):

(15) The average score on the exam was a C. Mary (#**only**) got an $[A–]_F$. (Klinedinst 2004: 4)

(16) John (#**only**) has $[11]_F$ kids. (uttered in typical western contexts where having 11 kids is a lot)

Finally, a component sometimes also added to the entry of *only*, in addition to or besides the 'scalar presupposition' (see, e.g., Roberts 2011; Alxatib 2013; Xiang 2020), is a

[6] Previous theories assume non-scalar entries for cases like (7), which assert the negation of all alternatives distinct from $||S||_O$ (i.e., distinct from *p*) in C (see, e.g., Horn 1969; Rooth 1985, 1992).

presupposition that C has alternatives not entailed by/stronger than *p*, which ensures that the operation of *only* (negating stronger alternatives) is not vacuous. Indeed, when such a presupposition fails, as in (17), *only* is infelicitous:

(17) **#Only** [all]$_F$ students passed the exam.

2.2 An infelicity puzzle with *only*

Against this background, we are now in a position to examine an infelicity puzzle with *only*, originally described in Orenstein and Greenberg (2013) and Orenstein (2016) for sentences like (18a). The pattern can be also seen in (18b) and (18c). In all of these cases, the VP in the sentence before the one with *only* is weaker than that of the prejacent of *only* along the relevant scale, and in all of these cases, *only* is infelicitous:

(18) a. John wrote 5 papers. Bill (#**only**) wrote [6]$_F$.
b. Last year Bill won the bronze medal in the contest. This year he (#**only**) won the [silver medal]$_F$.
c. Last week Bill managed to interview the minister's assistant. Today he (#**only**) managed to interview [the minister]$_F$.

We assume that the C sets for (18a-c) are as in (18'a-c), so that they have, besides $||S||_O$ (i.e., besides *p*), at least the focus alternative constructed by substituting the focused element in *S* with the parallel element in the previously uttered sentence. We come back to this assumption below:

(18') a {… John wrote 5 papers, <u>John wrote 6 papers</u>}
b. {… Bill won the bronze medal, <u>Bill won the silver medal}</u>
c. {… Bill managed to interview the minister's assistant, <u>Bill managed to interview the minister</u>}

Given such C sets, what the infelicitous cases in (18a-c) share is the presence of an alternative weaker than *p* in C.

We call this 'an infelicity puzzle' because the fact that such C sets lead to infelicity of *only* is not accounted for by the entry of *only* in (3) above. This entry requires the falsehood of alternatives stronger than *p* in C but, crucially, it does not ban the very existence of weaker alternatives than *p* in C in any way.

To explain this pattern, one could attempt to derive the infelicity of *only* in (18a-c) from a failure of the non-vacuity constraint, mentioned above. For example, one could take *only* to be infelicitous in (18a) since, given the set C in (18'a), *p* ("Bill wrote 6 papers") is the strongest alternative in C. However, as pointed in Orenstein 2016, this attempt is challenged by the fact that *only* continues to be infelicitous in cases like (19):

(19) A: How many papers have your faculty members written during the last three years?

B: Let's see: Ann wrote 10 papers, Sam wrote 8, Henry wrote 5, Tom wrote 6, Ted wrote 7, Ian wrote 3, and Bill (#**only**) wrote $[4]_F$.

(19a) is similar to (18a), except for having more sentences uttered before the sentences with *only*. We assume here that this leads to adding more alternatives of *p* to C, as in (19'):

(19') {Bill wrote 4 papers, Bill wrote 3 papers, Bill wrote 6 papers, Bill wrote 7 papers, Bill wrote 5 papers, Bill wrote 8 papers, Bill wrote 10 papers, …}

Importantly, unlike what happens in (18a) above, in (19) there **are** alternatives in C which are stronger than *p* and which can be negated by the assertion of *only*. *Only* is infelicitous in this sentence, then, although its operation is non-vacuous. In addition, the infelicity of *only* in (19) cannot be attributed to a violation of the 'mirativity/evaluativity' scalar presupposition, since, given the C set in (19'), *p* can be easily taken to express "a little"/"less than expected"/"less than most alternatives".

We conclude that the infelicity of *only* in (19) indeed constitutes a puzzle given traditional analyses of this particle.

2.3 The mirror imaged infelicity of *even* and the antonymic superlative presupposition hypothesis

An important clue in solving the infelicity puzzle for *only* is the mirror imaged infelicity pattern found with the focus sensitive particle *even*, illustrated (20a-c) (see Greenberg 2016 for discussion):

(20) a. A: How many papers have your faculty members written during the last three years?
B: Let's see: Ann wrote 4 papers, Sam wrote 3, Henry wrote 5, Tom wrote 7, Ted wrote 6, Ian wrote 10, and Bill (#**even**) wrote $[8]_F$.

b. Two years ago John won the bronze medal. Last year he won gold, and this year he (#**even**) won $[\text{silver}]_F$.

c. Two weeks ago I managed to interview the minister's assistant, last week I interviewed the prime minister, and this week I (#**even**) interviewed the $[\text{minister}]_F$.

Crucially, however, unlike the puzzling infelicity of *only*, pointed out in the previous section, the infelicity of *even* in these sentences is straightforwardly derived from its traditional lexical entry (Horn 1969; Karttunen and Peters 1979; Rooth 1985, 1992) in (21). According to this entry, *even* triggers a scalar presupposition requiring that $||S||_O$ is the strongest alternative along a scale in C and asserts the truth of $||S||_O$:[7]

(21) $||\textbf{even C S}||^{g,c} = ||S||_O(w) = 1$. Only defined iff $\forall q \in C\ [q \neq ||S||_O \rightarrow ||S||_O > q]$

[7] We are ignoring here the debated presence of the additive presupposition with *even.*

We assume that the C sets for (20a-c) are as in (20'a-c):

(20') a. {Bill wrote 4 papers, Bill wrote 3 papers, Bill wrote 5 papers, Bill wrote 7 papers, Bill wrote 6 papers, Bill wrote 10 papers, Bill wrote 8 papers}
b. John won bronze, John won gold, John won silver}
c. {I managed to interview the assistant of the minister, I managed to interview the prime minister, I managed to interview the minister}

Importantly, in all these cases *p* is stronger than at least one alternative in C and in (20'a) is also stronger than most alternatives (indicating 'a lot'), Crucially, however, it is not the strongest alternative in C. Greenberg (2016) suggests, then, that what accounts for the infelicity of *even* in cases like (20a-c) is the presence of the traditional 'superlative' presupposition in the lexical entry of this particle, requiring *p* to be stronger than **all** of these alternatives. We can now suggest that the mirror imaged infelicity pattern with *only* discussed above indicates the presence of a mirror imaged superlative presupposition triggered by it, as in (22), requiring that *p* is the weakest alternative in C:[8]

(22) A superlative scalar presupposition for *only (C) (p)*: $\forall q\ [[q \in C \wedge q \neq p] \rightarrow q > p]$

More generally, we suggest that the scalar antonymy of *even* and *only* is 'superlative' in nature, as summarized in (23):

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[8] There are two earlier suggestions for a superlative scalar presupposition for *only* that the present suggestion partially builds on. The first is made in Beaver and Clark (2008: 251), seen in (i), where *CQ* is the Current Question:

(i) Presupposition**:** *The strongest true alternatives in the CQ are* **at least** *as strong as the prejacent.*
Descriptive Content: *The strongest true alternatives in the CQ are* **at most** *as strong as the prejacent.*
[Original emphasis]

Orenstein and Greenberg (2011) and Orenstein (2016), however, point out that the 'at most' component in (i) wrongly predicts *only* to be felicitous in cases like (ii), uttered in a context where *I got a double room with a bath* is considered to be as strong on the relevant scale as *I got a single room with a Jacuzzi*. A similar example is given in (iii):

(ii) The hotel has a variety of rooms: single, double, with showers, with baths, with a jacuzzi. I expected a single room with a Jacuzzi, but (#**only**) got a double room with a bath.

(iii) #John has at least 20 students in his course and **only** 20 arrived today.

A second suggestion is made in Orenstein and Greenberg (2013) and Orenstein (2016):

(iv) $\lambda C.\lambda p.\lambda w$: $w \in p \wedge \forall q\ [[q \in C \wedge q \text{ is salient} \wedge q \neq p] \rightarrow q > p]$. $\forall q\ [[q \in C \wedge q >_s p] \rightarrow w \notin q]$

While (iv) also accounts for the infelicity of *only* in (18)-(19), in this paper we adopt the version of the presupposition in (22). One reason for this is that (iv) has different requirements for different sets of alternatives, namely an assertion concerning all alternatives in C and a presupposition only over a 'salient' subset of C, which is not a usual pattern for focus sensitive particles. More importantly, (22) is more helpful than (iv) in capturing the mirror imaged infelicity patterns of *only* and *even* (see (23)).

(23) **A superlative scalar antonymy hypothesis for *only* and *even:***

a. *Only C S* presupposes that $||S||_O$ (i.e., *p*) is the weakest alternative in C.

b. *Even C S* presupposes that $||S||_O$ (i.e., *p*) is the strongest alternative in C.

Note that some suggestions for mirror imaged superlative presuppositions of *only* and *even* (or their crosslinguistic correlates) were independently made in previous studies, as in Guerzoni (2003), König (1991), Crnič (2012), Charnavel (2017), and Liu (2017). In addition, there is some crosslinguistic support for this view, as in Grubic (2012), who observes that the particle *kapa,* which is present in both Bole and Ngizim, has opposite scalar orderings: *only*-like in Bole—indicating that its prejacent is on the low endpoint—and *even*-like in Ngizim—indicating that its prejacent is on the high endpoint.

However, to the best of our knowledge, the above-mentioned suggestions have not been used so far to explain the mirror imaged infelicity pattern of these two particles. Our observations above can be taken, then, as supporting such suggestions.

3 The superlative antonymy hypothesis and constraints on necessary alternatives in C

3.1 Constraints on necessary alternatives in C (for *only/even (C) (S)*) given previously uttered sentences

We motivated the 'superlative antonymy' hypothesis in (23) above by arguing that it can explain the mirror imaged infelicity of *only* and *even* in sentences like (18)-(19) and (20), i.e., those containing material weaker than and stronger than in $||S||_O$,, respectively. This motivation, though, relies on the assumption that given the sentences uttered before *only S* and *even S,*the sets of alternatives, C are indeed those in (18')-(19') and (20'), respectively.

We now want to make this latter assumption explicit by attempting to characterize more generally the kind of alternatives which must appear in C in *only (C) (p)* and *even (C) (p)* given earlier discourse. To do that, we continue to follow theories reviewed in Sect. 2.1 above in assuming that the members of C should be focus alternatives to *p* that are contextually relevant given both explicit or implicit domain restrictions and given the QUD (i.e., those alternatives that answer the salient QUD that *p* answers). In addition, we can require that among such alternatives, those that are constructed by substituting the focused element by an element in the previously uttered sentence MUST be in C[9] (where an alternative is constructed based on a sentence by substituting the focused material in $||S||_O$ by parallel material in this sentence), as phrased in (24).

[9] By 'previously uttered', we mean only those which are uttered 'close enough' before *only S/even S*. This is clearly a vague characterization, but we suspect it reflects an inherent vagueness in deciding how far previously uttered sentences can still be in order to be influential regarding the alternatives to *p* in C. We leave further examination of this point to future research.

(24) **A constraint on necessary membership of alternatives in C given prior discourse (for *only(C)(S)* and *even(C)(S)*). First version:** Contextually relevant focus alternatives to $||S||_O$ (i.e., to *p*) must be in C if they are constructed based on sentences which are previously uttered

However, while this requirement correctly generates the C sets in (18')–(20') for (18)–(20) above, it is not enough. To illustrate this point consider (25a,b) with *only*:

(25) a. John usually reviews 10 papers a year, and writes 5. This year he (**only**) reviewed $[6]_F$.
b. John usually reviews 10 papers a year, and writes 5. This year he (#**only**) wrote $[6]_F$.

The reason for the felicity contrast between (25a) and (25b) is intuitively clear. In (25a) we compare the number of papers **reviewed** by John this year to the number **reviewed** by him every year, and since the former is lower than the latter, *only* is felicitous. In contrast, in (25b) we compare the number of papers **written** by John this year to the number of papers **written** by him every year (and not to those reviewed by him), and since the latter is higher than the former, *only* is infelicitous.

But crucially, given the requirement in (24) above, the C sets for (25a,b) are (25'a,b), respectively, which do not capture this intuitive contrast, since in both sets *p* is not the weakest alternative:

(25') a. {This year John reviewed 6 papers, This year John reviewed 10 papers, This year John reviewed 5 papers, …}
b. {This year John wrote 6 papers, This year John wrote 10 papers, This year John wrote 5 papers, …}

Crucially, in both sets the alternatives distinct from *p* are focus alternatives to *p* that are contextually relevant to the salient QUD (namely, they answer the question *How many papers does John always review?* in (25a) and the question *How many papers does John always write*? in (25b)). And in both cases, they are constructed based on the previously uttered sentences.[10]

[10] There are some potential interactions of the focus marking, givenness and accentuation in such cases (see Selkirk 1984, 1995; Schwarzschild 1999), which we hope to examine in future research. These interactions do not seem to risk the narrative presented here. For example, while given Selkirk (1995), F-marking a direct object can lead to F-marking the entire VP (through F-projection), this mechanism does not seem to concern FOC(us)-marking, namely marking the element introducing alternatives. (I mark FOC(us) here via $[\ ]_F$, following Rooth 1992, and other theories). This is supported by the fact that the felicity contrast in (25) is also seen in the question-answer pairs in (i) and (ii):

(i) A: I know that John usually reviews 10 papers a year and writes 5. How many papers did he review this year?
B: This year he (only) reviewed $[6]_F$.

(ii) A: I know that John usually reviews 10 papers a year and writes 5. How many papers did he write this

To account for the felicity contrast in (25a,b), then, we propose the constraint in (26):

(26) **A constraint on necessary membership of alternatives in C given prior discourse (for *only(C)(S)* and *even(C)(S)*). Second version:** Contextually relevant focus alternatives to $||S||_O$ (i.e., to *p*) must be in C if they are constructed based on sentences which are

(a) previously uttered
and which
(b) answer the same QUD that *p* answers.

We take two sentences to 'answer the same QUD' if, given their topic and focus structure, there is a QUD that both sentences give at least a partial answer to (see Roberts 1996).

Below we illustrate the relevance of focus and topic structure to (26). But as a basic illustration of this constraint, consider again (25). In (25a), we could take *p* to be an answer to a QUD like *How many papers a year does John review?* Since the previously uttered sentence *John usually reviews 10 papers* is an answer to this QUD, an alternative based on this sentence must be a member of C. In contrast, the previously uttered sentence *John usually writes 5 papers* is not an answer to this question, so an alternative constructed based on this sentence, namely *John reviews 5 papers* does not have to be in C, and can be left out of it. Crucially, this is although this latter alternative itself DOES answer this QUD, and is hence would count as relevant and as a member of C given (24). The opposite is true with respect to (25b) (with the salient QUD *How many papers a year does John write?*).

Thus, following (26) we assume that the only alternatives that MUST be in C for (25a-b) are actually those in the C sets in (25''a-b), respectively, thus correctly capturing the felicity contrast:[11]

(25'') a. {This year John reviewed 6 papers, This year John reviewed 10 papers}
b. {This year John wrote 6 papers, This year John wrote 5 papers}

We predict that we will find the mirror imaged felicity contrast pattern with *even*. The prediction is indeed borne out, as can be seen in (27):

(27) a. Every year John reviews 10 papers and writes 5. This year he (**even**) wrote $[6]_F$.
b. Every year John reviews 10 papers and writes 5. This year he (#**even**) reviewed $[6]_F$.

year?
B: This year he (#only) wrote $[6]_F$.

[11] Importantly, this additional requirement on C seems to be independent of the truth of the superlative scalar presupposition hypothesis and is needed even if one assumes instead that the infelicity of *only* in (25b) is due to the requirement on non-vacuity of *only* (see again Sect. 1 and Sect. 2 above), i.e., the requirement that C must have at least one alternative stronger than the prejacent that can be negated. In particular, given the C sets in (25'), constructed based on requirement (24) alone, the non-vacuity constraint would wrongly predict both sentences in (25) to be felicitous, since *p* is not the strongest alternative in either (25'a) or (25'b).

Notice that given the constraint in (26), the C sets can in principle have many more alternatives besides the ones that are necessarily there—for example, alternatives **not** based on previously uttered sentences. However, these latter alternatives can be pruned from C if they lead to presupposition failure (in our case, if they are weaker/stronger than *p* with *only/even*). In contrast, the alternatives covered by the constraint in (26) cannot be pruned.

3.2 Predictions

The interaction of the two ingredients of our proposal, namely the one requiring mirror imaged superlative presuppositions triggered by *only* and *even* (in (23)) and the one characterizing the alternatives that must be members of C given previous discourse (in (26)), can be now used to make the following predictions:

(28) Predictions of our proposal

A. Contextually relevant focus alternatives to *p,* which are weaker than/stronger than *p,* will make *only/even* infelicitous (respectively) if they are constructed based on sentences which are both

(i) previously uttered

and

(ii) necessarily answering the same QUD that *p* answers.

B. In contrast, such alternatives will **not** make *only/even* (respectively) infelicitous if they are constructed based on sentences which

(i) are not previously uttered (even if these sentences answer the same QUD that *p* answers) **OR**

(ii) do not necessarily answer the same QUD that *p* answers (even if these sentences are previously uttered).

In the next sub-sections, we closely examine these predictions.

3.3 Examining prediction A: A closer look at the infelicity pattern with *only* and *even*

The infelicity of *only* in (18)-(19) and of *even* in (20) above is predicted by clause A of (28) since, in these cases, all previously uttered sentences are indeed answers to the same QUD that *p* answers. In these sentences, the QUD can be identified by the explicit question in the context, the focus on the numeral ('4'), and the Contrastive Topic (CT) intonation on the subjects of the sentence denoting *p* and the previously uttered sentences. We illustrate this with (19), repeated as (29):

(29) A: How many papers have your faculty members written during the last three years?

B: Let's see: [Ann]$_{CT}$ wrote 10 papers, [Sam]$_{CT}$ wrote 8, [Henry]$_{CT}$ wrote 5, [Tom]$_{CT}$ wrote 6, [Ted]$_{CT}$ wrote 7, [Ian]$_{CT}$ wrote 3, and [Bill]$_{CT}$ (#**only**) wrote [4]$_{F}$.

Following Büring (2003) and others, we assume that such CT intonation indicates the presence of a salient super-QUD along the lines of "Who wrote how many papers?", whose sub-QUD daughters are along the lines of *How many papers did Ann write?, How many papers did Sam write?, How many papers did Bill write*?, etc. The prejacent of *only* is relevant to this salient QUD in that it supplies a partial answer to it (see Roberts 1996), and importantly, each of the previously uttered sentences is also relevant to this salient QUD, in that they all supply a partial answer to it as well. Thus, alternatives based on these uttered sentences must enter C by (26), i.e., the set C here is indeed (19') above, where *p* is not the weakest element, accounting for the infelicity of (19).

A similar reasoning can be used with the other infelicitous cases of *only* and *even* in (30a,b), where the salient QUD (*Which medals did Bill win?*) can be identified based on the focus on 'silver medal' and 'bronze medal', and by the CT intonation on the temporal adverbials *last year* and *this year*, even though no explicit question is present:

(30) a. [Last year]$_{CT}$ Bill won the bronze medal in the contest. [This year]$_{CT}$ he (#**only**) won the [silver medal]$_{F}$.
b. [Last year]$_{CT}$ Bill won the silver medal in the contest. [This year]$_{CT}$ he (#**even**) won the [bronze medal]$_{F}$.

3.4 Examining prediction B(i): Felicity of *only* and *even* when *p* is not at the endpoint of the scale

Kay (1990) argues that the quantificational force of the scalar presupposition of *even* is weaker than universal and that *p* is just required to be stronger than some 'context proposition' (cp). Kay motivates this claim by showing that *even* can be perfectly felicitous in sentences like (31a,b), although 'making it to the semi-finals' is not the end of the scale point ('making it to the finals' is more extreme) and "having majors, captains or sergeants making major police decisions would provide the basis for even more extreme assertions" (1990: 90):

(31) a. Not only did Mary win her first-round match, she **even** made it to the [semi-finals]$_{F}$.
b. The administration was so bewildered that they **even** had [lieutenant colonels]$_{F}$ making policy decisions.

A similar pattern can be also illustrated with (30b), repeated here as (32), where *even* is felicitous even though winning silver does not seem to be stronger than all relevant alternatives: winning gold is stronger (less likely/more noteworthy):

(32) Last year Bill won the bronze medal. This year he **even** won [silver]$_{F}$.

Moreover, (30a), repeated here as (33), illustrates that the suggested mirror imaged superlative scalar presupposition of *only* faces exactly the mirror imaged problem (as winning silver is not the weakest possible alternative. Winning bronze is weaker:

(33) Last year Bill won the gold medal. This year he **only** won [silver]$_F$.

Greenberg (2016) suggested handling the challenge presented in Kay (1990) by arguing that in (31) the 'endpoint' alternatives, though contextually relevant, are allowed to be out of C, since they are not as salient as the alternatives based on the previously uttered sentences. As a point of support, Greenberg (2016) shows that the contrast between the infelicitous and felicitous uses of this particle correlates with the presence or absence of previously uttered material stronger than the one in *p*, respectively. An example is the felicity vs. infelicity of *even* in (31a) vs. (34):

(34) (Harry, John and Bill participated in the sports competition.) Harry made it to the finals, John won his first-round match, and Bill (??**even**) made it to [the semifinals]$_F$. (Greenberg 2016, ex. 7)

The same contrast is illustrated in the minimal pair in (35):

(35) a. Two years ago Bill won the bronze medal. Last year he won gold and this year he (#**even**) won [silver]$_F$.
b. Last year Bill won the bronze medal. This year he **even** won [silver]$_F$.

This is predicted in (28Bi) above: only alternatives uttered based on previously uttered sentences (which answer the salient QUD) must be in C. We get, then, the C sets in (35'), where the superlative presupposition (*p* is the strongest element in C) fails (35'a) and is met (35'b):

(35') a. {this year Bill won bronze, this year Bill won gold, this year Bill won silver}
b. {this year Bill won gold, this year Bill won silver}

We can now show that the same kind of contrast holds for *only*, as in (36), with the C sets in (36'):

(36) a. Two years ago Bill won the gold medal. Last year he won bronze and this year he (#**only**) won [silver]$_F$.
b. Last year Bill won the gold medal. This year he **only** won [silver]$_F$.

(36') a. {Bill won gold, Bill won bronze, Bill won silver}
b. {Bill won gold, Bill won silver}

The prediction in (28Bi), then, seems to be supported by this data. At least as far as *even* and *only* are concerned, alternatives that are not based on previously uttered sentences can stay out of C even if they are contextually relevant to the salient QUD (and even if they are part of the same conventionalized scale of alternatives (e.g., *bronze* < *silver* < *gold*)).

3.5 Examining prediction B(ii): Felicity of *only* and *even* in cases of QUD shift

In this section, we deal with cases covered by prediction (Bii) in (28), namely those where *only* and *even* are felicitous because alternatives weaker/stronger than *p* and constructed based on previously uttered sentences can stay out of C because these previously uttered sentences do not necessarily answer the same QUD that *p* answers (even though the alternatives themselves do answer this QUD).

Identifying such cases in a clear and testable way is harder than with the cases dealt with in the previous section (where we could simply point out the absence of previously uttered sentences). This is because all relevant sentences uttered in a discourse are by default answers to a salient QUD (see Roberts 1996), and often several sentences uttered one after the other are answers to the same salient QUD in the discourse. Indeed, this is exactly what we take to happen in many of the sentences with *only* and *even* we looked at above ((18)-(20), (35)-(36), etc.). Thus, to show that a sentence answers a distinct QUD rather than a previously uttered sentence requires us to identify shifts in the QUD. This is a challenge that is not limited to the issues dealt with in this paper.[12] Despite this difficulty, we attempt to identify some contextual factors that seem to affect the QUD, and in turn the felicity of *only* and *even.*

One such factor seems to be a shift in an explicit question in the discourse that *p* and the previously uttered sentences answer. To illustrate, compare (37) to (38):

(37) A: To get into this playground one needs to be at least 10 years old. Can John and Bill get in?
B: Yes. both are old enough to get in. $[\text{John}]_{CT}$ is 13 and $[\text{Bill}]_{F}$ is (#**only**) $[11]_{F}$.

(38) A: To get into this playground, one needs to be a least 10 years old. Can John and Bill get in? They are of the same age, right?
B: Yes, both are old enough to get in, but they are not of the same age: $[\text{John}]_{CT}$ is 13 and $[\text{Bill}]_{F}$ is (**only**) $[11]_{F}$.

The obvious difference between (37) and (38) is the salient sub-question that each of the sentences *John is 13* and *Bill is 11* is taken to answer. In (37), this is (37'):

(37') Salient QUD: Can John and Bill get in the playground?
Sub-questions:
a. Can John get in? (What is the contextually relevant standard age for getting into the playground?, What is John's age?)
b. Can Bill get in? (What is the contextually relevant standard age for getting into the playground?, What is Bill's age?)

[12] See, for example, the discussion of QUD-shifts in Simons et al. (2010) in the context of projectivity phenomena (which are taken to depend on relevance to the salient QUD).

Given these sub-questions for this salient QUD and the constraint in (26) above, the C set for *John is only [11]$_F$* in (37) is as in (37''), where the superlative scalar presupposition of *only* fails:

(37'') {Bill is 10 years old, Bill is 13 years old, Bill is 11 years old}

In contrast, in (38) we take the most salient question that *p* answers to be (38'):[13]

(38') Salient QUD: Are John and Bill of the same age?

The negative answer to the polar question in (38') can be taken to be based on the answer to the question "How old are John and Bill?" This question can be then further divided into the two questions 'How old is John?" and "How old is Bill?" that the two sentences (*John is 13 years old, Bill is only 11 years old*) are congruent with and constitute an elaboration of the negative answer.

The important point about the alternative to *Bill is 11 years old* in (38), then, and what sets it apart from (37), is that given the salient QUD in (38') we are able to ignore the previously uttered sentence about the minimal age norm (being 10 years old), since this sentence does NOT answer this QUD. Thus, the alternative based on this sentence—*Bill is 10 years old*—will not be forced into C and can be pruned in order to avoid the failure of the superlative scalar presupposition of *only*. Consequently, the C set for *Bill is only [11]$_F$* in (38) ends up as (38''), in which this presupposition is met, capturing the felicity of *only* in this sentence:

(38'') {Bill is 13 years old, Bill is 11 years old}

This explanation allows us to make several further predictions. First, we predict that if we keep the two questions in (37) but change their linear order (and the order of their answers) so the question *Can John and Bill get in?* becomes more salient, the status of *only* is degraded. This is borne out in (39):

(39) A: To get into this playground one needs to be at least 10 years old. John and Bill are of the same age, right? Can they get in?
B. They are not of the same age, but both can get in: [John]$_{CT}$ is 13 and [Bill]$_F$ is (??**only**) [11]$_F$.

A second prediction is that given a salient QUD of the form *Can John and Bill get in?*, with the sub-questions as in (37'), it is not only the sentence about the minimal age, but also the one about John's age, which cannot be ignored. This is indeed seen in the infelicity of *only* in (40):

[13] We assume that this indeed is the salient QUD, despite the declarative form of *They are of the same age.* The addition of *right?* indicates that the speaker is not sure about the answer (though she is biased toward a positive answer), so we can take the question to be as in (38'). We postpone investigation of the relationship between (non-)biased questions and their ability to function as the QUD to future research.

(40) A: To get into this playground one needs to be at least 10 years old. Can John and Bill get in?
B: No. [John]$_{CT}$ is 8 and [Bill]$_{F}$ is (#**only**) [9]$_{F}$.

Given the salient QUD and the contrastive topic intonation, the constraint in (26) above determines that C for *Bill is only 9 years old* is (40'), in which the superlative scalar presupposition of *only* fails, explaining its infelicity:

(40') {Bill is 10 years old, Bill is 8 years old, Bill is 9 years old}

On the other hand, we predict that if the subject in the sentence about Bill's age is not marked as a contrastive topic, it will be easier to ignore the previously uttered sentence about John's age. This is because, while CT marking indicates that the same QUD is being answered, the lack of this marking allows for a situation where the two sentences will then not necessarily be taken to be part of a strategy to answer the same QUD (namely a question about a comparison between John and Bill). (41) is an attempt to construct an example of such a case, and indeed *only* is better in it than in (40):

(41) A: To get into this playground one needs to be at least 10 years old. Can John get in?
B. No. He is 8.
A: Oh, that's a pity. What about Bill? Can he get in?
B: Let me check. No. Sorry. He is **only** [9]$_{F}$, so he is too young as well. Perhaps next year.

Another factor affecting QUD-shifts involves shifting discourse goals, which is exemplified in (42) with *only* and in (43) with *even*:

(42) (Context: Harry, John and Bill have to pay $100 in cash in a restaurant. They are not sure whether they have enough money together to pay the bill. Harry checks the amount each participant has in his wallet and calculates the sum).
Harry: Let's see. [I]$_{CT}$ have $45, and [John]$_{CT}$ has $20. So we are missing $35 (checks Bill's wallet…) We're in trouble! [Bill]$_{CT}$ **only** has [$30]$_{F}$.

(43) (Same context as in (42)):
Harry: Let's see. [I]$_{CT}$ have $45, and John has [$20]$_{CT}$, so we are missing $35. (checks Bill's wallet….): That's ok! [Bill]$_{CT}$ **even** has [$40]$_{F}$!

We suggest that whereas the original QUD is "Do Harry, John and Bill together have $100?", this QUD is shifted after each utterance to reflect the remaining needed sum, so before the sentence *[Bill]$_{CT}$ only has [$30]$_{F}$*, the QUD becomes "Does Bill have the remaining sum?" (i.e., the missing $35). Thus, the alternatives "Bill has $45" and more importantly "Bill has $20", which would cause the superlative presupposition of *only* to fail, can stay out of C, even though they can be constructed based on previously uttered sentences, since these sentences do not themselves answer the updated QUD that *p*

answers. Instead, C looks as in (42'), where the superlative presupposition of *only* is met. A similar case can be made for the felicity of *even* in (43), with a C set as in (43'):

(42') {Bill has \$35, Bill has \$30}

(43') {Bill has \$35, Bill has \$40}

As support, we observe the infelicity of *only* and *even* in a context where the previously uttered sentences about Harry's and John's individual amount of money cannot be ignored and pruned from C, as in (44)-(45):

(44) (Context: Harry, John and Bill sit together in a restaurant and try to guess how much money each of them has in cash. Harry counts the amount of money in each wallet):
Harry: Let's see. $[\text{I}]_{CT}$ have \$45, $[\text{John}]_{CT}$ has \$20 and $[\text{Bill}]_{CT}$ (#**only**) has $[\$30]_{F}$.

(44') {Bill has \$45, Bill has \$20, Bill has \$30}

(45) (Same context as in (44)):
Harry: Let's see. $[\text{I}]_{CT}$ have \$45, John has $[\$20]_{CT}$ and $[\text{Bill}]_{CT}$ (#**even**) has $[\$40]_{F}$.

(45') {Bill has \$35, Bill has \$50, Bill has \$40}

A final case of QUD-shift we want to consider is (46), which seems to be affected by standard-shift:

(46) A: I heard that Mary solved all 10 questions in the exam. Did you manage that too?
B: Well, no… But we still did very well. John answered 8 questions, and I **even** answered $[9]_{F}$.

We suggest that *even* is felicitous in (46) because B's answer indicates that John's and Bill's achievements are evaluated relative to a new implicit standard, which counts as 'very well', although it is lower than solving 10 questions (e.g., solving 7 questions). This leads to a shift from the question "Did you meet Mary's standard?" to "Did you meet the new standard?", so Mary's achievement can be ignored, thus not risking the scalar presupposition of *even*. Indeed, deleting *But we still did very well*, the status of *even* becomes significantly worse in (46).

The cases above are clearly illustrative examples only. Undoubtedly, many more cases exemplifying felicity contrasts with *only* and *even* in different contexts due to QUD-shifts can be constructed. Explaining all such cases requires a systematic and precise way for identifying the salient QUD, which is often implicit, and identifying the contextual factors licensing QUD-shifts. These are general challenges for any QUD-based theory, especially since some of these factors, like discourse goals, standards of comparison, etc., can be themselves implicit. These challenges call for the need of a general theory of QUD-shifts. We hope that the examination above regarding the contextual factors that seem to affect

QUD-shifts with *only* and *even* can contribute to the development of such a general theory in future research.

4 The evaluative effects of *only* and *even* and the superlative antonymy hypothesis

4.1 *Even* and *only:* Both superlative and evaluative antonyms?

The proposal developed in the last two sections raises a question regarding the observation that *only* and *even* seem to trigger mirror imaged evaluative inferences, indicating 'a little' vs. 'a lot', respectively. This observation was already illustrated in (2) above, and it can be taken to be further supported by felicity contrasts as in (47) and (48):[14]

(47) (How do you think John will do in the quiz?)
   a. He won't do so well. I think he can **only**/#**even** solve $[6]_F$ problems.
   b. He will do great. I think he can **even**/#**only** solve $[6]_F$ problems.

(48) a. A: John **only** published $[5]_F$ papers this year.
      B: What do you mean by "only"? Having 5 published papers in a year is astonishing!
   b. A: John is **even** shorter than $[\text{you}]_F$!
      B: Hey, what do you mean by "even"? I am not that short!

The question, then, is how to account for these observations within the present framework. Can the evaluativity effects of *only* and *even* be derived from their superlative scalar presuppositions? Alternatively, do we need to hardwire antonymic evaluative requirements into the semantics of these two particles? Such a requirement can be informally phrased as the 'evaluative antonymy hypothesis' in (49):

(49) **<u>An evaluative antonymy hypothesis for *only* and *even*</u>**
   a. *Only C S* presupposes that $||S||_o$ (i.e., *p*) indicates 'a little', i.e., a degree lower than the contextual norm.
   b. *Even C S* presupposes that $||S||_o$ (i.e., *p*) indicates 'a lot', i.e., a degree higher than the contextual norm.

In this section, we propose that the answers to these questions differ depending on whether the particle is *only* or *even.* More specifically, we argue against the hypothesis in (49) as a whole. Instead we propose that despite the mirror imaged evaluative inferences of *only* and *even,* they are only superlative, NOT evaluative antonyms.

To motivate this claim, we start by pointing out in the next section an asymmetry between the evaluativity effects of *only* and *even*. Based on this asymmetry, we suggest in Sect. 4.3 and Sect. 4.4 that while an evaluative requirement, as in (49b), is hardwired into the semantics of *even,* alongside the superlative requirement in (23b) above, the evaluative

[14] Thanks to an anonymous reviewer for these examples.

effect of *only* is not hardwired (i.e., (49a) is not correct). Instead the evaluative effects of *only* are indirectly derived from its superlative scalar presupposition in (23a) above.

4.2 An evaluative asymmetry between *only* and *even*

Consider the felicity contrast between *only* in *even* in (50):

(50) (The average price for a dress is $50)
   a. The blue dress is expensive. It costs $100. The red dress is cheaper—it is only $75. So it is also expensive, but costs less than the red one.[15]
   b. The blue dress is cheap. It costs $20. The red dress is more expensive—it is (#even) $30. So, it is also cheap but costs more than the red one.

What this felicity contrast seems to show is that for *only S* to be felicitous, it is enough that $||S||_O$ indicates a price that is lower than the previously uttered price, crucially even if this price itself counts as expensive, i.e., as high relative to the contextual norm of prices. In contrast, with *even S*, just taking $||S||_O$ to indicate a price higher than the previously uttered price is NOT enough. Instead, $||S||_O$ (as well as its alternatives) must indicate a price which is perceived as expensive, as in the felicitous (51):

(51) The blue dress is expensive. It is $75. The red dress is **even** $100.

Two more examples illustrating this asymmetry are (52) and (53):

(52) a. John is tall. He is 1.92m. Bill is shorter—he is **only** 1.88m (but he is still tall).
   b. John is short. He is 1.52m. Bill is taller. He is (#**even**) 1.58m (but he is still short).

(53) (Context: John and Bill are two average students checking their grades. The average grade/the grade one needs in order to be accepted to the second year is B+.)

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[15] A reviewer points out that a variant of (50a), as in (i), is odd (though still better than (50b) with *even*):

(i) Both dresses are expensive. The blue one costs $100. The second one is (?only) $75. So it is cheaper but still expensive.

A direction for explaining this observation relies on the existence of the adjective in the positive form in the sentence before *only S*, which is assumed to involve the covert degree modifier *pos* (see Kennedy and McNally 2005) and to be true iff both dresses have a degree of cost that is above the standard.

On the one hand, then, we have a previously uttered sentence which can be taken as an answer to the same QUD that *p* answers (e.g., *How much does the dress cost? It costs more than the standard* is felicitous) and which can be used to construct an alternative to *p* (substituting *pos* for $75, assuming both of them are of the same type, namely <<d,t>,t>). On the other hand, *pos* is covert, and the standard in its interpretation is a variable that gets its value from the context. Given this latter fact, the saliency of the alternative and its membership in C may not be clear. This explains why *only* sounds odd (at least to some speakers) but is not utterly infelicitous.

We leave a more thorough examination of this case and the implications for the way covert material can affect the construction of alternatives in C to future research.

a. John: Unbelievable! I got an A+!
   Bill: You got more than me then! I **only** got an A. (But this is still more than the average/than what I need. I am so happy!)
b. John: Oh no. I got a C in the exam…
   Bill: You got less than me then, I (#**even**) got a C+. (But this is still less than the average/than what I need. I am disappointed!)

We take this data to indicate that, despite the strong similarity between their mirror imaged effects, the evaluativity of *even* and *only* is of a different nature. *Even* is indeed a true evaluative particle, whose semantics has a hardwired, non-cancellable 'above the norm' component, indicating 'a lot'. In contrast, the evaluative inference of *only* is cancellable, and its prejacent does not inherently express 'a little', but just needs to indicate 'less' than its alternative(s) in C.[16]

To the extent this conclusion is on the right track, though, it raises an obvious question: if evaluativity is not hardwired for *only*, what explains its common evaluative effects? We turn to answer this question in the next section.

4.3 The common (but cancellable) evaluativity of *only* as derived from its superlative scalar presupposition

In this section, we propose that assuming a superlative scalar presupposition of *only* can account for the fact that the evaluative effects of this particle are common, but at the same time cancellable. In doing so, we rely on ideas raised in Krifka's (2000) discussion of the particles *already* and *still*.

4.3.1 Krifka's (2000) superlative semantics for still*, deriving its mirativity effects, and its application to* only

Krifka (2000) discusses the observation that *still* and *already* raise mirative/evaluative inferences, seen in (54):

(54) a. Lidia is 3 years old. (no inference)
b. Lidia is **already** 3 years old—one would expect Lidia to be younger.—**3 is 'a lot'**
c. Lidia is **still** 3 years old—one would expect Lidia to be older.—**3 is 'a little'**

[16] A reviewer points out that a listener of an *only*-sentence like (ia) is entitled to react to it by saying "What do you mean 'only $250?'" (see also (48a)):

(i) Bill charges $300 for his lessons, and/but Mary charges only $250.

We take such a listener to question whether the standard cost of lessons (assumed to be lower than $250) is not salient enough, and so an alternative constructed based on it should necessarily enter C. In future research, we hope to examine the idea that there is a continuum of saliency (perhaps relativized to different speakers), which affects membership of alternatives in C.

Unlike van der Auwera (1993), Krifka (2000) suggests that these inferences are not hard-wired into the semantics of *still* and *already* (see also Löbner 1989; Michaelis 1996) but are derived from two ingredients. The first is Krifka's claim that along a temporal scale, the prejacent of *already* and *still* denotes the latest and earliest alternative, respectively (Krifka 2000: 405):

(55) a. Lidia is $[3]_F$ years old.
b. alternatives considered: 1 2 <u>3</u> 4 5,
c. alternative asserted: <u>3</u>

(56) a. Lidia is **already** $[3]_F$ years old.
b. alternatives considered: 1 2 <u>3</u>
c. alternative asserted: <u>3</u>

(57) a. Lidia is **still** $[3]_F$ years old.
b. alternatives considered: <u>3</u> 4 5
c. alternative asserted: <u>3</u>

Krifka's second ingredient is the suggestion that the alternatives to the 'prejacent' of *still* and *already* are "assertions that, given the common ground and the informational interest of the interlocutors, could have been made at the current point of conversations" (2000: 405). This, he suggests, is due to a general pragmatic constraint on constructing sets of alternatives, which together with the constraints on alternatives for *still* and *already* seen in (56)-(57) leads to the 'mirative' effects:

> The alternative propositions must be considered reasonable, or entertainable, at the current point in discourse … hence (*still* and *already*) express a deviation from expected values in a particular direction … 'already' in [(56a)] gives rise to the understanding that Lydia's age is greater than may have been expected, and *still* in [(57a)], that it is smaller than may have been expected. These meaning components are conversational implicatures that arise from the fact that only such alternatives are constructed that can plausibly be entertained. (Krifka 2000: 405)

To apply Krifka's ideas to our understanding of *only*, we first suggest that what Krifka calls the 'alternatives considered' are the contextually relevant alternatives in the set C, and that the requirement that the 'considered' alternatives to $||S||_O$ are only those which are reasonable/entertainable at the current point in discourse, is a manifestation of the plausibility domain-based constraint on C (see Sect. 2.1 above).[17] Second, we take *only* to be similar to *still* in that both trigger a superlative scalarinference, requiring $||S||_O$ (i.e., *p*) to be the weakest alternative in C on the relevant scale. This does not mean that the two particles are equivalent—there are clearly differences between the scales that *still* and *only* operate over,

[17] See Liu (2017) for a similar application of Krifka (2000) to explain the evaluativity effects of Mandarin *jiu*.

leading to differences in the readings available for them[18] and in the status of the prejacent and the scalar requirement (asserted vs. presupposed). However, there are sometimes parallels between these scales and readings, as illustrated in (58):

(58) a. Lidia is **still** 3 years old. She is too young.
b. Lidia is **only** 3 years old. She is too young.
Alternative considered (=C) – {3 4 5}

Another interesting support for this parallel concerns independent observations concerning languages where exclusive (*only*-like) and *still*-like particles are lexicalized the same (see reports in Van Baar 1991).

We are now in a position to show how the interaction of these two ingredients derives the default but cancellable evaluativity effects (expressing 'a little') of *only*. To do that, we examine two types of discourse where *only S* can appear and that differ regarding the existence of these effects.

4.3.2 Discourses where the evaluative ('a little') inference of only arises, and those where it doesnot arise

The first type of discourse we look at is where *only S* is uttered 'out of the blue' or as an answer to a question, as in (59)-(60):

(59) John **only** wrote $[3]_F$ papers.

(60) A: How many papers did John write?
B: He **only** wrote $[3]_F$ papers.

Importantly, there are no previously uttered sentences here that can be used to construct alternatives to *John wrote 3 papers,* so constructing relevant alternatives is done by relying on non-linguistic factors like common ground assumptions regarding an entertainable/plausible number of papers, around the average/median number of papers, the number of papers known in the common ground to be relevant for some purpose (e.g., to get a promotion), etc.

Integrating these plausibility-based considerations with the presupposition that all the alternatives in C must be stronger than $||S||_O$ (i.e., than *p*) leads to the fact that *p* ends up being weaker than the alternatives that count as plausible or 'entertainable', given common

[18] For example, as a reviewer points out, the temporal scale is available for *still* but not *only*:

(i) Mary is still/#only here

See Umbach (2009) and Beck (2020) on the types of scales for *noch/still* and Zimmermann (2018) on *Schon/already*.

ground standards, similarly to what Krifka (2000) suggests for *still*. This, we suggest, is the reason for the evaluative ('a little') effect of *only* in such cases.[19]

Moreover, we can now also explain the infelicity of *only* in cases like (16) above, repeated here as (61):

(61) John (#**only**) has $[11]_F$ kids. (infelicitous in typical western contexts)

The superlative presupposition of *only* C results in examples like (61'), where *p* is the weakest element:

(61') {…, John has 14 kids, John has 13 kids, John has 12 kids, John has 11 kids}

But this requirement clashes with common ground assumptions regarding number of kids in typical western contexts, according to which the higher alternatives are not plausible, and it is therefore hard to consider them contextually relevant, leading to infelicity. More generally, then, the oddness of *only* with focus associates indicating 'a lot' (as in (61)), does not result from directly violating an evaluative/mirative presupposition ('less than the norm'/'less than expected'), but rather from the interaction of the superlative scalar presupposition ('*p* is the weakest alternative in C') and plausibility-based considerations in constructing C.

The second kind of discourse we look at is one where *only S* appears after a previously uttered sentence with material stronger than in *p*. We predict that in this kind of discourse, the evaluative effects of *only* will NOT necessarily arise. This is because alternatives constructed based on such sentences can be considered plausible/entertainable at the current point in discourse simply because they have been just entertained. Thus, there is no need to rely on common ground expectations or standards to construct a contextually relevant stronger alternative to $||S||_O$ (i.e., to *p*) in C, so the 'a little' inferences are predicted not to arise.[20]

The prediction seems to be borne out, as seen in the felicity contrasts in (62) and (63):

(62) a. (A: How many kids does John have?) B: He (#**only**) has $[11]_F$ kids.
b. A: Bill has 12 kids.
B: Wow, that's a lot! And what about John?
A: He has less. He **only** has $[11]_F$ kids.

[19] This derivation of the evaluative ('a little') effect of *only* seems better than attempts to derive this effect from non-vacuity (cf. Alxatib 2020). Consider, for example, (i) in a context where there are 10 levels of price for pens in this shop. The requirement that there is at least one alternative stronger than *p* in C is not enough to capture the fact that $10 is considered a low price, since it can in principle be the second- or third-highest price:

(i) This pen costs only $[\$10]_F$.

[20] A similar mechanism is proposed in Umbach (2009) regarding cases where additive *noch* combines with a comparative, leading to a 'beyond the norm' effect when uttered 'out of the blue', but not when uttered after another comparative.

(63) a. (How tall is Bill?) – He is (#**only**) 2.05m tall.
b. John is 2.10m tall. Bill is a bit shorter—he is **only** [2.05m]$_F$.

More generally, cases where *only* is felicitous without giving rise to 'a little' effects are predicted to be those with previously uttered explicit stronger sentences. This is, indeed, exactly what we also saw in the examples with *only* in Sect. 4.2 above.[21]

4.4 The evaluativity ('a lot') effects of *even* are hardwired, alongside its superlative scalar presupposition

We argued that the cancellable evaluativity ('a little') effects of *only* are not hardwired, but are derivable from its superlative scalar presupposition, together with plausibility constraints on the contextually relevant alternatives in C. In contrast, as observed in Sect. 4.2.1, the evaluativity effects of *even* ('a lot') are not cancellable, crucially not even in the presence of previously uttered sentences weaker than *p* (see again (50b)-(52b) above). We take this to indicate that in the case of *even* these effects are hardwired into its semantics, along with a superlative presupposition. This contrast between *even* and *only* is schematically summarized in (64a) vs (64b):

(64) a. <u>The scalar presupposition of *even C S:*</u>
Superlative component: $||S||_O$ (i.e., *p*) is the strongest alternative in C. +
Evaluative component: $||S||_O$ (i.e., *p*) indicates 'more than the norm'.
b. <u>The scalar presupposition of *only:*</u>
Superlative component: $||S||_O$ (i.e., *p*) is the weakest alternative in C.
(+ a derived evaluative inference that $||S||_O$ (i.e., *p*) indicates less than the norm.)

A possible way to capture this semantics of *even* is proposed in Greenberg (2015, 2018). Greenberg argues against the common characterization of the scalar presupposition of *even* as based on unlikelihood and suggests instead a degree-based characterization. This characterization is inspired by a preliminary suggestion in Rullmann (2007) about the role of *even* as indicating correlation with degrees on a scale associated with a gradable property, and more formally models it following Beck's (1997) modal analysis of comparative correlatives. The resulting presupposition has both a superlative and an evaluative component, as seen in (65):

[21] It would be interesting to compare this suggestion to Beaver and Clark (2008). On the one hand, Beaver and Clark take the discourse function of *only* to "make a comment on the Current Question … which weakens a salient or natural expectation. To achieve this function, the prejacent must be weaker than the expected answer to the CQ on a salient scale" (2008: 251). On the other hand, they suggest that this 'mirative' function can be derived from the MIN and MAX operators, in the semantics of *only*, which are relativized to the information state σ. Beaver and Clark (2008: 261) point out that "[i]n a full analysis, the state σ would keep track not only of the common ground of the participants and the questions under discussion, but also their expectations."

(65) ***Even****(C)(p)* is defined iff for all alternatives *q* in C distinct from *p*, a non-focused element x in *p*, and a contextually supplied gradable property G, the following holds:
$\forall w1,w2\ [w1Rw \wedge w2Rw \wedge w2 \in p \wedge w1 \in [q \wedge \neg p]] \rightarrow$
$[max\ (\lambda d2.G(d2)(x)(w2)) > max\ (\lambda d1.G(d1)(x)(w1))$ **(superlative component)**
$\wedge\ max\ (\lambda d1.G(d1)(x)(w1)) \geq standard_G\ ]$ **(evaluative component)**

In prose, for all alternatives *q* in C distinct from *p*, a non-focused element, x, in *p*, and a contextually supplied gradable property G, *even(C)(p)* presupposes that the degree of x in the accessible worlds where *p* holds exceeds its degree in the accessible worlds where q-and-not-*p* holds (the superlative component), and in the latter worlds the degree of x exceeds the contextual norm on the scale G (the evaluative component).

It is interesting to examine whether the superlative scalar presupposition of *only* can be formulated in a degree-based format as well (cf. Alxatib 2020 for a suggestion along these lines). Among other things, this may allow us to capture in a unified way the variability in the type of scales *only* was reported to be sensitive to (cardinality, rank-order, etc.). An attempt to formulate the superlative presupposition of *only* in a parallel way to that of *even* in (65) is given in (66):

(66) ***Only****(C)(p)* is defined iff for all alternatives *q* in C distinct from *p*, a non-focused element x in *p*, and a contextually supplied gradable property G, the following holds:
$\forall w1,w2\ [w1Rw \wedge w2Rw \wedge w2 \in p \wedge w1 \in [q \wedge \neg p]\ ] \rightarrow$
$[the\ max\ (\lambda d2.G(d2)(x)(w2)) < the\ max\ (\lambda d1.G(d1)(x)(w1))$
(superlative component)

Leaving the precise characterization of the scales for *even* and *only* to future research, our more general conclusion is that *only* and *even* are scalar antonyms in terms of their mirror imaged superlative presuppositions, but not in terms of triggering an evaluative presupposition.[22]

5 A challenge and a direction for future research: Double *only* cases

[22] Another interesting question for further research is whether the distinction between hardwired vs. derived evaluativity argued here for *even* vs. *only* holds more generally for all *even*-like and *only*-like particles crosslinguistically. A preliminary examination seems to suggest that, at least for exclusive *only*-like particles, the answer is negative. This is because alongside *only*, there also seem to be exclusives with a hardwired evaluative component whose 'lower than the norm' inference is non-cancellable. Examples are English *merely* (Beaver and Clark 2008; Coppock and Beaver 2014) and Hebrew *stam* (Orenstein 2016; Greenberg and Orenstein 2016), *bilvad* and *kula*. See also Winterstein et al. (2018) on the inherent evaluativity in the argumentative nature of *only* and of *even* crosslinguistically, Iatridou and Zeijlstra (2021) for discussion of similar evaluativity effects with *in years*/punctual *until* and Homer (2019) on *all* in copular sentences.

5.1 A challenge with double *only* cases

In Sect. 2 and Sect. 3 above, we argued that the mirror imaged infelicity of *only* and *even* in the presence of previously uttered sentences that are weaker and stronger than the prejacents of these particles, respectively, can be explained by the interaction of two assumptions: (a) that *only* and *even* trigger mirror imaged superlative scalar presuppositions, requiring *p* to be the weakest and the strongest alternative in C, respectively, (see (23)), and (b) that contextually relevant alternatives to *p* constructed based on previously uttered sentences which answer the same QUD that *p* answers must be in C (see (26)).

Greenberg (2019) points out cases that challenge this picture for *only*, namely those with double *only*, as in (67a). A similar example illustrating the same challenge is (67b), cited in Xiang (2020). For ease of presentation, we mark the two occurrences of *only* with subscripts:

(67) a. The average number of children here is 5. John **only$_1$** has 2 children. And Bill **only$_2$** has $[3]_F$.
b. How much are these shoes? Well. this pair is **only$_1$** \$40, and that pair is (**only$_2$**) $[\$50]_F$.

In the next section, we review Xiang's (2020) suggestion to account for the felicity of *only* in such cases, which she argues holds for cases of 'double *even*' as well and which relies on the assumed evaluativity (instead of superlativity) of *only* and *even.* We point out issues for this attempt in Sect. 5.3, and conclude in Sect. 5.4 by sketching a preliminary direction for handling the challenge, whose more thorough examination we leave for future research.

5.2 Xiang's (2020) evaluativity-based proposal for double *only* and double *even* cases

Xiang (2020) takes the semantics of both *even* and *only* to include existential quantification over alternatives. Regarding *even,* she follows Kay (1990) in assuming a lexical entry for *even* as in (68), presupposing that *p* is less likely than at least one of the contextually relevant focus alternatives and asserting that *p* is true:[23]

(68) $even_C = \lambda p \lambda w$: $\exists q \in C\ [q >_{likely} p].p(w) = 1$

As for *only,* Xiang (2020) assumes that its lexical entry is as in (69). In prose, *only* asserts that all excludable alternatives to *p* in C are false ('exhaustivity') and triggers a 'non-vacuity' presupposition requiring that there is at least one excludable alternative to *p* in C (not entailed by the prejacent) and one requiring the truth of *p* in w ('prejacent'):

(69) $only_C = \lambda p \lambda w$: $\exists q \in Excl(p,C) \wedge$ $p(w) = 1$. $\forall q \in Excl(p,C)[q(w) = 0]$
non-vacuity prejacent exhaustivity

[23] This claim is important for Xiang's derivation of the *even*-like reading of the Mandarin particle *dou*. Notice, though, that Xiang points out that the scale for *even*/*dou* may be based on other gradable properties and not necessarily on (un)likelihood, as suggested in Greenberg (2018).

To motivate the existential—rather than universal—force over alternatives in the scalar presupposition of *even*, Xiang relies on the felicity of *even* in cases where *p* is not at the endpoint of the scale, as in Kay's (1990) example in (31a), repeated here as (70):

(70) Not only did Mary win her first round match, she **even** made it to the [semi-finals]$_F$.

Xiang (2020) is aware, however, that this suggestion is challenged by the infelicity of *even* in cases like (34) above, repeated here as (71):

(71) (Harry, John and Bill participated in the sports competition.) Harry made it to the finals, John won his first-round match, and Bill (??even) made it to [the semifinals]$_F$. (Greenberg 2016)

To account for such infelicities, Xiang adds the assumption that *even* carries an evaluative inference requiring that *p* is unlikely. She then argues that the infelicity of *even* in (71) is due to the violation of a pragmatic constraint on evaluative particles in coordinating structures, namely (72):

(72) **The felicity condition of coordinating clauses with evaluatives:** For an evaluative expression *δ*, a coordination with clauses {*q*, *δ(p)*} is felicitous only if the evaluative inference of *δ(p)* does not entail the evaluative inference of *δ(q)*.
(Xiang 2020: 198)

Xiang (2020: 198) explains the rationale behind (72) as follows:

> Contra Greenberg (2016, 2019) I argue that the oddness of *even* in [(71)] is not due to the failure of satisfying the scalar presupposition of *even*. Instead, it is due to the oddness of not using *even* when the option of using *even* is clearly available in terms of the truthfulness of the related evaluative inference and the speaker's linguistic habit of using evaluative particles. […] "*S*1 and *even–S*2" implicates that either (i) *even-S*1 is infelicitous, i.e., that the evaluative scalar presupposition, that *S*1 is unlikely, is false, or at least that (ii) *even–S*2 does not grant the felicity of *even–S*1…. In consequence, **if *even* is used for a less extreme case, it should also be used for the more extreme case(s).** (My emphasis)

As a point of support, Xiang argues that unlike (71), *even* is felicitous in (73), where it is used BOTH with a less extreme case and a more extreme case:

(73) [— Harry, John and Bill participated in the sports competition. I heard that Harry won his first round. How exciting! — Well,] not only that Harry won his first round, John **even$_1$** made it to the [FInals]$_F$, and Bill **even$_2$** made it to the [SEMI–finals]$_F$!
(Xiang 2020: 198)

Xiang further argues that the constraint in (72) can be used to explain similar felicity contrasts with *only*, as in (74a) vs. (74b) (repeated from (67b)):

(74) [— How much are these shoes? — Well, ...]
a. …this pair is $40, and that pair is (#**only**) [$50]$_F$.
b. …this pair is **only$_1$** $40, and that pair is (**only$_2$**) [$50]$_F$. (Xiang 2020: 199)

In particular, she proposes that *only* is an evaluative particle too, i.e., the pragmatic antonym of *even* (following Klinedinst 2005; Beaver and Clark 2008; Zeevat 2009; Alxatib 2013), which in (74) "triggers an evaluative inference that the speaker considers the said price cheap" (Xiang 2020: 199). Given the constraint on evaluatives in (72), then, (74a) is infelicitous since "it is odd to use *only* for a higher price while not using it for a lower price … compared with (74b)" (Xiang 2020: 199).

5.3 Issues for the evaluativity-based explanation of double *only* and double *even* cases

Despite the intuitive appeal of the evaluativity-based suggestion reviewed above, it faces several issues.

First, the suggestion crucially relies on the assumption that *even* and *only* are both evaluative particles. This assumption is crucial for the claim that the infelicity of *even* in (71) and of *only* in (74a) is equally due to violating the constraint in (72). However, this assumption is problematic given the evaluative asymmetry of *only* and *even* observed in Sect. 4 above, i.e., the observation that *only* can be felicitous even when *p* does not indicate 'a little'. Given such observations, we concluded above that whereas the evaluativity of *even* is hardwired into its semantics, that of *only* is derived, and it is not a real evaluative particle.

But if indeed *only* is not an evaluative particle, then attributing its infelicity in sentences like (74a) to violating the constraint on evaluatives in (72), just like *even,* is problematic. The same problem holds for many other infelicitous cases with *only* discussed above, like (19), (40), and (44).

In addition, if *only* is indeed not a real evaluative particle, it will be difficult to explain the infelicity of *only* in sentences like (37), repeated here as (75), since unlike cases like (74a), in these cases it is impossible to 'save' the sentence by adding another occurrence of *only* in the 'less extreme' sentence in A's utterance (i.e., *only at least 10 years old* would be infelicitous itself):

(75) A: To get into this playground one needs to be at least 10 years old. Can John and Bill get in?
B: Yes. both can get in. [John]$_{CT}$ is 13 and [Bill]$_F$ is (#**only**) [11]$_F$.

More generally, the evaluativity-based proposal does not predict the range of felicity differences with *only* and with *even* described in Sect. 3, which we explained by relying on QUD-shifts, which in turn lead to shifts in the characterization of C.

Moreover, the assumption that both *even* and *only* are equally subject to the constraint in (72) predicts that the infelicitous cases with *even* in (71) and with *only* in (74a) will be equally saved in the 'double operator' cases. As seen above, Xiang (2020) argues that this

is indeed the case. We observe, however, that *only* and *even* differ in this respect: while (74b) and (67a) with double *only* are indeed felicitous, our informants found (71) above with double *even* to be much less natural. This pattern seems rather general and is illustrated also in (76)-(77):

(76) Context: The average salary here is \$100 per week.
   a. Danny doesn't manage so well. Last week he **only**$_1$ earned \$30! And this week **only**$_2$ \$50!
   b. Danny manages great! Last week he **even**$_1$ earned \$150! And this week (??**even**$_2$) \$130!

(77) Context: The average price of a dress is \$50. How much are the blue and red dresses over there?
   a. Let's check… Both are cheap. The blue one is **only**$_1$ \$20 and the red one is **only**$_2$ \$30.
   b. Let's check… Both are expensive. The blue one is **even**$_1$ \$100 and the red one is (??**even**$_2$) \$70.

This asymmetry between *only* and *even* is not limited to coordination structures, but can be found in dialogues as well, as in (78):

(78) (Context: The average price of a dress is \$50. Mary, Sue and Ann are in a shop together):
   a. Mary: This dress is cheap! It's \$40!
      Sue: And that one is only \$20!
      Ann: Right. And the one over there is **only** \$30! Wow! It's really cheap here!
   b. Mary: This dress is expensive! It's \$70!
      Sue: And that one is even \$100!
      Ann: Right. And that one over there is (#**even**) \$80! Wow! It's really expensive here![24]

In all these cases, the second occurrence of *only* in the (a) sentences is judged as significantly better than the second occurrence of *even* in the (b) sentences. This asymmetry is not predicted by the evaluativity-based suggestion for *even* and *only* reviewed above.

Finally, even if one considers both *only* and *even* evaluative particles to be subject to the constraint in (72), a third issue for the evaluativity-based proposal is the existence of 'order contrasts' with *only* and *even*, exemplified in (79)-(80):

(79) (Context: Two years ago John got a 90 on his exam. Is he still that good?)
   a. Yes, last year he got a 100. And I think this year he'll (#**even**) get a 97.

[24] Indeed, the double-*even* cases are fine with the 'correct' ordering, as in (i):

(i) Mary: This dress is expensive! It's \$70!
Sue: And that one is even \$80!
Ann: Right. And that one over there is (**even**) \$100! Wow! It's really expensive here!

b. Yes, last year he **even** got a 97. And I think this year he'll get a 100.

(80) (Context: Two years ago John got a 90 on his exam. Is he still that good?)
a. Well, last year he got an 80. And I think this year he'll (#**only**) get an 87.
b. Well, last year he **only** got an 87. And I think this year he'll get an 80.

While *even* and *only* are odd in (79a)-(80a), most of our informants judged them as good (or at least as significantly better) in the minimally contrasting (79b)-(80b). This is not expected given the rationale behind the constraint in (72), according to which in a coordination structure one should use an evaluative particle in a less extreme case only if it is also used in a more extreme case. For example, given this constraint, *even* is infelicitous in (79a) because if we are using this particle with a less extreme case (*He got a 97*), we should also use it in a more extreme case (*He got a 100*). But importantly, the same pattern is witnessed in (79b) as well, which only differs from (79a) in the linear order of the sentences. Thus, *even* is wrongly predicted to be infelicitous in this sentence too. A similar case can be made for (80) with *only*.

In contrast, the existence of such 'order contrasts' is straightforwardly predicted by the superlative-based hypothesis and the constraint on necessary membership of alternatives in C, developed in Sect. 2 and Sect. 3 above. (79a)-(80a) are infelicitous for exactly the same reasons as the original cases in (18)-(20) above: given the previously uttered sentences in these cases, C necessarily contains an alternative stronger than *p* (in (79a) with *even*) and weaker than it (in (80a) with *only*), which leads to violations of their superlative presuppositions. In contrast, *even* and *only* are correctly predicted to be felicitous in (79b)-(80b) because by the time the sentences with these operators are uttered, the 'problematic' material has not been uttered yet, as it is uttered AFTER these sentences. Thus, there is no contextual pressure to use this material in constructing alternatives in C. Instead, when the sentences with *only* or *even* are uttered, stronger and weaker alternatives than *p* are accommodated into C, respectively. Hence, the superlative scalar presupposition can be met with such accommodated alternatives, so that when the second sentences are being processed, the operation of *only* and of *even* has been already safely and appropriately completed.

One could wonder whether a constraint on linear order can be adopted by Xiang (2020) in some form to account for the order contrasts in (79)-(80). It seems, however, that such a move would be stipulative for several reasons. First, given the rationale behind the constraint on evaluative particles in (72), all that is required is that if one uses an evaluative particle in a less extreme case in one coordinate, this should be done only if the particle is also used in a more extreme case in the other. There seems to be no inherent reason to assume that this constraint covers only cases where the more extreme case appears before the less extreme one, rather than vice versa. That is, the constraint in (72) is not expected to be sensitive to linear order. Second, according to Xiang (2020) the infelicity of sentences with *only p/even p* in the presence of material weaker/stronger than *p* is not due to the presence of resulting weaker/stronger alternatives in C (as given this proposal, the scalar presupposition of these particles is not 'superlative'). Thus, constraints on C of the sort developed in Sect. 3 are not expected to play a part in this infelicity, and indeed, the

constraint in (72) does not make reference to focus alternatives or to contextually constrained sets of alternatives like C.

In contrast, the left vs. right asymmetry of uttered material, which is part of the constraint on obligatory alternatives in C proposed in Sect. 3 (i.e., the fact that this constraint concerns **previously** uttered sentences), is not merely stipulated, but reflects the idea (in, e.g., Rooth 1992) that focus is anaphoric, and finds its antecedent in the context. The constraint in Sect. 3 gives one specific implementation of this idea (at least for cases with *only* and *even*).[25]

5.4 An alternative direction for handling the challenge with 'double *only*' cases

Given the discussion above, we reject the idea that the felicity of double *only* cases as in (67a-b) above is due to avoiding a violation of the constraint on evaluative particles in (72). This, however, still leaves us with the challenge of explaining the felicity of these cases in the present framework. For example, if indeed alternatives based on previously uttered sentences that answer the same QUD that *p* answers must be in C (see again (26)), then the C set for $only_2$ in (76a), repeated here as (81), is as in (81'), thus wrongly predicting $only_2$ to be infelicitous since its superlative scalar presupposition would fail:

(81) The average number of children here is 5. John **only$_1$** has 2 children. And Bill **only$_2$** has $[3]_F$.

(81') {Bill has 5 children, Bill has 2 children, Bill has 3 children}

The ability of the superlative scalar presupposition of $only_2$ to be met in (81), then, depends on having a C set without the alternative *Bill has 2 children*. Indeed, what seems to intuitively happen in (81) is that Bill's and John's achievements (in the prejacents of $only_1$ and $only_2$) are compared to the higher norm expressed by the first sentence (*The average number of children here is 5*), instead of to each other. The question, then, is how the very presence of $only_1$ in (81) leads to this result.

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[25] An interesting piece of data, pointed out by a reviewer, is the infelicity of *only* in (i):

(i) Bill wrote 6 papers. Mary wrote 7. John wrote 3. And Sue (??only) wrote 3.

We hypothesize that this infelicity is not because of the scalar presupposition of *only*, but instead because of the lack of *also/too/as well* in the second sentence, due to some Maximize Presupposition! effect. For example, B's answer sounds better with *too/as well:*

(ii) Bill wrote 6 papers. Mary wrote 7. John wrote 3. And Sue too only wrote 3/only wrote 3 as well.

In addition, unlike the left/right asymmetry pointed out above, if we reverse the order in (i), as in (iiia), the result is still odd. But again, things are better when we add *as well*, as in (iiib):

(iii) a. #Bill wrote 6 papers. Mary wrote 7. John only wrote 3. And Sue wrote 3.
b. Bill wrote 6 papers. Mary wrote 7. John (only) wrote 3. And Sue too wrote 3/wrote 3 as well.

We leave further examination of this data to future research.

A direction we want to raise at this point is that this may be due to the well-studied (though still debated) status of the prejacent of *only*, namely its not-at-issueness. That is, it might be that because the prejacent of $only_1$ in (81) is not-at-issue, it can/must be ignored in constructing the C set for $only_2$, even though it is part of a previously uttered sentence.

The direction seems promising in that it might help explain the asymmetry between double *only* and double *even* cases, observed in the previous section. To recap, we observed that the status of *even p* in the presence of a previously uttered stronger sentence remains odd, even if that sentence contains another occurrence of *even* (see again (76b)-(78b)). This is in contrast to the mirror imaged cases of double *only*, which are felicitous (see again (76a)-(78a) and (67)).

Above we argued that the evaluativity-based proposal developed in Xiang 2020 does not predict this asymmetry. In contrast, the direction just sketched may be more productive in this respect, since unlike the not-at-issue status of the prejacent of *only*, the prejacent of *even* is known to be at-issue. To illustrate, in (76b) with *even* we hypothesize that when constructing alternatives to *John earned $140*, the alternative *Bill earned $160* must be a member of C because it is constructed based on the at-issue uttered prejacent of $even_1$. This leads to C as in (76b'), where the superlative presupposition of $even_2$ fails, explaining its infelicity:

(76b') {John earned $100, John earned $160, John earned $140}

In contrast, we hypothesize, since the prejacent of $only_1$ in (76a) is not-at-issue, the alternative based on it—*Bill earned $30*—does not enter the C set for $only_2$, despite the fact that it is previously uttered. Thus, C for $only_2$ is as in (76a'), where its superlative presupposition is met, explaining its felicity:

(76a') {John earned $100, John earned $50}

Similarly, given this direction the real C set for (81) is not (81'), but rather (81''), explaining the felicity of $only_2$ (and a similar case can be made for (67b) above):

(81'') {Bill has 5 children, Bill has 3 children}

If this direction is on the right track, the constraint in (26) above regarding the way previously uttered sentences affect the C set should be amended to reflect the distinction between not-at-issue and at-issue uttered material. We postpone further examination of this, as well as other directions for handling the challenge posed by double *only* vs. double *even* cases, to future research.[26]

[26] A reviewer wonders whether the hypothesized 'at-issueness' condition can be used by Xiang (2020) to explain the asymmetry pointed out above between *only* and *even* (as in (80)). We think the answer is negative.As already pointed out at the end of Sect. 5.3, Xiang's proposal does not seem to rely on what is and what is not a member of C, or more generally on the status of coordinated sentences as [ir-]relevant alternatives.What affects the felicity of the particles in this proposal is their 'evaluative inferences' (see again (72)). In contrast, the condition hypothesized in this section concerns the prejacent of $only_1$ vs. $even_1$ (as being [not-]-at-issue), and hence as being an [ir-]relevant alternative

6 Conclusion and some further directions for future research

We started this paper with Beaver and Clark's (2008: 71) words about *only* and *even*:

> In considering the meanings of *only* and *even*, one is tempted to say that they are, in some sense, opposites. Yet it is hard to put one's finger on the nature of this intuitive antonymy.

By examining the felicity and interpretation of *only* and *even* in a wide range of contexts, we hope to have made progress in "putting one's finger" on the nature of the antonymy of these particles. In particular, we argued that our examination provides novel support for a superlative antonymy view of *only* and *even*, originally suggested in Guerzoni (2003), taking them to presuppose that *p* is the weakest vs. the strongest alternative in C, respectively. We furthermore suggested that the superlative antonymy view makes better predictions than the existential antonymy and evaluative antonymy views. According to the former, *only* and *even* require that *p* is weaker/stronger than some (salient) alternative in C, respectively. While this seems to be true when there is one alternative in C, it cannot explain cases of infelicity where there are multiple such (salient) alternatives in C and *p* is weaker/stronger than just one of them. The latter view takes *even* and *only* to require that *p* indicates a degree smaller than/larger than the contextual norm, giving rise to 'a little' inference vs. 'a lot' inference, respectively. We examined data showing that while such an evaluativity inference ('a lot') is hardwired into the semantics of *even*, alongside its superlative presupposition, the mirror imaged one ('a little') is cancellable in the case of *only*. Instead, we proposed deriving the evaluativity effects of *only* from the interaction between its superlative scalar presupposition and plausibility constraints on contextually relevant alternatives in C. We showed that this view correctly predicts the types of discourse where the 'a little' effects of *only* arise vs. those in which they disappear.

The claim regarding the scalar presuppositions of *only* and *even* required an explication of the assumptions regarding the way that previously uttered material affects the construction of the set C of alternatives with *only* and *even*. We suggested that focus alternatives based on previously uttered sentences that necessarily answer the same salient QUD that *p* answers (and that themselves answer this QUD) must be in C. We discussed a number of contextual factors which can lead to QUD shifts, and hence affect the construction of C and in turn the felicity of *only* and *even*. Toward the end of the paper, we hypothesized that this constraint should be augmented with the requirement that only at-issue previously uttered material be used to construct necessary alternatives in C, thus potentially explaining asymmetries between double *only* and double *even* cases. These assumptions and hypothesis should be further examined in future research.

It would be interesting to more generally examine the constraints on C discussed in this paper by comparing them to parallel constraints in other types of studies motivated by other phenomena regarding focus-sensitive operators.

One type of such studies is experimental in nature. Similarly to our finding in this paper, studies on the activation of alternatives have found that alternatives constructed based on previously uttered sentences have a prioritized status. For example, Fraundorf et al. (2013)

report that the ability to reject alternatives to a sentence with a focused element (marked by prosody or by font emphasis) is improved when the alternative is based on a previously mentioned material. Similarly, Gotzner (2015) reports that mentioned alternatives get the highest amount of activation when considering sentences with *only* (see also Gotzner et al. 2016), and Kim et al. (2015) argues that material mentioned prior to sentences with *only* lead to activating an alternative to the focus associate (see also Baker et al. 2009). It would be interesting to examine whether QUD-shifts affect the activation of alternatives as predicted in (28) above.

Another body of studies that attempt to characterize the way the set of alternatives is constrained deal with scalar-implicatures and the symmetry problem (see Fox and Katzir 2011; Chierchia et al. 2011; Katzir 2014; Magri 2014; Trinh and Haida 2015; Breheny et al. 2018; Trinh 2019; Gotzner and Romoli 2021, etc.) and assume that scalar-implicatures are a result of the operation of *exh*, a covert variant of *only*. To generate only attested scalar-implicatures, Fox and Katzir (2011) and Katzir (2014) define a complexity-based constraint on the set of alternatives, where the lexicon and 'salient' constituents (namely "constituents of the structures of utterances made in recent discourse" [Katzir 2014: 50]) seem to have an equal status in constructing alternatives in the 'substitution source'.[27] This seems to differ from the prioritized status given to previously uttered material over the lexicon, proposed above to account for the infelicity pattern with *only* and *even* (see Sect. 3.3). We suggest examining this difference in future research.

A related question concerns the comparison between overt *only* and covert *exh* (cf. Chierchia et al 2011 and subsequent work). We observe that these differ with respect to both the infelicity pattern and evaluativity inferences. In particular, we observe that unlike *only*, constructions where *exh* is assumed to be present are felicitous against previously uttered sentences with material weaker than in *p*, as seen in (82)-(83). In addition, such constructions raise no evaluative ('a little') inference, even when these sentences are uttered 'out of the blue', as seen in (84) (see Crnič 2012):

(82) A: How many papers did your faculty members write?
B: Let's see: Bill wrote 7, Henry wrote 12, Tom wrote 11, Ted wrote 9, Ann wrote 9 as well, Bill wrote 4 Ian wrote 6, and John (#**only**)/**exh** wrote $[5]_F$.

(83) John solved half of the questions in the exam. Bill (#**only**)/**exh** solved [most of them]$_F$.

(84) a. John **only**/**exh** has $[3]_F$ kids. (unlike *only*, *exh* does not yield the inference that 3 is 'a little')
b. John (#**only**)/**exh** has $[11]_F$ kids. (unlike *only*, the sentence with *exh* is felicitous)

To the extent that our explanations of these effects with *only* are on the right track, there are at least two ways to explain these observations. One is to assume that unlike *only*, *exh* does not trigger a superlative scalar presupposition. Another is to explore the possibility

[27] Though see Trinh (2019) on the challenges in characterizing 'salience' in this approach.

that unlike *only*, *exh* imposes different constraints on constructing sets of alternatives based on previously uttered sentences.[28]

We leave the examination of these and other possibilities to future research. We hope that the examination of the data discussed in this paper contributes more generally to our understanding of alternative-sensitive phenomena and the way they are affected by context.

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[28] A third possibility is to assume that in sentences like (82) and (83), we have double occurrences of covert *exh* (similarly to the double overt *only* cases discussed in Sect. 5 above). This, however, would not explain the lack of evaluativity effects of *exh* in (84). In addition, applying the hypothesis developed for double *only* cases to *exh* is risked by the claim, made in Bassi et al. (2020), that unlike *only*, the prejacent of *exh* is at-issue.

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