

A distributed analysis of *only**

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The positive, non-exclusive inference of *only* has been famously elusive, both with respect to its projective status as well as to its content (e.g., Horn 1969, 1972, 1996, McCawley 1993, Atlas 1993, among many others). This is due to the apparently irreconcilable properties it exhibits: in some cases the positive inference behaves like a presupposition, while in others it does not; in some cases the inference is strong, corresponding to the pre-jacent of *only*, while in others it is not, corresponding to a mere existential inference. This complex topography, we argue, surfaces the exceptive nature of *only* (cf. von Stechow & Iatridou 2007). More specifically, if the import of *only* is distributed between a minimality and a subtraction component, as has been argued for exceptives (esp., Gajewski 2008), the apparently irreconcilable properties of *only* can be captured.

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1 Horn's dilemmas

In the study of any expression, one needs to determine what meaning the expression contributes to the sentences in which it occurs, and how this meaning is encoded (that is, whether it is presupposed or asserted, whether it is sourced to the expression alone or some other mechanism is involved, etc). These two questions have proved to be particularly difficult to answer in the case of the focus-sensitive particle *only*. Accordingly, this has led to it and other exclusive particles to command considerable attention in the literature (see Horn 1969, 1972, 1996, 2002, Groenendijk & Stokhof 1984, Atlas 1993, von Stechow 1991a,b, Rooth 1985, 1992, Krifka 1993, von Stechow 1997, Geurts & van der Sandt 2004, Klinedinst 2005, Roberts 2006, 2011, Wagner 2006, von Stechow & Iatridou 2007, van Rooij & Schulz 2007, Ippolito 2008, Beaver & Clark 2008, Coppock & Beaver 2014, Alonso-Ovalle & Hirsch 2019, among many others).

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This state of affairs may at first sight seem unexpected. A sentence like (1), where *Gali* is focused (as represented with the F diacritic), uncontroversially gives rise to two inferences. The first inference is positive: *Gali* arrived on time (which has been described as the ‘prejacent’ of *only*, namely, the meaning of the sentence minus *only*), given in (1a). The second inference is negative (exclusive): no individual distinct from *Gali* arrived on time, given in (1b).

- (1) Only *Gali_F* arrived on time.
- a. **Positive inference:** *Gali* arrived on time
 - b. **Negative inference:** No one distinct from *Gali* arrived on time

However, the semantic contribution of *only* – particularly its positive inference – shows puzzling variability once one looks at more complex sentences embedding it, as well as at more complex discourses containing simple sentences like (1). This variability extends along the two initially mentioned dimensions, as discussed by Horn (1969, 1972, 1996, 2002) and others:

- the projective status of the positive inference (see Section 1.1), and
- the precise content of the positive inference (see Section 1.2).

1.1 Projection dilemma

Setting the stage. We work up to the projective puzzles posed by *only* by reviewing some general properties of asserted, presupposed, and implicated meanings.¹ Consider the sentence in (2), which contains the change of state verb *stop*. The meaning of the sentence is exhausted by two inferences: that *Gali* used to smoke, (2a), and that she does not smoke anymore, (2b).

- (2) *Gali* stopped smoking.
- a. ⇒ *Gali* smoked
 - b. ⇒ *Gali* does not smoke (anymore)

What is the nature of these two inferences? First of all, they share the property that neither of them can be suspended. This is witnessed by the infelicity of both non-modalized and modalized continuations in (3), all of which contradict the inferences described in (2). This kind of non-suspendability is typical of presupposed and asserted meanings, but not of implicatures.

- (3) *Gali* stopped smoking
- a. #(In fact,) she never smoked / she might have never smoked.
 - b. #(In fact,) she still smokes / she might still smoke.

The two inferences of *stop* can, however, be differentiated by looking at their behavior in the scope of modal verbs, (4), negation, (5), and questions, (6). In all these cases, the inference about *Gali* smoking (before stopping) is inherited by the matrix sentence – as indicated in the (a)-examples – while the inference about *Gali* not smoking (after stopping) is not – rather, it

¹Instead of treating the positive inference of *only* as asserted, presupposed, or implicated, one could take it to be an inference of a yet another kind (cf. Horn 2002, Roberts 2011). Rather than engaging with these approaches directly, we hope to show that recourse to them is not necessary. However, it should be obvious that calling an inference a ‘presupposition’, a lexical item a ‘presupposition trigger’, or showing that they pattern like some other inferences or expressions, as we do in this subsection, has no explanatory value on its own, but at most a descriptive one. See also, e.g., Tonhauser et al. 2013 on some challenges for providing a uniform description and explanation of the phenomena commonly classed under the heading of ‘presupposition’.

becomes either modalized, negated, or questioned, as indicated in the (b)-examples. (Note that due to the future-orientation of the deontically flavored modal verb *have*, the inference about Gali smoking pertains to the present time.)

- (4) Gali has to stop smoking.
 a. \Rightarrow Gali smokes / \nRightarrow Gali does not smoke (anymore)
 b. \nRightarrow Gali has to smoke / \Rightarrow Gali has to not smoke (anymore)
- (5) Gali didn't stop smoking.
 a. \Rightarrow Gali smoked / \nRightarrow Gali does not smoke (anymore)
 b. \nRightarrow Gali did not smoke / \Rightarrow Gali still smokes
- (6) Did Gali stop smoking?
 a. \Rightarrow Gali smoked / \nRightarrow Gali does not smoke (anymore)
 b. \nrightarrow Did Gali smoke? / \rightsquigarrow Does Gali not smoke (anymore)?

Again, at least in the absence of a special intonation pattern (cf. Horn 1989), none of the observed inferences in (4)-(6) can be suspended. For illustration, (7) demonstrates that both the modalized and non-modalized continuations of the sentences in (4) and (5) that contradict their (a)-inferences result in an infelicitous sequence.

- (7) a. #Gali has to stop smoking and (in fact) (perhaps) she never smoked.
 b. #Gali didn't stop smoking and (in fact) (perhaps) she never smoked.

This projective behavior led to the first inference in (2), pertaining to Gali having smoked before, being described as a presupposition, and to the second inference being described as an assertion (see, e.g., Heim 1990, Beaver 2001, Kadmon 2001 and references therein for further distinguishing tests, and, e.g., Tonhauser et al. 2013 for important qualifications):

- (8) *Categorizing the inferences of 'Gali stopped smoking':*
 a. **Presupposition:** Gali smoked
 b. **Assertion:** Gali does not smoke (anymore)

This categorization has been further buttressed by embedding sentence (2) in the scope of an emotive factive predicate. For example, the sentence in (9) conveys Tali's expectations towards Gali not smoking (anymore), (9b), but not to her having smoked before – as expected if Gali having smoked is a presupposition of *Gali stopped smoking* (see, e.g., Heim 1992, von Stechow 1999 for a detailed discussion of presupposition projection under emotive factives).

- (9) Tali is surprised that Gali stopped smoking.
 a. \Rightarrow (Tali believes that) Gali smoked.
 b. \Rightarrow Tali did not expect that Gali does not smoke (anymore).

With these diagnostics in hand, we now turn to the positive inference of *only*.

Only. The positive inference of *only*, exemplified in (1), does not exhibit the same uniform behavior when it comes to the descriptive categorization as a presupposition, assertion, or implicature. Let's first consider the suspendability of the positive inference in simple sentences (e.g., Horn 1972, 1996, Roberts 2006, 2011, van Rooy & Schulz 2007, Ippolito 2008, Beaver

& Clark 2008). (10) illustrates that a non-modalized continuation that contradicts the putative positive inference of (1) is infelicitous, (10a), while a modalized continuation that contradicts it just as much is felicitous, (10b). The asymmetry in felicity between the continuations indicates that some inference pertaining to Gali arriving on time does survive, namely, one that is contradicted by (10a) but not by (10b) – namely, that Gali may have arrived on time.

- (10) Only Gali_F arrived on time
 a. #... and (in fact) she didn't (either).
 b. ... and perhaps she didn't either.

Obligatory inference: \diamond (Gali arrived on time)

This pattern is unexpected on the assumption that the positive inference is either a pre-supposition or assertion – these inferences cannot be suspended. It is also unexpected on the assumption that the positive inference is an implicature – an implicature should be cancellable by a non-modalized continuation as well. We are thus at an impasse, at least given our characterization of the positive inference as corresponding to the prejacent.

A similar pattern can be observed when *only* is embedded in the scope of a universal modal, as illustrated by the sequences in (11). The initial sentence in (11) does not convey that Tali will dance with Gali, nor that Tali has to dance with Gali – note that the modalized continuation in (11b) is felicitous. Nonetheless, the sentence does give rise to the weaker inference that Tali is allowed to dance with Gali – which accounts for the non-modalized continuation in (11a) being infelicitous. (The pre-VP *only* is used to trap its scope below the modal, cf. Taglicht 1984.)

- (11) Tali has to only dance with Gali_F
 a. #... and (in fact) she cannot dance with her either.
 b. ... and she doesn't have to dance with her either.

Obligatory inference: \diamond (Tali dances with Gali)

We will call the availability of the inference pattern illustrated in (10)-(11) ‘weak projection’: specifically, weak projection of the positive inference obtains in an unembedded or modal sentence that dominates an occurrence *only* if the sentence inherits as an inference not the prejacent of *only*, or its universally modalized variant, but rather its existentially modalized variant. Accordingly, when a sentence does inherit the prejacent of *only*, or its universally modified variant, we will call the inference pattern ‘strong projection’. The latter projection is strongly preferred in the absence of explicit suspension.

(P) Weak and Strong Projection: A sentence that dominates an occurrence of *only* and inherits merely the inference that the prejacent of *only* is possible exhibits ‘weak projection’ of the positive inference. Otherwise it exhibits ‘strong projection’.

In contrast to simple and modalized sentences, the positive inference does behave like a pre-supposition in the scope of negation, emotive factive predicates, and in questions. For illustration, the sentence in (12) is infelicitous both with modalized and non-modalized continuations that contradict the positive inference that Gali arrived on time (Horn 1972, Ippolito 2008).

- (12) Not only Gali_F arrived on time
 a. #... and (in fact) she didn't (either).
 b. #... and (in fact) perhaps she didn't (either).

Obligatory inference: Gali arrived on time

Similarly, the question in (13) intuitively conveys that Gali arrived on time. This inference cannot be suspended by either a non-modalized, (14a), or a modalized continuation, (14b).

- (13) Did only Gali arrive on time?
 - a. #Yes, and (in fact) she didn't (either).
 - b. #Yes, and (in fact) perhaps she didn't (either).

Obligatory inference: Gali arrived on time

Finally, in the case of embedding under an emotive factive predicate, we obtain the inference that Gali arrived on time, that Tali believes that, and that Tali did not expect that no one else will arrive on time. This is in line with Gali arriving on time being a presupposition of the embedded sentence (see Beaver & Clark 2008, Ch. 9, for further support). (We turn to other tests for presuppositions in Sect. 4, where *only* sometimes exhibits more complex behavior.)

- (14) Tali is surprised that only Gali arrived on time.
 - a. \Rightarrow (Tali believes that) Gali arrived on time.
 - b. \Rightarrow Tali did not expect that no one distinct from Gali will arrive on time.

Summary. We have ended up with apparently conflicting data involving the nature of the positive inference. In some cases it has the hallmarks of presupposition (under negation, emotive factive predicates, and in questions), while in others it behaves unlike presupposition, assertion, or implicature (in overtly unembedded and modalized sentences). This is summarized in Table 1 and constitutes the first dilemma addressed in this paper.

	Unembedded	Modals	Negation	Questions	Emotive factives
Predicted	$p / \diamond p$	$p / \Box p / \diamond p$	$p / \diamond p$	$p / \diamond p$	$p / \diamond p$
Observed	$p / \diamond p$	$p / \Box p / \diamond p$	$p / \diamond p$	$p / \diamond p$	$p / \diamond p$
	see (10)	see (11)	see (12)	see (13)	see (14)

Table 1: Predicted and observed inferences of *only* in relation to its prejacent *p*. The predictions are based on the assumption that the inference is a presupposition. Gray boxes indicate behavior incompatible with the prejacent being a presupposition.

1.2 Content dilemma

Following the prevailing trend, we took it for granted above that the positive inference introduced by *only* should be characterized with the prejacent of *only*. A weaker assumption would suffice, however, to derive the entailment pattern described in (1): if *only* were to induce merely an existential inference – namely, that there is an individual who arrived on time – the sentence would entail the same positive inference (e.g., Horn 1996, Geurts & van der Sandt 2004, Klinedinst 2005, Wagner 2006, von Stechow 1997, von Stechow & Iatridou 2007, Beaver & Clark 2008, Coppock & Beaver 2014). This is demonstrated in (15).

- (1) Only Gali_F arrived on time.
- (15) No one distinct from Gali arrived on time. *(negative inference)*
Someone arrived on time. *(existential inference)*
 ∴ Gali arrived on time. *(positive inference)*

This assumption, however, would not on its own capture the behavior of the positive inference when *only* occurs under negation and in questions, repeated below. For example, negated sentence (12) would merely presuppose a proposition that is entailed by the sentence itself, and would thus not license on its own any inference with respect to Gali, as provided in (16).

- (12) Not only Gali_F arrived on time.
Obligatory inference: Gali arrived on time
- (13) Did only Gali arrive on time?
Obligatory inference: Gali arrived on time
- (16) Someone distinct from Gali arrived on time. *(negated negative inference)*
Someone arrived on time. *(existential inference)*
 ✗ Gali arrived on time. *(positive inference)*

But, in contrast to (12) and (13), there are some vexing occurrences of *only* that do seem to convey merely a weaker, existential inference (e.g., Horn 1996, Klinedinst 2005, Beaver & Clark 2008). This is exemplified in (17), where *Cal State* is focused (Klinedinst 2005). In normal contexts, in which one graduates with a BA from a single institution, the sentence does not convey that Gali got her BA from Cal State, as it should if the prejacent were presupposed. Rather, it conveys merely that Gali got her BA from some other, more prestigious institution. This is in line with *only* triggering a weaker, existential presupposition.²

- (17) Gali didn't only get her BA from Cal State_F.
Observed positive inference: Gali got her BA degree somewhere
 (not: Gali got her BA from Cal State)

Interrogative counterparts of such sentences lead to the same conclusion, as exemplified in (18): what projects in (18) is merely an existential positive inference, rather than the prejacent.³

- (18) Did Gali only get her BA from Cal State_F?

²As suggested with the modifier “more prestigious” in the main text, the sentence in (17) induces another, so-called mirativity inference that the prejacent is ranked lowest on a scale of relevant alternatives, as detailed by Jacobs 1983, Klinedinst 2005, Beaver & Clark 2008, Grosz 2012, Coppock & Beaver 2014, and others. See fn. 13 and Sect. 7 for further discussion.

³A conservative explanation of the patterns in (17)-(18) is conceivable: the strong positive inference is accommodated in the scope of negation (or the trace of the *whether* operator), as provided in (i), and an existence presupposition is independently induced by focus (cf., e.g., Geurts & van der Sandt 2004). The sentence in (17) would, accordingly, receive the observed interpretation, as provided in (ii).

- (i) [neg [ACCOM₁ [only₁ [Gali got her BA from Cal State_F]]]]
- (ii) a. ¬(Gali got her BA from CS ∧ Gali did not get her BA from elsewhere)
(locally accommodated positive inference)
 b. Gali got her BA from somewhere
(existence presupposition due to focus)
 c. ∴ Gali got her BA from an institution distinct from CS

Observed positive inference: Gali got her BA degree somewhere
(not: Gali got her BA from Cal State)

A merely existential positive inference is also generated in the notoriously challenging sufficiency modal constructions with *only* (e.g., von Stechow & Iatridou 2007). For illustration, consider sentence (19). The prejacent of *only* in (19) is that you have to go to the North End to get good cheese – but this is clearly not entailed by the sentence. Rather, the sentence is not only compatible with but even invites the negation of the prejacent. Instead, the inference that (19) does entail can be captured with a paraphrase involving existential quantification: you have to go somewhere to get good cheese.

(19) To get good cheese, you only have to go to the North End_F.

Observed positive inference: You have to go somewhere
(not: You have to go to the North End)

Klinedinst (2005) observes in relation to examples like (17)-(18) that existential positive inferences obtain only if the prejacent of *only* and the relevant focus alternatives are mutually incompatible in the context (for example, you getting your BA from some college is contextually incompatible with you getting your BA from a different college), as described in (20) (see fns. 2 and 13 for additional qualifications). The same observation extends to the sufficiency modal construction examples like (19) since having to go to one location to get good cheese normally means not having to go to a different location. In the examples in which there is no such incompatibility, exemplified in (12) and (13), only the stronger positive inference corresponding to the prejacent surfaces, as stated in (K).

(K) **Weak and Strong Content:** A sentence that dominates an occurrence of *only* induces an existential positive inference in a context *c* if the sentence minus *only* and its focus alternatives are mutually incompatible in *c*. Otherwise the sentence induces a strong positive inference (which corresponds to the prejacent of *only*).

The nature of the positive inference constitutes the second dilemma addressed in this paper.

1.3 Synopsis

The narrative. Our starting point will be the observation that negative quantifiers with exceptives provide not only a good paraphrase of the semantic contribution of *only*, as illustrated in (20), but also exhibit behavior that is strikingly similar to that of *only* when it comes to the puzzling projection (P) and content (K) patterns described above.

(20) No one but Gali arrived on time.
⇔ Only Gali_F arrived on time.

We show that the behavior of exceptives is accounted for on their distributed analysis, on which their import is split between a minimality component (which contributes the positive inference) and a subtraction component (which contributes to the negative inference) (Gajewski

This analysis, however, neither provides any traction in deriving the apparently existential positive inference in sufficiency modal constructions discussed next in the main text, nor accounts for the felicity of the non-negated variants of (17) discussed in Sect. 5. Accordingly, it will not be pursued further here.

2008, building on von Fintel 1993), as presented in (21). The separation of these components, their properties, and their interactions form the lynchpin of our analysis in this paper.

- (21) [MIN [no one but Gali arrived on time]]
- negative inference:** No one *distinct from Gali* arrived on time
- positive inference:** Gali arrived on time

Turning back to *only*, we argue that its projection and content puzzles expose the exceptive nature of *only*, where we build on the proposal of von Fintel & Iatridou (2007).⁴ Specifically, we show that if the contribution of *only* is split between a minimality and a subtraction component, as sketched in (22), a new path between the horns of Horn’s dilemmas opens up.

- (22) [MIN [only Gali_F arrived on time]]
- negative inference:** No one *distinct from Gali* arrived on time
- positive inference:** Gali arrived on time

More concretely, the path between the horns of the two dilemmas emerges due to the properties of the minimality operator MIN. On the one hand, MIN can be separated from the subtraction component by modal and other operators – this may result in weak projection. On the other hand, its interpretation is context-dependent, which means that its import may vary across contexts and sentences – this may result in it having merely existential import.

Plan. In Sects. 2 and 3, we study weak projection, exemplified in (10)-(11). After showing that exceptives exhibit parallel behavior, we account for it by relying on their distributed analysis. This analysis allows the minimality inferences accompanying exceptives and *only* not to be generated in the minimal clause containing subtraction, as schematized in (23). If this is the case, the positive inference may be weaker, a modalized variant of the prejacent.

- (23) **Weak projection:** [MIN [MODAL/ASSERT [... but / only ...]]]

In Sect. 4, strong projection, exemplified in (12)-(13), is addressed. Strong projection follows if the minimality inference is generated in the same minimal clause as subtraction, as schematized in (24). In some sentences, say, in negated sentences and questions, only this structural configuration yields a consistent interpretation, hence forcing strong projection.

- (24) **Strong projection:** [... [MIN [... but / only ...]]]

In Sect. 5, the data involving weak content – that is, the cases where the positive inference is merely existential – are shown to be derivable on the distributed approach. Specifically, this is attributed to the minimality operator quantifying over a domain whose resolution may be influenced by contextual pressures and relevance considerations, as in other instances of quantification (cf., e.g., Westerståhl 1984, von Fintel 1994). We suggest that the domain of MIN can be pruned, and thus yield a weaker positive inference insofar this is admitted by general constraints on relevance. This allows us to derive Klinedinst’s generalization in (K).

⁴An earlier expression of this idea can be found already in von Fintel (1993): “exceptives seem to be related to the exclusive particle *only* in a sense that needs to be clarified” (p. 141).

- (25) a. Pruning of the domain of MIN for assertability \rightsquigarrow **Weak positive inference**
 b. No pruning of the domain of MIN \rightsquigarrow **Strong positive inference**

In Sect. 6, the distributed analysis is compared with some preceding accounts by focusing on how some issues for those theories are overcome on the proposal here (esp., Horn 1996, van Rooy & Schulz 2007, Ippolito 2008, Beaver & Clark 2008). Furthermore, an implementation of the distributed analysis of *only* in an exhaustification framework is outlined (cf. Gajewski 2013, Hirsch 2016, Crnić 2018 for such an analysis of exceptives). We round out the paper in Sect. 7 by pointing to some asymmetries between *only* and exceptives, to their potential explanation, as well as to some questions that cut across the issues attended to in this paper.

2 Weak projection with exceptives

Although the positive inference of *only* in overtly unembedded and modalized sentences usually corresponds to the prejacent, we noted that a weaker inference corresponding to the modalized prejacent may sometimes obtain. We dubbed this phenomenon weak projection of the positive inference, (P), and it constitutes the first part of the projection dilemma. Our account of it requires a detour through exceptives. These exhibit inferential patterns that parallel those of *only* in overtly unembedded and modal sentences, as well as elsewhere. We show that these patterns naturally follow from the distributed analysis of exceptives.

2.1 Weak projection data with exceptives

Consider the sentence in (26), which contains a negative quantifier phrase with an exceptive phrase *but Gali*. Similarly to the sentences with *only*, the sentence gives rise to two inferences in normal contexts, which we again call the positive and the negative inference:

- (26) No one but Gali arrived on time.
 a. **Positive inference:** Gali arrived on time.
 b. **Negative inference:** No one distinct from Gali arrived on time.

As in the case of *only*, the positive inference can be suspended. The suspension can be brought about by an appropriate continuation. For illustration, the sentence in (27) can be followed by the modal sentence in (27b), but not by the non-modal sentence in (27a) (cf. Horn 1972, van Rooy & Schulz 2007, Ippolito 2008). The asymmetry in the felicity of the two continuations suggests that while the positive inference that Gali arrived on time may fail to obtain, the weaker inference that Gali may have arrived on time is obligatory.

- (27) No one but Gali arrived on time
 a. #... and (in fact) she didn't either.
 b. ... and perhaps she didn't either.

Obligatory inference: \diamond (Gali arrived on time)

A similar state of affairs can be observed in modal sentences. The sentence in (28) can convey that the requirement is that Tali dances with no one distinct from Gali, while still admitting that Tali is allowed not to dance with Gali, as confirmed by the felicitous continuation in (28b). As in the sentences with *only*, (28) does not allow for Tali being prohibited to dance with

Gali, (28a). This suggests that the weaker inference that Tali may dance with Gali is obligatory. Absent modalized continuations, (28) conveys that Tali will or has to dance with Gali.

- (28) Tali has to dance with no one but Gali
- a. #... and (in fact) she cannot dance with her either.
 - b. ... and she doesn't have to dance with her either.

Obligatory inference: $\diamond(\text{Tali dances with Gali})$

This pattern of weak projection, summarized in Table 2, is identical to that observed for *only*. But, unlike in the case of *only*, we have a handle on the apparently puzzling behavior of exceptives: it can be explained on their distributed analysis (cf. Crnič 2021).

	Unembedded	Modals
Observed	$p / \diamond p$	$p / \square p / \diamond p$

Table 2: Observed positive inference of negative quantifiers with exceptives, where p corresponds to the main predicate holding of the excepted element.

2.2 A distributed analysis of exceptives

An analysis of exceptives must, on the one hand, account for their semantic contribution to the sentences in which they occur and, on the other hand, for their restricted distribution – they are acceptable with (negative) universal quantifiers, but usually not with existential quantifiers. One influential analysis that delivers these desiderata was provided by von Stechow (1993). He factored the meaning of exceptives into the minimality and subtraction components, both encoded in the meaning of exceptives themselves. These two components conspire to derive the observed meanings of exceptives; and their restricted distribution comes out as a side benefit of the derivation of their meanings. Subsequently, von Stechow's proposal was amended by detaching the minimality component from the subtraction component (see Gajewski 2008, 2013, Hirsch 2016, Crnič 2018 for arguments and different implementations). The facts in Sect. 2.1 follow from this amended analysis, and thus provide further support for it.

Subtraction. Following Gajewski (2008), we treat exceptives as simple subtraction operators, as defined in (29): *but* takes two predicates as its arguments (where the first predicate has to be contained in the second) and subtracts the first from the second. Accordingly, *but Gali* subtracts Gali from its predicate argument, (30) (but see Vostrikova 2021 for a clausal analysis of certain exceptives). (Throughout this paper, we take referential DPs to pick out sets in the obvious way and to combine with predicates with the mediation of type-shifting. Moreover, we tend not to represent the containment presupposition for brevity.)

$$(29) \quad \llbracket \text{but} \rrbracket = \lambda P. \lambda Q: P \subseteq Q. Q \setminus P$$

$$(30) \quad \llbracket \text{but Gali} \rrbracket = \lambda Q: \{\text{Gali}\} \subseteq Q. Q \setminus \{\text{Gali}\} = \lambda Q: Q(\text{Gali}). \lambda x. Q(x) \wedge x \neq \{\text{Gali}\}$$

All else equal, the meaning of the sentence containing the negative quantifier with the exceptive, say, *No one but Gali arrived on time* is, accordingly, predicted to be the one in (31): no one distinct from Gali arrived on time (we also obtain that Gali must be a person, due to

the containment presupposition of *but*). This meaning, however, does not entail the observed positive inference of the sentence – that Gali arrived on time – which is derived by other means.

$$(31) \quad \begin{aligned} & \llbracket \llbracket \text{no one but Gali} \rrbracket \text{ arrived on time} \rrbracket = && \text{(partial LF)} \\ & \llbracket \text{no} \rrbracket (\llbracket \text{person} \rrbracket - \{\text{Gali}\}) (\llbracket \text{arrived on time} \rrbracket) = \\ & \neg \exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge x \text{ arrived on time} \end{aligned}$$

Minimality and its domain. The simplicity of the meaning of exceptives is compensated by the minimality operator MIN (LEASTNESS in Gajewski 2008; cf. UNIQUENESS in von Stechow 1993). The characterization of MIN is underpinned by the assumption that exceptive sentences obligatorily induce alternatives – specifically, that the exceptive phrase induces alternatives. Gajewski (2008) represents these with structured meanings. For instance, sentence *No one but Gali arrived on time* minus the minimality operator is assigned the structured meaning in (32), where the first element (“the background”) is a predicate of sets of individuals, and the second element (“the focus”) is a set containing the subtracted individual (see von Stechow 1991a,b, Krifka 1993, Gajewski 2008 for discussion of structured meanings).

$$(32) \quad \langle [\lambda X. \llbracket \text{no} \rrbracket (\llbracket \text{person} \rrbracket \setminus X) (\llbracket \text{arrived on time} \rrbracket)], \{\text{Gali}\} \rangle$$

The minimality operator performs two functions. The first one is that it lets through the inference that the background holds of the focus, as stated in the second row of (M) below. The more substantial one gives it its name: the operator induces a minimality presupposition, which we treat as a presupposition (in contrast to Gajewski 2008; we treat it as a presupposition due to its projective behavior, discussed in greater detail in Sect. 4). The minimality presupposition corresponds to the focus being the minimal set of which the background holds, where minimality is determined relative to a specified domain of sets. While the precise inference may vary with the specification of this domain, making its resolution at least potentially an empirical matter, we take it to be unrestricted for now (following von Stechow 1993, Gajewski 2008): every set of which the background holds contains the focus or, equivalently, if the focus is not contained in a set, the background does not hold of that set, as stated in the first row of (M).

$$(M) \quad \llbracket \text{MIN} \rrbracket (\langle B, F \rangle) \text{ is defined only if } \forall X: F \not\subseteq X \rightarrow \neg B(X).$$

$$\text{If defined, } \llbracket \text{MIN} \rrbracket (\langle B, F \rangle) = B(F).$$

A full structure of sentence *No one but Gali arrived on time* is provided in (33), where the minimality operator MIN c-commands the quantifier hosting the subtraction operator *but*. The meaning of (33) is provided in (34): the presupposition induced by MIN is that no subtraction that does not contain Gali yields a true meaning, that is, every set that does not contain Gali is such that someone not in that set arrived on time, (34pr); the asserted meaning corresponds to the meaning of the sister of MIN, that no one distinct from Gali arrived on time, (34as).

$$(33) \quad \begin{aligned} & \text{a. No one but Gali arrived on time.} \\ & \text{b. } [\llbracket \text{MIN} \rrbracket [\llbracket \text{no one but Gali} \rrbracket \text{ arrived on time} \rrbracket] \end{aligned}$$

(34) **Meaning of (33b):**

$$\text{(pr) } \forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \exists x: \text{person } x \wedge x \notin X \wedge x \text{ arrived on time}$$

$$\text{(as) } \neg \exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$$

The presupposition in (34pr) is equivalent to Gali arriving on time, as stated in (35): namely, the presupposition is equivalent to every set containing Gali being such that someone from that set arrived on time (note also that all Xs in (34pr) contain just people, due to containment); one of these domains contains just Gali; and that someone from that singleton set arrived on time (that is, that Gali arrived on time) entails all other propositions entailed by the presupposition.

(35) **Observation:** (34pr) \Leftrightarrow Gali arrived on time

We thus derived the positive inference of exceptives as a presupposition triggered by MIN, while the negative inference follows from the negative quantifier with the exceptive:

(36) [MIN [no one but Gali arrived on time]]

negative inference: $\neg \exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$
 \Leftrightarrow **assertion:** No one *distinct from Gali* arrived on time
positive inference: $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \exists x: \text{person } x \wedge x \notin X \wedge x \text{ arrived on time}$
 \Leftrightarrow **presupposition:** Gali arrived on time

Restricted distribution. The distribution of exceptives is famously restricted. In particular, exceptives are unacceptable in existential quantifier DPs like the one in (37). This follows from the fact that the presupposition and assertion of (37), provided in (38), are mutually incompatible: the presupposition is equivalent to no one arriving on time (that is, it is false that someone who is not in the empty set arrived on time), which contradicts the assertion that someone distinct from Gali arrived on time. Sentences that generate systematic contradictions of this sort are ungrammatical (see von Stechow 1993, Gajewski 2009, Chierchia 2013 for details).

(37) a. #Someone but Gali arrived on time.
 b. [MIN [someone but Gali arrived on time]]

(38) **Meaning of (37b):**

(pr) $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \neg \exists x: \text{person } x \wedge x \notin X \wedge x \text{ arrived on time}$
 (as) $\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$

Existential quantifiers and split scope. One important consequence of the distributed approach is that it allows for the acceptability of *some* occurrences of exceptives that are unexpected on the integrated approach of von Stechow (1993). In particular, it allows for exceptives to be acceptable in certain existential quantifier NPIs, which Gajewski (2008) shows is desirable prediction. One acceptable example of an NPI with an exceptives is provided in (39).

(39) Tali didn't dance with anyone but Gali.

The distributed analysis predicts (39) to be acceptable primarily because it allows the two components of exceptives – the minimality operator and the subtraction component *but* – to be separated at LF by an operator like negation, as stated in (S) below.

(S) **Split Scope:** The minimality presupposition may in principle be computed at a scope site distinct from that of the minimal clause in which subtraction applies.

More specifically, while the parse of (39) on which MIN attaches to the minimal clause contain-

ing *but* leads to a defective meaning along the lines of (37), a parse on which MIN scopes above negation, and *anyone but Gali* scopes below it, as given in (40), yields a consistent meaning.

(40) [MIN [neg [anyone but Gali_t [Tali danced with t]]]] (split parse)

The meaning of the structure in (40) is provided in (41). It corresponds to the meaning of sentence *Tali danced with no one but Gali*: the sentence presupposes that Tali danced with Gali, for the same reasons as discussed around (33), and it asserts that she danced with no one else. This is the observed meaning of the sentence.

(41) **Meaning of (40):**

(pr) Tali danced with Gali

(as) $\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali danced with } x$

The availability of the split scope of minimality and subtraction, (S), will play a pivotal role in our explanation of the weak projection facts introduced in the preceding subsection.

2.3 Modal sentences

We begin with the analysis of modal sentence (28) on a construal on which the negative quantifier is interpreted in the scope of the modal (that is, the sentence describes the requirement that Tali dances with no one distinct from Gali).⁵

- (28) Tali has to dance with no one but Gali
- a. #... and (in fact) she cannot dance with her either.
 - b. ... and she doesn't have to dance with her either.

Obligatory inference: $\diamond(\text{Tali dances with Gali})$

If we keep the negative quantifier fixed in the embedded clause, the distributed analysis allows for two parses of the sentence, which differ in relation to the scope of MIN.

Parse without split scope. On the first parse of sentence (28), MIN occurs in the scope of the modal, that is, its scope is the minimal clause in which subtraction applies.

(42) [□ [_{XP} MIN [no one but Gali_t Tali dance with t]]] (non-split parse)

The meaning of constituent XP in (42) parallels the one computed in the preceding section. It consists of the inferences that Tali dances with Gali (presupposition) and that Tali dances with no one distinct from Gali (assertion):

⁵Negative indefinites allow for split scope readings across modals (e.g., Penka 2011). The targeted reading here is a non-split one, as indicated with the paraphrase in the main text, in order to distinguish the phenomenon here from the phenomenon of sufficiency modal readings discussed in Sect. 5.2. To ensure that such a reading is indeed obtained one can use a contrastive sequence like (i), in which the negative indefinite in the second sentence must be interpreted below the modal for the discourse to be coherent. As in the main text, a continuation that indicates that dancing with Gali is not necessary is acceptable.

- (i) Yesterday, Tali didn't have to dance with anyone but Gali. Today, even more absurdly, she had to dance with no one but Gali. But, fortunately, she could skip dancing with Gali as well, whom she despises.

(43) **Meaning of XP in (42):**

(pr) Tali danced with Gali

(as) $\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali danced with } x$

Now, what the interpretation of the full modal sentence is depends on how the minimality presupposition in (43a) projects. More specifically, if it is accommodated in the scope of the modal, we obtain the inference in (44a): the requirement is that Tali dances with no one distinct from Gali and that she dances with Gali. If the presupposition projects, we obtain the meaning in (44b): Tali will dance with Gali, and she has to dance with no one else.⁶

(44) a. **Meaning of (42) (accommodation):**

$\Box(\text{Tali dances with Gali} \wedge (\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali dances with } x))$

b. **Meaning of (42) (projection):**

$\partial(\text{Tali dances with Gali}) \wedge \Box(\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali dances with } x)$

Both of the inferences in (43) and (44) seem to be possible. Importantly for our purposes, both inferences are incompatible with the continuations in (28). First: Tali having to dance with Gali, (44a), is incompatible both with her being prohibited to, (28a), as well as with her being allowed not to, (28b). Second: if the the circumstances are such that Tali will dance with Gali, (44b), every deontically accessible world will be such that Tali does dance with Gali, and thus it cannot be that she is allowed/has to not dance with Gali.

Parse with split scope. Another parse of sentence (28) is available, one on which the minimality and the subtraction components of the exceptive are separated by the modal, as in (45).

(45) $[_{XP} \Box \text{MIN}] [\Box [[\text{no one but Gali}]_t \text{Tali dance with } t]]$ (split parse)

The meaning of the structure in (45) is provided in (46). Similarly to the parse with low scoping MIN, (45) conveys the requirement that Tali dances with no one distinct from Gali, as provided in (46as). This is the exceptive's negative inference. The structure also presupposes that Gali's is the minimal subtraction that makes the sentence true, as provided in (46pr). This is equivalent to every set that contains Gali being such that Tali is allowed to dance with someone from that set (this includes the singleton set containing Gali), that is, it is equivalent to Tali being allowed to dance with Gali, as stated in (47). This is the exceptive's positive inference.

(46) **Meaning of (45):**

(pr) $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \neg\Box(\neg\exists x: \text{person } x \wedge x \notin X \wedge \text{Tali danced with } x)$

(as) $\Box(\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali danced with } x)$

(47) **Observation:** (46pr) $\Leftrightarrow \Diamond(\text{Tali danced with Gali})$

This interpretation is incompatible with the continuation in (28a), that is, if Tali is allowed to dance with Gali she cannot be prohibited to do so. In contrast, it is compatible with the

⁶The presupposition projection under modals remains ill-understood. But it seems to hold that they behave like holes for presupposition projection, as indicated in (i). See Heim 1992 for a closely related discussion of presupposition projection under attitude predicates.

(i) Tali has to stop smoking. \Rightarrow Gali smokes

continuation in (28b): namely, Tali being allowed to dance with Gali, (47), may hold even if she is allowed not to dance with Gali. We thus correctly capture the weak projection of the positive inference.⁷

- (28) Tali has to dance with no one but Gali
- a. #... and (in fact) she cannot dance with her either. (derived ✓)
 - b. ... and she doesn't have to dance with her either. (derived ✓)
- Obligatory inference:** \diamond (Tali dances with Gali) (derived ✓)

2.4 Overtly unembedded sentences

In the absence of a specific continuation, the sentence in (27) tends to convey that Gali arrived on time. In the presence of an appropriate modalized continuation, however, it may convey the weaker meaning that it is possible that Gali arrived on time.

- (27) No one but Gali arrived on time
- a. #... and (in fact) she didn't either.
 - b. ... and perhaps she didn't either.
- Obligatory inference:** \diamond (Gali arrived on time)

The two readings can be derived in parallel to the two readings of overtly modal sentences. The derivation is based on the assumption that all sentences are implicitly modal: specifically, declarative sentences are prefixed with the speech act operator ASSERT in grammar, (A), which contributes the information that the speaker believes the asserted sentence, (48) (e.g., Mittwoch 1977, Faller 2002, Alonso-Ovalle & Menéndez-Benito 2010, Chierchia 2013, Meyer 2013, Cohen & Krifka 2014, Krifka 2014, Beck 2016, among others). Moreover, there are operators that can take scope above ASSERT, and MIN falls into this class (see, e.g., Repp 2009, Meyer 2013, Fox 2016, Beck 2016, Greenberg 2018, Buccola & Haida 2019 for recent discussions, as well as Sect. 6.2). (Although every sentence has a prefixed ASSERT, we will avoid representing this in most of our structures unless the operator scopally interacts with MIN.)

- (A) **Speech Act Assumption:** Every matrix declarative sentence is prefixed by the illocutionary operator ASSERT that encodes that the sentence expresses the speaker's beliefs. Some operators, including MIN, may take scope above it.

$$(48) \quad \llbracket \text{ASSERT} \rrbracket = \square_{sp} = \lambda p. \forall w (\text{Acc}(\text{sp}, @)(w) = 1 \rightarrow p(w) = 1)$$

Given this assumption, the two possible parses of the sentence in (27) are those provided in (49)-(50). They differ only in the scope of MIN relative to ASSERT.

⁷A question arises whether the availability of the split scope readings across modals may lead to overgeneration in relation to exceptives in existential quantifiers. The answer is 'no': although the unacceptable sentence in (ia) may be assigned the structure in (ib), its meaning is still contradictory, as provided in (ii).

- (i) a. #Tali has to danced with someone but Gali.
 b. $\llbracket \text{MIN} [\square [\text{someone but Gali}_t [\text{Tali dances with } t]]] \rrbracket$
- (ii) **Meaning of (ib):**
- (pr) $\diamond(\neg\exists x: \text{person } x \wedge \text{Tali dances with } x)$
 - (as) $\square(\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali dances with } x)$

- (49) [ASSERT [MIN [no one but Gali arrived on time]]] (non-split parse)
 (50) [MIN [ASSERT [no one but Gali arrived on time]]] (split parse)

The meaning of the first structure, (49), where MIN occurs in the scope of ASSERT, yields the default negative and positive inference described in (1): that Gali arrived on time, (51pr), and that no one distinct from Gali arrived on time, (51as). The computation proceeds in parallel to (42) above (the only difference is in the flavor of the modal). The meaning in (51) is incompatible with both continuations in (27): if Gali is believed to have arrived on time, it cannot be the case that she (possibly) did not arrive on time.

(51) **Meaning of (49):**

- (pr) Gali arrived on time
 (as) $\Box_{sp}(\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge x \text{ arrived on time})$

The inferences of the structure in (50) are provided in (52): Gali may have arrived on time, (52pr), and no one else did, (52as). The computation proceeds in parallel to (45) above.

(52) **Meaning of (50):**

- (pr) $\Diamond_{sp}(\text{Gali arrived on time})$
 (as) $\Box_{sp}(\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge x \text{ arrived on time})$

These inferences are incompatible with the non-modalized continuation in (27): it cannot be that the speaker takes it to be possible that Gali arrived on time, while also believing that she did not. They are, however, compatible with the modalized continuation in (27): the speaker may well be ignorant about Gali arriving on time even when they believe that no one else did.

- (27) No one but Gali arrived on time
 a. #... and (in fact) she didn't either. (derived ✓)
 b. ... and perhaps she didn't either. (derived ✓)
Obligatory inference: $\Diamond(\text{Gali arrived on time})$ (derived ✓)

2.5 Summary

We showed the the weak projection facts are a reflex of the scope of the MIN operator. Specifically, the weak projection facts in the overtly unembedded and modal sentences with exceptives follow when minimality, but not subtraction, takes scope above a modal or an ASSERT operator: merely an existentially modalized positive inference is generated in such configurations. If the minimality and the subtraction component are not split by a modal or an ASSERT operator, a strong positive inference is generated. We showed that the inference inherited by the sentence then depends on whether the presupposition of MIN projects or is locally accommodated. The derived readings are summarized in Table 3.⁸

⁸Similar weak projection facts can be observed with cleft sentences, though the pertinent inference of clefts is negative. This is exemplified in (i) and (ii), where a strong negative inference that no one distinct from Gali arrived (or has to arrive) on time can be suspended by a modalized continuation. A weak negative inference that it is possible that no one distinct from Gali arrived on time is obligatory, however.

- (i) It was Gali who arrived on time
 a. #... and other people did too.
 b. ... and perhaps other people did too.

	Unembedded	Modals
Derived	$p / \diamond p$	$p / \Box p / \diamond p$
	see (49) / (50)	see (42) / (45)

Table 3: Derived positive inference of negative quantifiers with exceptives, where p corresponds to the main predicate holding of the excepted element.

3 Weak projection with *only*

There is a close connection between *only* and exceptives (esp., von Stechow & Iatridou 2007). In addition to the sentences with the two expressions allowing for natural paraphrases of each other, as repeated below, we have just seen that the positive inference of exceptives may project weakly just like the positive inference of *only*. And we will see in the following section that this parallelism extends to strong projection as well. Building on von Stechow & Iatridou (2007) and Gajewski (2008), we show that a distributed analysis of *only* that parallels that of exceptives can account for the weak projection facts.

- (20) No one but Gali arrived on time.
 \Leftrightarrow Only Gali_F arrived on time.

3.1 A distributed analysis of *only*

Exceptive and *only* sentences give rise to minimality and subtraction inferences. On the distributed analysis, these are split between two morphemes, MIN and *only*. A characterization of *only* is provided in (53): it conveys that the background holds of no relevant individual distinct from the focus (cf. Geach 1962, McCawley 1993; see Rooth 1992, Hirsch 2017 on *only* attaching at a clausal level at LF). This constitutes the subtraction component of the *only* sentences, and is comparable to the import of negative quantifiers with exceptives (the only difference is in the semantic type of the background, see Sect. 2.2 above).

$$(53) \quad \llbracket \text{only} \rrbracket (\langle B, F \rangle) = \neg \exists x: x \notin F \wedge B(x)$$

Consider the structure in (54). The focus marking is on *Gali*, which means that we are quantifying over alternatives to Gali. The structure conveys that no individuals distinct from Gali arrived on time, as provided in (55) – which we have taken to also be the meaning of *No one but Gali arrived on time* prior to the application of minimality.

-
- (ii) It must be Gali who arrived on time.
a. #... and other people must have as well.
b. ... and other people may have as well.

This reading can be captured by assigning clefts the structure in (iii), which lacks a subtraction operator, and where the structured meaning fed to MIN is of the form in (iiib). See also Fox 2020 for an analysis of clefts that can account for these facts adopting the logic defended in the main text. See also fn. 10 below.

- (iii) a. $[\text{MIN} [\Box [\text{it was Gali}_F \text{ who arrived on time}]]]$
b. $\llbracket \text{MIN} \rrbracket (\langle \lambda X. \Box (\llbracket \text{arrived on time} \rrbracket (X)), \{ \text{Gali} \} \rangle)$

(54) [only [Gali_F arrived on time]] (partial LF)

(55) $[[\text{only}]](\langle \lambda x. [[\text{arrived on time}]](x), \{\text{Gali}\} \rangle) =$
 $\neg \exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$

The meaning in (55) leaves it open whether Gali arrived on time. This means that the positive inference of *only* is not induced by *only* alone. Rather, it is derived by the application of the minimality operator, as represented in (56b). This is a full parse of the sentence.

(56) a. Only Gali_F arrived on time.
 b. [MIN [only Gali_F arrived on time]]

Both the minimality operator and *only* associate with the same expression in (56), *Gali* (see Krifka 1992 on multiple focus association in the structured meanings approach and, e.g., Beck 2009, Bade & Sachs 2019 for related discussion). The sentence presupposes that the subtraction of Gali from the domain of *only* is the minimal subtraction that validates the sentence, (57pr) – for every set that does not contain Gali, it is false that no one who is not in that set arrived on time, that is, for every set that does not contain Gali is such that someone who is not in that set arrived on time. Furthermore, the asserted meaning of the sentence is that no one distinct from Gali arrived on time, (57as)

(57) **Meaning of (56b):**
 (pr) $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \exists x: x \notin X \wedge x \text{ arrived on time}$
 (as) $\neg \exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$

The presupposition in (57pr) is equivalent to every set that contains Gali being such that someone in that set arrived on time, which is in turn equivalent to Gali arriving on time, along the lines discussed in the preceding sections:

(58) **Observation:** (57pr) \Leftrightarrow Gali arrived on time

We thus captured an observed interpretation of sentences like *Only Gali arrived on time* – their strong projection reading – where presupposition (57pr) corresponds to *only*'s prejacent, and assertion (57as) to *only*'s negative inference.

(59) [MIN [only Gali_F arrived on time]]

negative inference: $\neg \exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$
 \Leftrightarrow **assertion:** No one *distinct from Gali* arrived on time

positive inference: $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \exists x: x \notin X \wedge x \text{ arrived on time}$
 \Leftrightarrow **presupposition:** Gali arrived on time

We now turn to the weak projection readings.

3.2 Modal and overtly unembedded sentences

In addition to the preferred strong projection reading, *only* sentences like (1) and their overtly modal counterparts allow also for weak projection readings. The strong projection readings, on

which the sentences presuppose the prejacent, are derived as indicated in the preceding section. In the scope of a modal, this presupposition can then either be locally accommodated (leading to the prejacent being interpreted in the scope of the modal) or project (leading to the matrix sentence presupposing the prejacent), as provided in (61).

- (60) a. Tali has to only dance with Gali_F. (non-split parse)
 b. [\square [MIN [only [Tali dances with Gali_F]]]]
- (61) a. **Meaning of (60b) (accommodation):**
 $\square(\text{Tali dances with Gali} \wedge (\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali dances with } x))$
 b. **Meaning of (60b) (projection):**
 $\partial(\text{Tali dances with Gali}) \wedge \square(\neg\exists x: \text{person } x \wedge x \notin \{\text{Gali}\} \wedge \text{Tali dances with } x)$

An illustration of the weak projection reading, which obtains in the presence of an appropriate modalized continuation, is repeated below, where we have an overtly unembedded occurrence of *only* in (10) and its occurrence in an overtly modal sentence in (11):

- (10) Only Gali_F arrived on time
 a. #... and (in fact) she didn't either.
 b. ... and perhaps she didn't either.

Obligatory inference: $\diamond(\text{Gali arrived on time})$

- (11) Tali has to only dance with Gali_F
 a. #... and (in fact) she cannot dance with her either.
 b. ... and she doesn't have to dance with her either.

Obligatory inference: $\diamond(\text{Tali dances with Gali})$

The derivation of weak projection with exceptives transfers in a mechanical way to weak projection with *only*. In particular, if a modal or an ASSERT operator is interposed between the minimality and the subtraction components of *only*, as represented in (62), a weaker, modalized positive inference is generated. (We discuss explicitly only the overtly unembedded case in the following since the derivation of the modal case is identical.)

- (62) [MIN [\square/ASSERT [only [Gali_F arrived on time]]]] (split parse)

The meaning of (62) is provided in (63). The negative inference – it has to be the case that no one distinct from Gali arrived on time, provided in (63as) – is the same as in a configuration in which MIN and *only* are adjacent at LF, discussed in (60) above. On the other hand, the positive inference is weaker on the LF in (62): for every set that does not contain Gali, it is not necessary that no one who is not in that set arrived on time, that is, that someone who is not in that set may have arrived on time, (63pr). This is equivalent to every set that contains Gali being such that that someone in that set may have arrived on time. And this is equivalent to the proposition that Gali may have arrived on time, as provided in (64).

- (63) **Meaning of (62):**
 (pr) $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \diamond(\exists x: x \notin X \wedge x \text{ arrived on time})$
 (as) $\square(\neg\exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time})$

(64) **Observation:** (63pr) $\Leftrightarrow \diamond(\text{Gali arrived on time})$

The positive inference in (64) is compatible with the modalized (b)-continuations below: namely, it is consistent that both Gali having arrived on time and Gali not having arrived on time are possibilities. In contrast, the meaning is not compatible with the non-modalized (a)-continuations: namely, asserting that Gali did not arrive on time contradicts the possibility of her arriving on time. And since the minimality component is obligatorily present, there is no way around the infelicity of these continuations. The weak projection readings with *only* are thus correctly captured.

- (10) Only Gali_F arrived on time
- a. #... and (in fact) she didn't either. (derived ✓)
 - b. ... and perhaps she didn't either. (derived ✓)
- Obligatory inference:** $\diamond(\text{Gali arrived on time})$ (derived ✓)
- (11) Tali has to only dance with Gali_F
- a. #... and (in fact) she has cannot dance with her either. (derived ✓)
 - b. ... and she doesn't have to dance with her either. (derived ✓)
- Obligatory inference:** $\diamond(\text{Tali dances with Gali})$ (derived ✓)

3.3 Summary

The proposed decomposition of *only* into a minimality and a subtraction component allowed us to derive the two possible readings of overtly unembedded and modal sentences containing them. This was achieved by means of the two possible LFs schematized in (65).

- (65) a. [MODAL/ASSERT [MIN [only ...]]] \rightsquigarrow **strong projection**
- b. [MIN [MODAL/ASSERT [only ...]]] \rightsquigarrow **weak projection**

On the first parse of the overtly unembedded and modal sentences, MIN and *only* are adjacent at LF, and we obtain the default, strong positive inference. On the second parse, where MIN and *only* are separated by a modal or an ASSERT operator, we obtain the weak, modalized positive inference. In other words, the weak and strong projection readings are epiphenomenal on the different scopes of MIN. The derived readings are summarized in Table 4.⁹

4 Strong projection

The positive inferences of *only* exhibit the hallmark behavior of presuppositions in the scope of negation, in questions, and in emotive factive attitude ascriptions (see Beaver & Clark 2008,

⁹Our focus in this paper is exclusively on *only*. One might expect variation among exclusive particles with respect to the availability of the different configurations and, thus, weak projection. Building on the insights of Chierchia (2013), who studied parametric differences between *exh* operators in relation to NPIs, there are three additional patterns that could in principle obtain in relation to weak/strong projection: one on which only strong projection is found across the board (say, MIN and *only* constitute a single constituent), one on which weak projection is found only with modals (cf. Chierchia 2013, Ch. 5, on cases where *exh* can scope above a modal but not above ASSERT), and one on which weak projection is found only in overtly unembedded sentences. Clemens Mayr (p.c.) notes that *nur* in German may exhibit the second behavior. Unfortunately, we cannot explore this variation in detail here, though we hope to get back to it in the future.

	Unembedded	Modals
Derived	$p / \diamond p$	$p / \Box p / \diamond p$
	see (56) / (62)	see (60) / (62)

Table 4: Derived positive inference of exceptives in relation to the prejacent p of *only*.

Ch. 9, for a catalogue of other environments in which the positive inference of *only* projects like a presupposition): namely, the positive inference projects exclusively strongly in all these three types of sentences (that is, the non-modal positive inference obtains); and only the negative inference is targeted by negation, question, and assertive component of emotive factives:

- (12) Not only Gali_F arrived on time
- #... and (in fact) she didn't (either).
 - #... and (in fact) perhaps she didn't (either).

Obligatory inference: Gali arrived on time

- (13) Did only Gali arrive on time?
- #Yes, and (in fact) she didn't (either).
 - #Yes, and (in fact) perhaps she didn't (either).

Obligatory inference: Gali arrived on time

- (14) Tali is surprised that only Gali arrived late.
- \Rightarrow (Tali believes that) Gali arrived late.
 - \Rightarrow Tali did not expect that no one distinct from Gali will arrive late.

This behavior of the positive inference of *only* is to some extent mirrored by that of the positive inference of exceptives. For example, if a negative quantifier with an exceptive occurs in a question, the question inherits its positive inference, (66). Weak projection is unavailable.

- (66) Did no one but Gali arrive on time?
- #Yes/no, and (in fact) she didn't (either).
 - #Yes/no, and (in fact) perhaps she didn't (either).

Obligatory inference: Gali arrived on time

Similarly, in sentences with emotive factives, as in (67), the exceptive's positive inference is inherited by the sentence – that Gali arrived late, (67a) – while Tali's counterexpectation pertains to the negative inference – that no one distinct from Gali arrived late, (67b). This pattern is expected on the exceptive's positive inference being presupposed and its negative inference being asserted. (The test with negation that we employed with *only* is difficult to apply to exceptives since they seem to be allergic to the scope of negation, which makes them akin to positive polarity items. Accordingly, we set this test aside here.)¹⁰

¹⁰Analogous projection facts can be observed with clefts, where the negative inference is presupposed. For example, (i) conveys that Tali did not expect that Gali will arrive on time, rather than that no one distinct from her would. See fn. 8 for related discussion, and Fox 2020 for a derivation.

- (i) Tali is surprised that it was Gali who arrived on time.

- (67) Tali is surprised that no one but Gali arrived late.
- a. \Rightarrow (Tali believes that) Gali arrived late.
 - b. \Rightarrow Tali did not expect that no one distinct from Gali will arrive late.

This projection behavior of positive inferences is predicted on the distributed analysis. Specifically, the unavailability of the weak projection in these examples follows on the same grounds that rule out exceptives in existential quantifiers – the split parse required for weak projection readings yields a contradictory interpretation.

4.1 Minimality presupposition

The strong projection under negation, in questions, and with emotive factives is explained on, and thus provides support for, the treatment of the minimality inference as a presupposition that we adopted in our characterization of the minimality operator in Sect. 2.1, repeated below.

- (M) $[[\text{MIN}]](\langle B, F \rangle)$ is defined only if $\forall X: F \not\subseteq X \rightarrow \neg B(X)$.
 If defined, $[[\text{MIN}]](\langle B, F \rangle) = B(F)$.

Reminder of the derivations. Since the minimality inference is presupposed, the positive inference of *only* and exceptives is presupposed as well. Absent split scope of the minimality and the subtraction components, as in (68), these inferences correspond to the prejacent (or the main predicate holding of the excepted element) – the strong projection readings.

- (68) a. Only Gali_F arrived on time. (non-split parse)
 b. [ASSERT [MIN [only Gali_F arrived on time]]]

(69) **Meaning of (68b):**

- (pr) Gali arrived on time
 (as) $\neg \exists x: x \text{ person} \wedge \neg x \circ \text{Gali} \wedge x \text{ arrived on time}$

In contrast, if MIN takes wide scope above a modal or an ASSERT operator, as in (70), a modalized positive inference is presupposed – the weak projection readings.

- (70) a. Only Gali_F arrived on time. (split parse)
 b. [MIN [ASSERT [only Gali_F arrived on time]]]

(71) **Meaning of (70b):**

- (pr) $\diamond_{sp}(\text{Gali arrived on time})$
 (as) $\square_{sp}(\neg \exists x: x \text{ person} \wedge \neg x \circ \text{Gali} \wedge x \text{ arrived on time})$

Accordingly, in sentences that exhibit only strong projection (that is, in negated, interrogative, and emotive factive sentences), we expect the split parse, which is needed for weak projection, not to be available (that is, to yield a defective meaning). This is indeed what we find. We demonstrate this for the three types of sentences mentioned above in turn.

-
- a. \Rightarrow (Tali believes that) no one distinct from Gali arrived on time
 - b. \Rightarrow Tali did not expect that Gali will arrive on time

Negation. The positive inference projects strongly in negated *only* sentences, as observed in (12), *Not only Gali_F arrived on time*: the prejacent of *only* is inherited by the negated sentence (that is, Gali arrived on time); in addition, the negative inference is negated (that is, that someone distinct from Gali arrived on time is entailed). This meaning of the sentence is straightforwardly generated if both MIN and *only* are interpreted in the scope of negation, as represented in (72) and computed in (73).

- (72) a. Not only Gali_F arrived on time. (non-split parse)
 b. [neg [MIN [only Gali_F arrived on time]]]

(73) **Meaning of (72b):**

(pr) Gali arrived on time

(as) $\exists x: x \notin \{\text{Gali}\} \wedge x$ arrived on time

On the distributed approach to *only*, however, further parses of the sentence should in principle be available – in particular, one on which MIN takes scope above negation but below ASSERT, as in (74a), and one on which MIN scopes above an ASSERT operator, as in (74b).

- (74) a. [ASSERT [MIN [neg [only Gali_F arrived on time]]]] (split parses)
 b. [MIN [ASSERT [neg [only Gali_F arrived on time]]]]

On these parses, however, the minimality presupposition systematically contradicts the assertion. First: if for every set that does not contain Gali is such that no one who is not in that set arrived on time, which is the presupposition of (74a), given in (75pr), then this holds in particular of the empty set – hence, no one arrived on time. And this is incompatible with the asserted meaning of the sentence that someone distinct from Gali arriving on time, (75as). This contradictory entailment pattern is summarized in (76).

(75) **Meaning of (74a):**

(pr) $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \neg \exists x: x \notin X \wedge x$ arrived on time

(as) $\exists x: x \notin \{\text{Gali}\} \wedge x$ arrived on time

(76) **Observations:**

a. (75pr) $\Leftrightarrow \neg \exists x: x$ arrived on time, and

b. $\neg \exists x: x$ arrived on time $\Rightarrow \neg(75as)$

Second: MIN taking scope above ASSERT does not obviate the contradiction. The minimality presupposition of (74b), provided in (77pr), entails that the speaker takes it to be possible that no one arrived on time. This presupposition contradicts the asserted meaning of (74b) that the speaker believes that someone distinct from Gali arrived on time, provided in (77as). This contradictory entailment pattern is summarized in (78).

(77) **Meaning of (74b):**

(pr) $\forall X: \{\text{Gali}\} \not\subseteq X \rightarrow \neg \Box_{sp}(\exists x: x \notin X \wedge x$ arrived on time)

(as) $\Box_{sp}(\exists x: x \notin \{\text{Gali}\} \wedge x$ arrived on time)

(78) **Observations:**

a. (77pr) $\Leftrightarrow \Diamond_{sp}(\neg \exists x: x$ arrived on time)

- b. $\diamond_{sp}(\neg\exists x: x \text{ arrived on time}) \Rightarrow \neg(77as)$

Weak projection is thus unavailable in configurations in which *only* occurs in the scope of negation. This is because any parse of these sentences in which MIN is not adjacent to *only* yields a contradictory interpretation. Accordingly, the prejacent of *only* is correctly predicted to project and be contradicted by both the non-modal and modal continuations in (12).

- (12) Not only Gali_F arrived on time
- a. #... and (in fact) she didn't (either). (derived ✓)
- b. #... and (in fact) perhaps she didn't (either). (derived ✓)
- Obligatory inference:** Gali arrived on time (derived ✓)

Questions. An interrogative sentence like (79) can be assigned two possible parses, provided in (80), which differ in the scope of MIN relative to the trace of the polar question operator *whether*. For simplicity, we treat *whether* as an existential quantifier over two propositional operators, negation and an identity function (cf. Guerzoni 2004), and treat ? as an identity function between propositions (cf. Karttunen 1977).

- (79) Did only Gali_F arrive on time?
- (80) a. $[\lambda p [\text{whether}_t [[? p] [t [\boxed{\text{MIN}} [\boxed{\text{only}} \text{Gali}_F \text{ arrive on time}]]]]]$ (non-split parse)
- b. $[\lambda p [\text{whether}_t [[? p] [\boxed{\text{MIN}} [t [\boxed{\text{only}} \text{Gali}_F \text{ arrive on time}]]]]]$ (split parse)

On the parse in (80a), where MIN and *only* are adjacent at LF, the Hamblin denotation of the question is the set of propositions in (81). Both propositions are partial: they trigger the minimality presupposition that Gali arrived on time. This is, then, inherited by the question.

- (81) **Meaning of (80a):**
- $$\{ \llbracket \text{MIN} \rrbracket (\langle [\lambda X. \neg\exists x: x \notin X \wedge x \text{ arrived on time}], \{ \text{Gali} \} \rangle),$$
- $$\neg \llbracket \text{MIN} \rrbracket (\langle [\lambda X. \neg\exists x: x \notin X \wedge x \text{ arrived on time}], \{ \text{Gali} \} \rangle) \}$$
- $$(\text{=} \{ \partial(\text{Gali arrived on time}) \wedge (\neg\exists x: x \notin \{ \text{Gali} \} \wedge x \text{ arrived on time}),$$
- $$\partial(\text{Gali arrived on time}) \wedge (\exists x: x \notin \{ \text{Gali} \} \wedge x \text{ arrived on time}) \})$$

On the parse in (80b), where the trace of *whether* is interposed between MIN and *only*, the Hamblin denotation of the question is the set of propositions in (82). The two presuppositions are mutually inconsistent (that Gali arrived on time and that no one arrived on time). Since both are inherited by the question, the question is pragmatically illicit and, accordingly, ruled out (see, e.g., Abenina-Adar & Sharvit 2021 on presupposition projection in questions).¹¹

- (82) **Meaning of (80b):**
- $$\{ \llbracket \text{MIN} \rrbracket (\langle \lambda X. \neg\exists x: x \notin X \wedge x \text{ arrived on time}, \{ \text{Gali} \} \rangle),$$
- $$\llbracket \text{MIN} \rrbracket (\langle \lambda X. \exists x: x \notin X \wedge x \text{ arrived on time}, \{ \text{Gali} \} \rangle) \}$$

¹¹If the two presuppositions were locally accommodated, the two propositions in the Hamblin set would correspond, respectively, to Gali and no one else arriving on time and to a contradiction. To the extent that a question with such a meaning is licit (cf. Guerzoni 2004), the single consistent proposition in its Hamblin denotation would convey that Gali arrived on time, which would correspond to the strong projection of the positive inference.

$$\begin{aligned}
& (= \{ \partial(\text{Gali arrived on time}) \wedge (\neg \exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}), \\
& \quad \partial(\neg \exists x: x \text{ arrived on time}) \wedge (\exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}) \})
\end{aligned}$$

A parse on which MIN and ONLY would be split are thus unavailable in questions since such a split would result in a pragmatically illicit meaning. Accordingly, only the parse on which the prejacent of *only* projects strongly out of the question is available. This derives the fact that the positive inference cannot be suspended by the non-modal and modal continuations in (13).

- (13) Did only Gali arrive on time?
- a. #Yes, and (in fact) she didn't (either). (derived ✓)
- b. #Yes, and (in fact) perhaps she didn't (either). (derived ✓)
- Obligatory inference:** Gali arrived on time (derived ✓)

Emotive factives. The same logic extends to emotive factive attitude ascriptions like (14): *Tali is surprised that only Gali arrived late* intuitively expresses Tali's expectations only with respect to no one distinct from Gali arriving on time, and not with respect to Gali arriving on time, all the while it conveys that Gali arrived on time (and that Tali believes that). Again, this follows immediately from a parse on which MIN and *only* are adjacent at LF, provided in (83). Namely, in such a configuration the positive inference is generated as a presupposition and projects as such (see Heim 1992 for a detailed discussion), while the attitude predicate describes an expectation pertaining to the negative inference, as given in (84).

- (83) [Tali is surprised [MIN [only Gali_F arrived on time]]] (non-split parse)

- (84) **Meaning of (83):**
- (pr) Bel_T(Gali arrived on time)
- (as) Surp_T(¬∃x: x ∉ {Gali} ∧ x arrived on time)

Moreover, given that *be surprised* is a (Strawson) downward-entailing predicate (von Stechow 1999), this is the only parse of the sentence that yields a consistent interpretation – if MIN scopes above *be surprised*, we obtain the inference that Tali expected (or at least allowed for) no one to arrive on time as well as the inference contradicting it, namely, that Tali expected someone distinct from Gali to arrive on time (the strength of the former inference depends on the neg-raising properties of emotive factives, cf. Cremers & Chemla 2016). This accounts for the pattern in (14). (We point to some related issues involving intervention in Sect. 7.)

- (14) Tali is surprised that only Gali arrived on time. (derived ✓)
- a. ⇒ (Tali believes that) Gali arrived on time.
- b. ⇒ Tali did not expect that no one distinct from Gali will arrive on time.

4.2 Accommodation

In setting up the projection puzzle for positive inferences in Sect. 1, we alluded to the fact that, in addition to exhibiting weak and strong projection, the positive inference can also exhibit behavior resembling asserted meaning. Specifically, we discussed occurrences of *only* and exceptives in the scope of modal operators, where projection of the positive inference seemed to be optional and the prejacent could be interpreted below the modal (see examples (11) and (28) above). Further examples like these can be produced, some involving embedded *only*

and exceptive sentences, discussed first below, some involving their unembedded counterparts, discussed second below (there seems to be some cross-speaker variation with respect to how acceptable the non-projective readings of positive inference are, see also Tonhauser et al. 2013 for similar observations for the Guaraní variant of *only*).

Embedded *only* and exceptive sentences. We begin with an illustration of non-projection of positive inferences in modal environments. In (85), the sentence expresses the requirement that Tali dances with Gali and no one else – that is, both the positive and the negative inference of *only* are interpreted in the scope of the modal. The observation that the positive inference is not inherited by the matrix sentence is brought out by the continuation that Gali did not dance with anyone (which would contradict the presupposition that Tali danced with Gali).

(85) Tali had to only dance with Gali_F but ended up dancing with no one.

In (86), the sentence expresses Tali's desire that she dances with Gali and no one else – again, the desire relates to both the positive and the negative inference of *only*. The non-projection of the positive inference is brought out by the acceptable continuation that Tali need not believe that she will dance with Gali (which would contradict the presupposition that Tali believes that she will dance with Gali, cf. Heim 1992, von Stechow 1999).

(86) Tali wants to only dance with Gali_F but knows it is unlikely that anyone will.

In (87), the sentence expresses the possibility that Gali and no one else arrived on time. The continuation indicates that Gali arriving on time need not hold (or be necessary) (which would contradict the presupposition that Gali arrived on time; see also Ippolito 2008).

(87) It is possible that only Gali_F arrived on time but it is also possible that no one did.

The same non-projection patterns can also be observed for exceptives, as demonstrated in (88)-(90), where all three sentences describe a deontic and bouletic necessity, and epistemic possibility, of both the positive and negative inference obtaining, rather than merely of the negative inference obtaining. Again, the accompanying sequences are compatible with the positive inference being false, which indicates that the positive inference does not project.

(88) Tali had to dance with no one but Gali but ended up dancing with no one.

(89) Tali wants to dance with no one but Gali but knows it is unlikely that anyone will.

(90) It is possible that no one but Gali arrived on time but it is also possible that no one did.

As a final illustration of non-projection of the positive inference, the positive inference of *only* and exceptives can also be incorporated into the meaning of the antecedent of a conditional (see Ippolito 2008). This is exemplified in (91)-(92), where the conditionals in the first rows convey that if Tali danced with Gali and no one else, she will be praised. The felicitous continuations in the second rows indicate that Tali need not have danced with Gali (her not dancing with anyone must be possible for the conditional to be felicitous). (Moreover, note that if the conditionals conveyed merely that if Tali danced with no one distinct from Gali, she will be praised, they would be contradicted by the continuations.)

(91) If Tali only danced with Gali_F, she will be praised.
If she danced with no one, she will be criticized.

- (92) If Tali danced with no one but Gali, she will be praised.
 If she danced with no one, she will be criticized.

Other presuppositions. The behavior of the positive inference appears to differ from that of some other presuppositions in that the projection of the latter seems to be more robust. This is demonstrated for *stop* in (93)-(96), where the continuations that would contradict the (expected) projected presupposition that Tali used to smoke are marked compared to their counterparts above. (See, e.g., Tonhauser et al. 2013, 2018 for wide-ranging surveys on the projection of different contents, which are consonant with our characterization here.)

- (93) ?Tali had to stop smoking but she (might have) never smoked.
 (94) ?Tali wants Gali to stop smoking but knows that Gali (might have) never smoked.
 (95) ?It is possible that Gali stopped smoking but it is also possible that she never smoked.
 (96) If Gali stopped smoking, her family will be pleased.
 ?If she never smoked, her family will be ecstatic.

Local accommodation. The theories of presupposition have the resources needed to capture the facts in (85)-(92), as well as to describe the apparent contrast between the projective behavior of the minimality presupposition (the positive inference) and some other presuppositions. In particular, this can be achieved by making use of accommodation (*de iure* accommodation, Soames 1989). On the one hand, the data in (85)-(92) are captured on the assumption that the minimality presupposition (the positive inference) is locally accommodated in those examples (see Heim 1983, Beaver & Zeevat 2007, von Stechow 2008, among others). This can be implemented with an accommodation operator ACCOM in grammar, an operator that transforms presupposed meanings into merely asserted ones (cf. Beaver & Krahmer 2001). For example, a structure of (85) with an accommodation operator is given in (97), where MIN occurs in the scope of ACCOM, which in turn occurs in the scope of the modal. The meaning of the structure is in (98), where the positive inference is now part of the asserted meaning (see the discussion of (42) above).

- (97) [□ [ACCOM [MIN [only [Tali danced with Gali_F]]]]] (accommodation parse)

- (98) **Meaning of (97):**

□(Tali danced with Gali ∧ (¬∃x: x∉{Gali} ∧ Tali danced with x))

On the other hand, the difference in relation to non-projection between the positive inference and other presuppositions can be described by characterizing the accommodation of the former as more accessible, easier, less costly than that of the latter, as stated in (A) (see, e.g., Tonhauser et al. 2013, 2018 for a comparison of the behavior of different triggers).

- (A) **Ease of Accommodation:** The accommodation of the minimality presupposition accompanying *only* and exceptives is more accessible than that of other presuppositions.

Unembedded *only* and exceptive sentences. It is not only in embedded environments in which the minimality presupposition of *only* and exceptive sentences can be accommodated more readily than some other presuppositions – accommodation is available also for matrix *only* and exceptive sentences. This is demonstrated in (99)-(100) (modelled on Karttunen 1974): the

sentences may occur in a user manual that informs the computer user that they must copy their files into the Documents folder in order to have them stored on the cloud; the use of the sentences is felicitous even though the reader of the manual might not have known which folders sync with the cloud prior to reading these sentences.

(99) Only the files in the Documents folder sync with the cloud.

(100) No folder but Documents syncs with the cloud.

An often-discussed use of *only* (and exceptive) sentences to inform the conversational participants that their positive inference holds can be found in answers to questions (e.g., Horn 1996, Geurts & van der Sandt 2004, Klinedinst 2005). An example is provided in (101), where the positive inference (that Gali arrived on time) constitutes new information and partially resolves the question that the *only* and exceptive sentences are answering.

(101) Q: Who arrived on time?

A: Only Gali_F arrived on time.

A': No one but Gali arrived on time.

As in the preceding discussion, local accommodation could be used to derive the patterns in (99)-(101). Another possibility is that an accommodation of the context occurs (*de facto* accommodation, Soames 1989), where the context is modified “quietly and without fuss” to entail the positive inference (see von Stechow 2008 for an extensive recent discussion). In all the cases in (99)-(101), both strategies would allow the contribution of the sentences to be informative and conversationally adequate (e.g., on the assumption of *de facto* accommodation, the negative inferences of (101) substantively contribute to the full resolution of the question).¹²

Presuppositions or different projective content? The preceding discussion does not introduce any new insights or observations – the heterogeneous projective behavior and accommodatability of different presuppositions, including of the positive inference, have been previously recognized and carefully documented (e.g., Prince 1978, Tiemann et al. 2011, Tonhauser et al. 2013, 2018, Tonhauser 2015). Moreover, the characterization of the differences between the presuppositions relied on above, summed up in (A), is merely descriptive. Accordingly, the theory of presupposition, and pragmatics more generally, has a task cut out for it: an auxiliary theory must be provided of the differences between the different kinds of presuppositions in relation to the accessibility of their (local) accommodation (e.g., Tonhauser et al. 2013 group *only* with factive and aspectual verbs when it comes to the accommodatability of their presuppositions, which suggests that the same factors may underlie their behavior). Alternatively, one might try to develop a more refined categorization of projective contents and, accordingly, classify the minimality inference under a different rubric (see Tonhauser et al. 2013, Tonhauser 2015 for a detailed discussion of these and other options). This would be warranted to the extent minimality does behave according to that rubric, and to the extent there is a substan-

¹²If contexts that fail to entail the positive inference nonetheless always admitted the *only* and exceptive sentences presupposing that inference, the following analysis could be entertained: their presupposition is obligatorily *de iure* accommodated at the global level, that is, a sentence like (ia) comes with a structure like (ib). This analysis would be compatible with the observation that positive inferences can, and tend to, project.

- (i) a. Only Gali_F arrived on time.
b. [ACCOMM₁ [MIN₁ [only [Gali_F arrived on time]]]]

tive theory behind that rubric, one that goes beyond introducing new terminology. However, since the minimality presupposition (and thus the positive inference) does usually project like a presupposition, which led the majority of researchers to classify it as such, and since the positive inference does not exhibit the properties of the other well-studied projective content, conventional implicature, we continue to treat it as a presupposition here (minimality interacts semantically with the operators in whose scope it occurs, as observed in the cases of accommodation above, while conventional implicatures do not, e.g., Potts 2004, Nouwen 2007; see Schlenker 2013 on the reduction of conventional implicatures to presuppositions). We are convinced that further progress will be made in this domain. Its pursuit here would, however, take us too far afield.

4.3 Summary

The starting point of our discussion of varying projection facts was the observation that *only* and exceptive sentences sometimes give rise to a weaker, modalized positive inference. Instead of departing from the characterization of the positive inference as a presupposition, and instead of weakening its content, we showed in Sects. 2 and 3 that these patterns were an epiphenomenon of the ability of MIN – a presuppositional operator that is responsible for the generation of the positive inference – to take scope above pertinent modal operators (while *only* and the exceptive are interpreted below these modals). In this section, we showed that the analysis predicted that in cases in which such split scope of the minimality and the subtraction components is ruled out (due to generating defective meanings), the positive inference projects exclusively strongly (that is, the embedding sentence inherits the non-modalized prejacent as an inference). Finally, we observed that the positive inference qua minimality presupposition may be more accommodatable than some other presuppositions (see also Ippolito 2008, Tonhauser et al. 2013, 2018). We expect that our understanding of the projective behavior of the positive inference, and other presuppositions like it, will improve concurrently with the improvement of our understanding of the constraints and principles governing accommodation.

(102) **Summary of the configurations studied in relation to projection:**

- (i) Split scope: [MIN] [... OP [... only/but ...]] \rightsquigarrow **Weak projection**
- (ii) Non-split scope: [OP ... [MIN] [... only/but ...]] \rightsquigarrow **Strong projection**
- (iii) Accommodation: [OP [ACCOM] [MIN] [... only/but ...]]] \rightsquigarrow **No projection**

5 Weak content

There are occurrences of *only* that induce only an existential positive inference, which is at odds with what we put forward in the preceding sections, throughout which the positive inference corresponded to the (potentially modalized) prejacent. Some examples of such occurrences were provided in (17)-(18), repeated below (Klinedinst 2005). These sentences intuitively fail to convey that Gali got her BA from Cal State (that is, the strong positive inference). Rather, they merely convey that she got a BA from a university other than Cal State, (17) or that she got a BA, (18) (though see fn. 3 for a possible derivation of these inferences on the assumption that *only* always generates the strong positive inference).

(17) Gali didn't only get her BA from Cal State_F.

Observed positive inference: Gali got her BA degree somewhere
(not: Gali got her BA from Cal State)

(18) Did Gali only get her BA from Cal State_F?

Observed positive inference: Gali got her BA degree somewhere
(not: Gali got her BA from Cal State)

The problem with sentences like (17)-(18) is, however, even more acute for our preceding discussion. It arises namely already with the non-negated, declarative counterpart of the sentences in (17)-(18) provided in (103). This sentence is predicted to have the meaning in (104). In all contexts in which one graduates with a BA from a single university, which includes our actual context, the presupposition of the sentence contextually entails the assertion (that is, if someone got a BA from Cal State, they did not get a BA from anywhere else). This means that the assertion of (103) is predicted to be uninformative and thus pragmatically illicit, contrary to fact. (Note that while having MIN scope above ASSERT would yield a weaker presupposition - that Gali may have got her BA from Cal State - and obviate the issue of informativity, the resulting meaning would be weaker than the one that we observe for the sentence - namely, that Gali got her BA from Cal State.)

(103) Gali only got her BA from Cal State_F.

(104) **Meaning of (103):**

(pr) Gali got her BA from Cal State

(as) $\neg\exists x: x \neq \text{Cal State} \wedge \text{Gali got her BA from } x$

An existential positive inference is not freely available with just any occurrence of *only*, however. As we observed in the preceding section, *only* does presuppose in many cases the prejacent. Now, there is fortunately an informative way of carving the distributions of the two presuppositions apart, described in (K) in the introduction and repeated below: Klinedinst (2005) argues that an existential positive inference emerges only if the focus alternatives to the sentence without *only* are mutually incompatible.

(K) Weak and Strong Content: A sentence that dominates an occurrence of *only* induces an existential positive inference in a context *c* if the sentence minus *only* and its focus alternatives are mutually incompatible in *c*. Otherwise the sentence induces a strong positive inference (which corresponds to the prejacent of *only*).

In accounting for (K), we exploit a feature of the distributed approach that was left unmined in the preceding – the context-sensitivity of quantificational expressions, in this case MIN. We focus on *only* in Sect. 5.1 and discuss exceptives in Sect. 5.2, where we zone in on the sufficiency modal constructions.

5.1 Minimality and pruning

The minimality operator in *only* and exceptive sentences is a quantifier over the alternatives to the focused element and conveys that focus is the minimal element of which the background holds. Following von Stechow (1993) and Gajewski (2008), we assumed that the domain of MIN is unrestricted and ranges over all sets of individuals that do not contain the focus, which we indicate with the frame in (M) below.

(M) $\llbracket \text{MIN} \rrbracket(\langle B, F \rangle)$ is defined only if $\boxed{\forall X: F \notin X} \rightarrow \neg B(X)$.
 If defined, $\llbracket \text{MIN} \rrbracket(\langle B, F \rangle) = 1$ iff $B(F)$.

In light of the observations above, however, we need to revise this assumption of context-independence. This should make MIN more akin to other quantificational expressions, whose contribution tends to be a function of their meaning and the features of the contexts in which they are used. In doing this, we defer to the standard practice of having quantifiers take a contextually determined resource domain as an argument (e.g., von Stechow 1994).

Domain restriction. The full, updated definition of MIN is provided in (M_C): MIN is equipped with a resource domain that restricts the quantification in its presupposition, which we again frame. The quantification now ranges over all sets of individuals that do not contain the focus and are in the resource domain C. In the preceding sections, we took all sets to be relevant, $\mathcal{P}(D) = C$, and thus all sets that do not contain the focus were quantified over, a limiting case.

(M_C) $\llbracket \text{MIN}_C \rrbracket(\langle B, F \rangle)$ is defined only if $\boxed{\forall X: F \notin X \wedge X \in C} \rightarrow \neg B(X)$.
 If defined, $\llbracket \text{MIN}_C \rrbracket(\langle B, F \rangle) = B(F)$.

If the resource domain is restricted to merely the empty set (in other words, if all other sets of individuals are pruned from the domain of MIN), we obtain a weak, existential positive inference. This is illustrated for sentence (105) in (106): the sentence presupposes that it is false that Gali got her BA from no institution that is not in the empty set, that is, it presupposes that Gali got her BA from some institution, (106pr); it asserts that Gali got her BA from no institution distinct from Cal State, (106as). Together, these two inferences entail that Gali got her BA from Cal State, the observed inference of the sentence, as stated in (107).

- (105) a. Gali only got her BA from Cal State_F.
 b. $\llbracket \text{MIN}_C \rrbracket \llbracket \text{only} \rrbracket \llbracket \text{Gali}_F \text{ got her BA from Cal State}_F \rrbracket$

- (106) **Meaning of (105) (C={∅}):**
 (pr) $\exists x: x \notin \emptyset \wedge \text{Gali got her BA from } x$
 (as) $\neg \exists x: x \notin \{\text{Gali}\} \wedge \text{Gali got her BA from } x$

- (107) **Observations:**
 a. (106pr) $\Leftrightarrow \exists x: \text{Gali got her BA from } x$
 b. (106pr) and (106as) $\Rightarrow \text{Gali got her BA from Cal State}$

On the other hand, if the *only* sentence in (105) is negated, the observed, existential positive inference is generated if MIN occurs in the scope of negation, (108). This is demonstrated in (109): the minimality presupposition is inherited by the sentence and corresponds to Gali getting her BA from some institution, (109pr), while the negated asserted meaning corresponds to Gali getting her BA from some university distinct from Cal State, (109as).¹³

¹³It is worth noting that the information conveyed by the existential positive inferences described in (106) and (109) are entailed by the asserted meanings. In light of the ease of accommodation of the positive inference, (A), the contribution of *only* is thus all but vacuous in these examples, and identical to the contribution that is often assigned to focus itself (see also fn. 3); the same fact obtains in the sufficiency modal constructions. This potentially overly weak contribution of *only* could then be seen to be sufficiently enhanced by its mirative presupposition to avoid pragmatic infelicity, which we have left aside in this paper. But see fn. 2 and Sect. 7 for related discussion.

- (108) a. Gali did not only get her BA from Cal State_F.
 b. [**neg** [**MIN_C** [**only** [Gali got her BA from Cal State_F]]]]

(109) **Meaning of (108) (C={∅}):**

- (pr) $\exists x: x \neq \emptyset \wedge \text{Gali got her BA from } x$
 (as) $\exists x: x \notin \{\text{Cal State}\} \wedge \text{Gali got her BA from } x$

- (110) **Observation:** (109pr) $\Leftrightarrow \exists x: \text{Gali got her BA from } x$

In contrast, if MIN is interpreted above negation, as provided in (111), we again obtain a contradictory meaning, as discussed in Sect. 4: the minimality presupposition that Gali did not get her BA from any institution, (112pr), contradicts the negated asserted meaning that Gali got her BA from some institution distinct from Cal State, (112as). (We only discussed negated *only* sentences here. The existential positive inference is derived in a parallel way in questions.)

- (111) a. Gali did not only get her BA from Cal State_F.
 b. [**MIN_C** [**neg** [**only** [Gali got her BA from Cal State_F]]]]

(112) **Meaning of (111) (C={∅}):**

- (pr) $\neg \exists x: x \neq \emptyset \wedge \text{Gali got her BA from } x$
 (as) $\exists x: x \notin \{\text{Cal State}\} \wedge \text{Gali got her BA from } x$

- (113) **Observation:** (112pr) $\Rightarrow \neg(112as)$

We demonstrated that restricting the domain of MIN allows for the derivation of merely existential positive inferences, which are detectable in negated sentences and in questions. But is the introduction of the resource domain in (M_C) too much of a good thing?

Prima facie overgeneration. A host of overgeneration issues arises for the updated, context-dependent MIN, all else equal. On the one hand, weak positive inferences are predicted to be possible for other *only* and exceptive sentences, readings that we often fail to observe. On the other hand, the derivation of the restricted distribution of exceptives, which is a crucial requirement on any theory of exceptives, is lost. The first issue is demonstrated in (114)-(115), where the observed positive inference of the sentence is that Gali arrived on time. The updated characterization of MIN in (M_C), however, allows for an interpretation that is compatible with Gali not arriving on time, provided in (115). Namely, the sentence gives rise to a positive inference that is merely existential if the domain of MIN is resolved as above, and this meaning may well describe a situation in which, say, only Tali arrived on time. Thus, the observed stronger meaning of the sentence on which Gali and someone else arrived on time is no longer necessarily derived (see Roberts 2011 for further discussion of this issue).

- (114) a. Not only Gali_F arrived on time.
 b. [**neg** [**MIN_C** [**only** [Gali_F arrived on time]]]]

(115) **Meaning of (114) (C={∅}):**

- (pr) $\exists x: x \text{ arrived on time}$
 (as) $\exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$

The second issue is demonstrated in (116)-(117), where we assume that the resource domain of MIN contains, say, a set containing every individual distinct from Gali. The minimality presupposition corresponds in this case to no one distinct from everyone other than Gali having arrived on time – that is, it corresponds to Gali not having arrived on time – while the asserted meaning is that someone else arrived on time, as provided in (117). This meaning is consistent and corresponds to the intuitive meaning of sentence *Someone other than Gali arrived on time*. Accordingly, the sentence is incorrectly predicted to be acceptable.

- (116) a. #Someone but Gali arrived on time.
 b. [MIN_C [someone but Gali arrived on time]]

(117) **Meaning of (116) ($C = \{D \setminus \{Gali\}\}$):**

(pr) $\neg \exists x: x \notin D \setminus \{Gali\} \wedge x$ arrived on time

(as) $\exists x: x \notin \{Gali\} \wedge x$ arrived on time

(118) **Observation:** (117pr) $\Leftrightarrow \neg(\text{Gali arrived on time})$

Both of these issues arise due to an assumption implicit in our discussion so far – that the resource domain of MIN can be arbitrarily gerrymandered. Such an assumption, however, is not warranted, not just for MIN but for quantification more generally. Rather, the domains of quantifiers are determined on the basis of what counts – and sometimes must count – as relevant in the context in which they are used, and of what is required by the assertion of a quantified sentence. That is, there are limits to the disambiguation of the domains of quantifiers, no matter how cooperative and accommodating the conversational participants might be.

Relevance and exceptives. We noted that we should not assume that the domain of quantification can be arbitrarily gerrymandered. Its adjustment is rather conditioned by relevance considerations and the constraints these are subject to. Relevance is usually analyzed as a relation between propositions and a question under discussion: in particular, a proposition is relevant if it picks out a cell or a union of cells in the partition invoked by the question under discussion (e.g., Lewis 1988). Now, what question is addressed by *only* and exceptive sentences like (119)? As usual, this is determined by the alternatives they induce. In our setup, these are the propositions obtained by applying the background to the sets of individuals, given in (120).¹⁴

- (119) a. Only Gali_F arrived on time.
 b. [MIN_C [only [Gali_F arrived on time]]]
 c. [MIN_C] ($\langle [\lambda X. \neg \exists x: x \notin X \wedge x$ arrived on time], {Gali} \rangle)

(120) $\{ \neg \exists x: x \notin Z \wedge x$ arrived on time | $Z \subseteq D \}$

This set of alternatives corresponds to the question in (121), which induces a partition in which each cell corresponds to a proposition that a specific person and no one else arrived on

¹⁴For the sake of explicitness, we assume that relevance affects the resource domain of MIN – which consists of sets of individuals, not of propositions – indirectly by determining what propositions that are obtained by applying the background to the sets of individuals are relevant:

- (i) A set of individuals X is in resource domain C of $\text{MIN}_C(\langle B, F \rangle)$ in context c iff $B(X)$ is relevant in c .

time, or that no one arrived on time. (119) then completely answers this questions: (119) picks out a cell in the partition induced by (120) – the cell corresponding to Gali and no one else arriving on time (this is achieved either by first restricting the partition to a context set in which Gali arrived, or by collapsing the presupposition and assertion).¹⁵ Furthermore, the *only* and exceptive sentences obviously also fully answer question (122), which (121) is included in, namely, the question whether Gali arrived on time.

(121) **Question induced by (119)-(120):**

Who (if anyone) arrived on time?

(122) **Question about the focus in (119)-(120):**

Did Gali arrive on time?

We assume that *only* and exceptive sentences (or appropriate sentences embedding them) must, at the very least, resolve the question about the focus, exemplified in (122), in particular since the question pertains to the only explicitly mentioned element in the domain of the pertinent quantificational operator (cf. Bar-Lev 2018, 2021 for an arguably related constraint in exhaustification). For illustration, in a simple sentence like *Only Gali_F arrived on time*, the question about the focus is on its non-split construal the one in (122), and it is resolved negatively – it is not the case that Gali arrived on time. On its split construal, the question about the focus is whether the speaker believes that Gali arrived on time (the belief ascription is due to ASSERT), and it is again resolved negatively – it is not the case that the speaker believes that Gali arrived on time (that is, she might not have arrived on time). Notice that the resolution of the question about the focus may follow from an (accommodated) positive inference directly, as discussed in the preceding sections, or from a combination of the (accommodated) presupposition and assertion, as discussed earlier in this section. We provide an overly simplistic description of this requirement in (123), which should be seen as a place-holder for a more general constraint on *only* and exceptive sentences.

(F) **Focus Resolution Requirement:** In the absence of local accommodation, a sentence dominating, respectively, $[\text{MIN}_C [(\text{OP}) [\text{only } S]]]$ or $[\text{MIN}_C [(\text{OP}) [Q \text{ NP but DP VP}]]]$ must resolve whether, respectively, $[(\text{OP}) S]$ or $[(\text{OP}) \text{DP VP}]$ holds.

Finally, we rely on a single condition on relevance, though doubtlessly many further conditions may play a role in the issue at hand. The condition that we adopt states that relevance is closed under negation and conjunction (e.g., Fox 2007, Fox & Katzir 2011, Trinh 2019).

(B) **Boolean Closure of Relevance:** For any S , if S is relevant, $\neg S$ is relevant as well. For any S and S' , if S and S' are relevant, $S \wedge S'$ is relevant as well.

Let us see how these considerations can help us derive and understand (K).

Back to domain restriction. If a conversational participant is faced with a *prima facie* illicit assertion – say, one that presupposes something which is not part of the common ground, or one that is already presupposed, or one that is contradictory – they can try to accommodate appropriate information to avoid a conversational breakdown (e.g., Stalnaker 1978, von Stechow 2008). We already discussed cases of such accommodation that involve presuppositions that

¹⁵There is a striking resemblance between the partition induced by (120), and the partitions induced by the ‘subdomain’ alternatives to sentences with certain NPIs like *any* (cf. Crnič 2022, Sect. 5, for discussion).

are not yet part of the common ground in Sect. 4.2. Another kind of accommodation involves a shift in what is assumed to be relevant in the context, concretely, an adjustment of the resource domain of MIN. The assumptions in (F) and (B) constrain such adjustments.

(i) Observed existential presuppositions (positive sentences): If a sentence presupposes what it means to assert, it is not assertable. This is the case in examples like (103), repeated below: the sentence presupposes that Gali got her BA from Cal State, (124pr), which contextually entails that she did not get it from elsewhere – the assertion of the sentence, (124as). Accordingly, the sentence should be unassertable in any context, contrary to fact.

(103) Gali only got her BA from Cal State_F.

(104) **Meaning of (103) (C = $\mathcal{P}(\mathbf{D})$):**

(pr) Gali got her BA from Cal State

(as) $\neg\exists x: x \neq \text{Cal State} \wedge \text{Gali got her BA from } x$

Two maneuvers are available to a conversational participant faced with the assertion of (103). On the one hand, one can attempt to locally accommodate the presupposition, which would allow the assertion to be informative. This maneuver, however, is not helpful since local accommodation makes the sentence contextually (but not logically) equivalent to its proper part, as stated in (123). Consequently, such a construal would violate various redundancy and manner principles operative in language (e.g., Katzir & Singh 2015, Mayr & Romoli 2016, Anvari 2018, among others).

(123) For any c such that one gets a BA from a single university in c :

$$\begin{aligned} & \llbracket \llbracket \boxed{\text{ACCOM}} \llbracket \llbracket \boxed{\text{MIN}_C} \llbracket \llbracket \text{only} \llbracket \text{Gali got her BA from Cal State}_F \llbracket \llbracket \llbracket \\ & \Leftrightarrow_c \llbracket \llbracket \text{Gali got her BA from Cal State} \llbracket \llbracket \end{aligned}$$

On the other hand, one may adjust the domain of MIN, which would lead to a weaker positive inference and hence allow an informative assertion. Most adjustment will do, say, pruning every element in the domain of MIN, but the empty set. As discussed above, this would yield the inferences in (106), which jointly entail that Gali got her BA from Cal State, as desired.

(106) **Meaning of (103) (C={ \emptyset):**

(pr) $\exists x: x \notin \emptyset \wedge \text{Gali got her BA from } x$

(as) $\neg\exists x: x \notin \{\text{Gali}\} \wedge \text{Gali got her BA from } x$

The adjustment in (106) is in line with (F) and (B). In the case of (F), we see that the issue of whether Gali got her BA from Cal State is resolved - she did. In the case of (B), the set of relevant alternatives includes (i) that it is not the case that Gali got a BA from somewhere (based on the empty set of individuals), and (ii) that it is not the case that Gali got a BA from somewhere distinct from Cal State (the assertion itself, which we assume is always relevant; cf. Roberts 1996, Büring 2003, Magri 2009). No other proposition of the form ‘it is not the case that Gali got her BA from somewhere distinct from X’ is in the Boolean closure of the set containing these two propositions, hence none of them need be relevant, and derivatively no set of individuals other than the empty set need be in the resource domain of MIN.

(ii) Observed existential presuppositions (negated sentences): Turning to the negated counterpart of (103), provided in (108), the sentence leads to a (contextually) contradictory meaning

if the domain of MIN is not adjusted – without an adjustment, the presupposition would be that Gali got her BA from two institutions, a contextual impossibility. If the domain of MIN is pruned to contain merely the empty set, however, we obtain the meaning in (109), which corresponds to Gali getting a BA from an institution distinct from Cal State.

- (108) a. Gali did not only get her BA from Cal State_F.
 b. [neg [MIN_C [only [Gali got her BA from Cal State_F]]]]

(109) **Meaning of (108) (C={∅}):**

- (pr) $\exists x: x \notin \emptyset \wedge$ Gali got her BA from x
 (as) $\exists x: x \notin \{\text{Cal State}\} \wedge$ Gali got her BA from x

Both (F) and (P) are satisfied by (108)-(109). In the case of (F), we obtain that Gali did not get her BA from Cal State (which is contextually entailed by her getting her BA from an institution distinct from Cal State). In the case of (B), the same reasoning applies as under (i).¹⁶

(iii) Observed prejacent presuppositions: We now turn to the first type of overgeneration discussed above: we want to avoid generating meanings that are too weak in sentence that only trigger strong positive inferences. For instance, the sentence in (114), *Not only Gali_F arrived on time*, cannot convey merely that someone distinct from Gali arrived on time, which would be the case if the domain of MIN were adjusted to contain merely the empty set. This is predicted by the account sketched here: in contrast to (108), sentence (114) on the adjusted domain resolution would not resolve the question whether Gali arrived on time. Thus, it violates (F).

(iv) Ungrammatical occurrences of exceptives: The second type of overgeneration involved admitting ungrammatical occurrences of exceptives. For instance, we noted that sentence (116) should have a consistent meaning on a parse on which the domain of MIN consists merely of the set that contains every individual distinct from Gali – it would convey the same meaning as *Someone other than Gali arrived on time*, (117).

- (116) a. #Someone but Gali arrived on time.
 b. [MIN_C [someone but Gali arrived on time]]

(117) **Meaning of (122) (C={D \ {Gali}}):**

- (pr) $\neg \exists x: x \notin D \setminus \{\text{Gali}\} \wedge$ x arrived on time
 (as) $\exists x: x \notin \{\text{Gali}\} \wedge$ x arrived on time

This construal is ruled out by (B). If the propositions (i) that someone distinct from everyone

¹⁶The case of *only* and exceptives in questions in which merely an existential positive inference is generated is more involved when it comes to the satisfaction of (F). It is not that the question in (i) resolves the issue whether Gali got her BA from Cal State. Rather, the issue is resolved by each of the two propositions in the Hamblin denotation of the question on their own, as provided in (ii): the first proposition entails that Gali got her BA from Cal State; the second one (contextually) entails that she did not.

- (i) a. Did Gali only get her BA from Cal State_F?
 b. [λp [whether_t [[? p] [t [MIN [only Gali got her BA from Cal State_F]]]]]]
- (ii) $\partial(\text{Gali got her BA from somewhere}) \wedge \neg \exists x: x \notin \{\text{CS}\}$ Gali got her BA from x,
 $\partial(\text{Gali got her BA from somewhere}) \wedge \exists x: x \notin \{\text{CS}\}$ Gali got her BA from x

other than Gali arrived on time and (ii) that someone distinct from Gali arrived on time are both relevant, it is also relevant that someone arrived on time (which corresponds to the disjunction of the two, or the negation of their conjoined negations). But then the empty set must be in the resource domain of MIN (recall that someone arriving on time corresponds to someone who is not in the empty set arriving on time). And if the empty set is in the resource domain of MIN, we are stuck with a contradiction and the prediction that the sentence is unacceptable.

We conclude that conditions (F) and (B) adequately limit potential overgeneration that might emerge from allowing for contextual adjustment of the covert resource domain of MIN.

5.2 Sufficiency modal constructions

Sentences like (19), repeated below, have been notoriously challenging to analyze. Particularly relevant to or discussion of positive inferences is the observation that (19) merely conveys that it suffices to go to the North End to get good cheese, rather than that it is necessary for one to do so – hence their name ‘sufficiency modal constructions’ (see von Fintel & Iatridou 2007, Alonso-Ovalle & Hirsch 2019 for two comprehensive analyses of these constructions).

(19) To get good cheese, you only have to go to the North End_F.

Observed positive inference: You have to go somewhere
(not: You have to go to the North End)

As discussed by von Fintel & Iatridou 2007, but left unanalyzed by them, the same meaning is also generated by exceptive sentences like (124): sentence (124) conveys that it suffices for one to go to the North End to get good cheese, rather than that it is necessary for one to do so.

(124) To get good cheese, you do not have to go anywhere but the North End.

This behavior of exceptives can be explained on the just updated distributed analysis. We begin by the derivation of this behavior, and then extend the analysis to *only* sentences.

Exceptive sufficiency modal constructions. The sentence in (124) may be assigned the structure in (125), where the MIN operator is separated from the NPI containing the exceptive by negation and a modal operator. Note that an insertion of MIN below negation would result in the structure having a contradictory meaning, as discussed in Sects. 2 and 4, so only the parse on which MIN takes matrix scope is possible.

(125) [MIN_C [neg [\square [anywhere but NE]_t [you go to t]]]]

The interpretation of the structure in (125) depends on the resolution of resource domain C of MIN. If the context is such that that getting cheese at one location means that you don’t have to go to another location, an unrestricted domain of MIN will lead to the positive inference – that you have to go to the North End to get good cheese – (contextually) entailing the assertion – that you do not have to go elsewhere – and hence to the vacuity of the assertion, as discussed in Sect. 5.1. On the other hand, if the domain of MIN is restricted to the empty set, we obtain the meaning that is identical to the one derived by von Fintel & Iatridou (2007) and Alonso-Ovalle & Hirsch (2019) for the *only* sentence in (19) (see von Fintel & Iatridou 2007, p. 463, and Alonso-Ovalle & Hirsch 2019, p. 26).

(126) **Meaning of (125) (C={∅}):**

- (pr) $\Box(\exists x: x \notin \emptyset \wedge \text{you go to } x)$
 (as) $\neg\Box(\exists x: x \notin \{\text{NE}\} \wedge \text{you go to } x)$

This is the observed interpretation of (124). But (126) does not on its own resolve whether you have to go to the North End, and so the proposed parse should violate (F). Importantly, however, the assertion of (124) does intuitively convey that you do not have to go to the North End to get good cheese (which is, interestingly, the opposite of what the positive inference of the sentence would be without the adjustment of the domain of MIN) – and with this inference, (F) is satisfied. We suggest that the inference arises due to an application of a strengthening mechanism in grammar that strengthens the presupposition in (126) to one on which you are not required to go to any specific location, that is, one on which you can go to any specific location to get good cheese (see, e.g., Gajewski & Sharvit 2012, Spector & Sudo 2017, Marty & Romoli 2021 on the derivation of scalar implicatures of this sort).

(127) **Strengthened meaning of (125):**

- (pr) $\Box(\exists x: \text{you go to } x) \wedge \forall x(\neg\Box(\text{you go to } x))$
 (as) $\neg\Box(\exists x: x \notin \{\text{NE}\} \wedge \text{you go to } x)$

We now turn to the sufficiency modal constructions with *only*.

Only sufficiency modal constructions. There is a surface mismatch between *only* and exceptive sufficiency modal constructions: *only*, which encodes subtraction, occurs above the modal at surface form, while the *any*-DP with the exceptive occurs below the modal. This means that the latter’s analysis provided above can be transferred to the former only if this mismatch is resolved. In order to deal with this mismatch, we can take recourse to two proposals that have been put forward to deal with it: von Fintel & Iatridou propose to split the negative quantifier corresponding to *only* to negation and to an existential quantifier, the latter of which is interpreted in the scope of the modal; Alonso-Ovalle & Hirsch propose to insert a separate operator encoding existential quantification in the scope of the modal. Both of these strategies can be adopted here without much ado, and the choice between them, we think, is not critical for the purposes of this paper. For the sake of concreteness, we reproduce the proposal of von Fintel & Iatridou, whose core assumptions are summarized in (128). They split off negation from *only* and reconstruct the remaining existential quantifier below the modal in sufficiency modal constructions, as provided in (129) (see von Fintel & Iatridou 2007 for details). The resulting interpretation, provided in (130), is identical to that of the exceptive sufficiency modal construction above, and hence to that derived by von Fintel & Iatridou and Alonso-Ovalle & Hirsch. As above, (B) is resolved by a computation of a scalar implicature.

- (128) a. Morphology: *only* spells out NEG and ONLY
 b. Semantics: $[[\text{ONLY}]](\langle B, F \rangle) = \exists x: x \notin F \wedge B(x)$

- (129) a. To get good cheese, you only have to go to the North End_F
 b. $[\boxed{\text{MIN}_C} [\boxed{\text{NEG}} [\boxed{\text{ONLY}} [\text{you go to the NE}_F]]]]$

(130) **Meaning of (129) (C={∅}):**

- (pr) $\Box(\exists x: x \notin \emptyset \wedge \text{you go to } x)$
 (as) $\neg\Box(\exists x: x \notin \{\text{NE}\} \wedge \text{you go to } x)$

Necessity readings. The sentences that have the surface form of the sufficiency modal constructions do not always convey the sufficiency reading – they may also convey the stronger, necessity reading. This is demonstrated in (131)-(132), which can describe the requirement to read *War and Peace* in the literature class. (The reading is even more pronounced with some other modals, like *be required to*, as discussed by von Fintel & Iatridou 2007.)

(131) In the literature class, we only have to read *War and Peace*.

(132) In the literature class, we don't have to read any book but *War and Peace*.

⇒ In the literature class, we have to read *War and Peace*

This stronger reading can be derived on the distributed analysis in two ways: (i) by having the existential quantifier hosting the subtraction (ONLY and *any book but War and Peace*) scope above the modal or (ii) by having it occur below the modal and not pruning the domain of MIN. We focus on the latter derivation, which we apply to example (132).¹⁷ The sentence in (132) is assigned the structure in (133), where MIN is separated from the subtraction component by negation and a modal. Without pruning, this structure has the interpretation in (134). First, as provided in (134pr), the sentence presupposes that for every set that does not contain *War and Peace*, we must read a book that is not in that set. This means that for every set that includes *War and Peace*, including the singleton set, we must read a book in that set. Accordingly, the presupposition is equivalent to the requirement that we read *War and Peace*, as stated in (135). Second, as provided in (134as), the sentence asserts that we do not have to read any book distinct from *War and Peace*.

(133) [[MIN_C [[neg [□ [[any book but WP]_t we read t]]]]]

(134) **Meaning of (133) (C = $\mathcal{P}(\mathbf{D})$)**

(pr) $\forall X: \{WP\} \not\subseteq X \rightarrow \square(\exists x: x \notin X \wedge \text{we read } x)$

(as) $\neg \square(\exists x: x \notin \{WP\} \wedge \text{we read } x)$

(135) **Observation:** (134pr) $\Leftrightarrow \square(\text{we read } WP)$

This derivation shows that the difference in the sufficiency and necessity readings of negated universal modal sentences with NPIs with exceptives can be derived without movement of the NPI. That this is a desirable feature of the analysis is evidenced by it predicting the intuitively correct interpretation of (136), which can convey that the guard has to stay in the garden. Again, the reading follows naturally on a parse which parallels (133) and on which the domain of MIN is not pruned. An analysis that would involve movement of the NPI above the modal is unavailable in (136) since this would require the movement of the pivot of a *there is* construction, which is impossible (cf., e.g., Barwise & Cooper 1981, Heim 1987).

¹⁷Structure (i), where the NPI scopes above the modal, has the interpretation in (ii). The presupposition and assertion in (ii) jointly convey that you need to read *War and Peace* in the literature class.

(i) [MIN_C [neg [□ [any book but WP]_t [we read t]]]]]

(ii) **Meaning of (i) (C={ \emptyset }):**

(pr) $\exists x: x \notin \emptyset \wedge \square(\text{you go to } x)$

(as) $\neg \exists x: x \notin \{NE\} \wedge \square(\text{you go to } x)$

(136) There doesn't have to be anyone but the guard in the garden.

⇒ The guard has to be in the garden.

In the case of *only*, this leads to a parallel expectation that the strong, necessity reading could also be derived in two ways: by either the existential component of *only* taking scope above the modal, or by it taking scope below the modal and adjusting the domain of MIN. However, given the covert nature of this existential operator in English, we cannot easily test this expectation in English.

Summary. This completes our discussion of the sufficiency modal constructions. We focused exclusively on the nature of the positive inference in them. There are other puzzling aspects of the construction, which cut across the issue at the heart of this paper, or so we believe. We refer the reader to von Stechow & Iatridou (2007) and Alonso-Ovalle & Hirsch (2019) for more comprehensive treatments of the construction, as well as to some related pointers in Sect. 7.

5.3 Summary

In light of the data that suggest that the positive inference may in specific cases be weaker than the prejacent, we revisited the MIN operator. We showed that if we allow the context to partly determine the contribution of MIN by restricting its domain of quantification, as it does in other cases of quantification, a weaker, existential positive inferences can be obtained.

(137) **Summary of the derivation of the strong vs. weak content**

For any $[\text{MIN}_C [\dots \text{only}/\text{but} \dots]]$,

- (i) if $C = \mathcal{P}(D)$, we obtain a **strong positive inference** (the prejacent), and
- (ii) if $C = \{\emptyset\}$, we obtain a **weak positive inference** (an existential inference).

The domain restriction of MIN, as well as that of other quantifiers, cannot be freely germandered, however. We proposed that its adjustment is subject to two constraints: that it does not undermine the resolution of the question about the focus, (F), and that it respects the Boolean closure of relevance, (B). Much more should be said about domain adjustment with MIN and other quantifiers and about the nature of relevance, but showing how their interplay can resolve the second of Horn's dilemmas suffices for our modest goals here.

6 Comparison

The complex behavior of the positive inference of *only* and exceptives led to a myriad of approaches to them. So much so that we cannot do proper justice to them here. Rather, we isolate and discuss four prominent assumptions about the positive inference, while screening off other important aspects of the analyses that rely on them (see Ippolito 2008, Beaver & Clark 2008, Roberts 2011, Coppock & Beaver 2014 for recent comparisons of the different approaches to *only*). Our focus in this section is exclusively on *only* since much of the data discussed so far have either not been previously analyzed for exceptives, or have been shown to require a distributed analysis (see Gajewski 2008, 2013, Hirsch 2016, Crnič 2018 for discussion).

6.1 Some alternative analyses

We initially group the different approaches to the positive inference of *only* into three classes that differ with respect to the strength of the positive inference. This classification is, accordingly, most pertinent to the weak vs. strong content dilemma. Some of these approaches, however, also have a take on the weak vs. strong projection dilemma. We conclude our comparison by discussing the fourth, scalar implicature approach, which also has a take on both dilemmas. Our proposal bears the closest resemblance to this last approach, which we further elaborate on in the following subsection.

Existential and prejacent presuppositions. Most entrenched analyses of *only* assign it a presupposition that pertains to its sister at LF. The presupposition is either existential – there is an alternative to the sister of *only* that is true (e.g., Horn 1996, von Stechow 1997, Klinder 2005, Wagner 2006, Beaver & Clark 2008, Coppock & Beaver 2014) – or it corresponds to the prejacent – the sister of *only* is true (e.g., Horn 1969, Rooth 1992, Roberts 2006, Alonso-Ovalle & Hirsch 2019). Now, many objections to both types of presupposition have been brought forward. On the one hand, their encoding as a presupposition runs into problems with the weak projection facts discussed in Sect. 3. On the other hand, their uniform strength runs into problems with either the strong or the weak content facts. In this latter respect the existential presupposition approach is better positioned since a stronger inference may in many cases be derived from the weaker one by strengthening. The strategies of the approaches for how to get the two observed entailment patterns discussed in the introduction are listed in (138).

(138) Comparison of the derivation of different strengths of positive inferences

- | | | | |
|----|-----------------------|-----------------------------------|---|
| a. | Prejacent approach: | strong (prejacent) presupposition | |
| b. | Existential approach: | weak (existential) | $\xrightarrow{\text{strengthening}}$ strong (prejacent) |
| c. | Distributed approach: | strong (prejacent) | $\xrightarrow{\text{dom. adjustment}}$ weak (existential) |

The existential approach faces its specific issues, however. Two issues that are commonly raised are the derivation of the prejacent inference when the focus involves a plural element, and when the *only* sentence is embedded, as exemplified in (139)-(140), respectively. Both sentences entail that the students arrived on time, and both are on the existential approach, all else equal, predicted to entail merely an existential positive inference (e.g., Ippolito 2008, Alonso-Ovalle & Hirsch 2019 for a detailed discussion and references).

(139) Only the students arrived on time.

(140) Did only the students arrive on time?

⇒ The students arrived on time

In contrast, an existential positive inference is blocked in (139)-(140) on the distributed analysis due to the requirement that the sentence containing *only* resolve the question about the focus, (F), which effectively restricts what domain adjustments are admissible.

Conditional presupposition. Ippolito (2008) defends a conditional positive inference of *only*, which is weaker than the prejacent and independent of the existential positive inference. It is exemplified in (141): if one of the alternatives to the sister of *only* is true (that is, someone arrived

on time), then the prejacent is true. Ippolito derives the prejacent inference of (141) as a scalar implicature. Specifically, she achieves this by negating alternative *No one arrived on time*, yielding the inference that someone arrived on time, which in turn yields that Gali arrived on time given that no one else did (see Sect. 1.2 for a similar derivation).

(141) Only Gali_F arrived on time.

Conditional presupposition: Someone arrived on time → Gali arrived on time

Three types of issues arise for this proposal. The first issue pertains to the theory of alternatives that the approach implicitly employs. On the one hand, the assumption that *No one arrived on time* is activated as an alternative to (141) should have as a consequence that someone arrived on time is also an alternative (it is arguably simpler than the former alternative, uses quantifiers of the same type, and should thus count as an alternative on all extant approaches to alternatives, e.g., Rooth 1992, Katzir 2007). But this would result in the two alternatives being symmetric, hence neither of them being negatable/excludable (e.g., Fox 2007, Fox & Katzir 2011, Katzir 2014 for discussion). Accordingly, the required scalar implicature should not be generated. On the other hand, given the resemblance of *No one arrived on time* to a proposition negated on the distributed analysis (where the subtraction from the domain of *only* is empty), one may rely on an alternative corresponding to that proposition (it would have the form *only X_F arrived on time*, where *only* does not range over X, which is admitted on the extant approaches to alternatives). But, as we will see in the following subsection, this strategy would remove all motivation for adopting the conditional presupposition: the positive inference could be made to follow in simple, negated, and other sentences simply as a scalar implicature.

The other two issues involve the strength of the positive inference. On the one hand, we observed that in the family-of-sentences tests, the prejacent presupposition can, and many times does, project strongly. For instance, the sentence in (142) can, and tends to, presuppose that Tali danced with Gali. The conditional presupposition of the sentence is, however, weaker: either Tali danced with no one or she danced with Gali. Since the alternative *If Tali danced with no one, she is not tired* is now weaker than (142), no stronger inference is generated by the sentence. More generally, all occurrences of *only* in downward-entailing environments that are not anti-additive will be predicted to have weaker positive inferences than the prejacent, contrary to fact.

(142) If Tali only danced with Gali_F, she is not tired.

On the other hand, the positive inference is predicted to be too strong in all the cases in which merely existential positive inferences have been observed. Consider sentence (17), repeated below. The sentence conveys that Gali did not graduate from Cal State but from some other university.

(17) Gali didn't only get her BA from Cal State_F.

Observed positive inference: Gali got her BA degree somewhere
(not: Gali got her BA from Cal State)

Together with the assertion, the conditional presupposition of (142) necessarily yields a contextual contradiction, provided in (143): it follows as a consequence of Gali getting her BA from Cal State (presupposition together with the assertion), as well as from an institution distinct from it (assertion), which is incompatible with getting one's BA only from one institution.

(143) **Predicted meaning of (142):**

(pr) $\neg(\text{Gali got her BA from some institution}) \vee \text{Gali got her BA from Cal State}$

(as) Gali got her BA from some institution distinct from Cal State

Scalar implicature approach. The final family of approaches derives the positive inference as a scalar implicature (esp., Horn 1992, McCawley 1993, van Rooy & Schulz 2007; see also Ippolito 2008, Beaver & Clark 2008 for discussion and criticism). All these approaches derive the positive inference as a scalar implicature by evaluating the sentence with respect to a negative quantifier alternative (cf. Horn 1992:181ff and van Rooy & Schulz 2007, Sect. 6; see also Ippolito 2008); negating this alternative yields an existential inference and, together with the assertion, the prejacent inference. This derivation faces parallel issues to those discussed for Ippolito’s approach above. For example, the approaches cannot obviously capture different projection facts from various embedded *only* sentences, nor is it clear that they are compatible with the extant theories of alternatives. These issues notwithstanding, the approaches share several features with the distributed approach defended in this paper, in particular the simple meaning of *only* and the positive inferences being generated external to it.

(144) **Main features shared by the scalar implicature and distributed analysis**

- a. Subtractive meaning of *only* (negative quantification + subtraction of focus)
- b. Positive inference is generated by a mechanism external to *only*
- c. Potential sensitivity to the context of this external mechanism

These commonalities are striking. In the following subsection, we discuss an implementation of the distributed analysis that relies on a grammatical exhaustification mechanism that has been independently argued to be responsible for the generation of scalar implicatures. The implementation is immune to the objections usually levied against its scalar implicature ancestors.

6.2 More on the scalar implicature analysis

There are two semantic components to *only* and exceptives: subtraction and minimality. We encoded them into two separate operators, in particular, the minimality component was encoded in operator MIN. Although this apparatus sufficed for the derivation of the observed facts, a more ambitious theory may want to attribute minimality to some independently-motivated mechanism. This task has been fruitfully pursued for exceptives, where the mechanism has been identified with the exhaustivity operator *exh*, otherwise responsible for generating scalar implicatures (Gajewski 2013, Hirsch 2016, Crnič 2018). In the following, we present an exhaustivity-based incarnation of the distributed analysis of *only*.

Only and subtraction. The meaning of *only* remains the same. For example, the clause prefixed by *only* in *Only Gali_F arrived on time* has the following structure and interpretation:

(145) [only [Gali_F arrived on time]] (partial LF)

(146) $\llbracket \text{only} \rrbracket (\langle [\lambda x. x \text{ arrived on time}], \{\text{Gali}\} \rangle) =$
 $\neg \exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$

Exhaustivity and alternatives. The exhaustivity operator delivers the minimality inference. And given that the minimality inference must be a presupposition, the exhaustivity operator

should be presuppositional. Bassi et al. (2021) argue extensively for precisely such a formulation of the operator, and insofar the proposal here is successful, it provides further support for their treatment. The operator is defined in (E_C): it leaves the asserted meaning of its complement unchanged, and presupposes the negation of all relevant, excludable alternatives, which are defined in (147). (For reasons of convenience, we depart from the standard characterizations of *exh* in employing a semantic characterization of alternatives, in line with our assumptions above. See Fox & Katzir 2011 for arguments for the necessity of a syntactic characterization.)

(E_C) $\llbracket \text{exh}_C \rrbracket(\langle B, F \rangle)$ is defined only if $\forall X: B(X) \in \text{Excl}(\langle B, F \rangle) \cap C \rightarrow \neg B(X)$.
If defined, $\llbracket \text{exh}_C \rrbracket(\langle B, F \rangle) = 1$ iff $B(F)$.

(147) $\text{Excl}(\langle B, F \rangle) = \cap \{ C \mid C \text{ is a maximal subset of } \text{ALT}(\langle B, F \rangle) \text{ such that } \{ \neg B(X) \mid \langle B, X \rangle \in C \} \cup \{ B(F) \} \text{ is consistent} \}$

The full structure of a simple *only* sentence has the form along the lines of (148). The output of exhaustification depends on the alternatives that enter into its computation, which we provide in (149): *Gali* has as its alternatives all referential DPs, both singular and plural. These pick out all the individuals, which we continue to represent with sets containing them (again, we assume that these may be reasonably restricted by the context).¹⁸

(148) $\llbracket \boxed{\text{exh}_C} \llbracket \boxed{\text{only}} \llbracket \text{Gali}_F \text{ arrived on time} \rrbracket \rrbracket \rrbracket$

(149) $\text{ALT}(\langle B, \{ \text{Gali} \} \rangle) = \{ \langle B, X \rangle \mid X \in \mathcal{P}(D) \}$

We are now in a position to reproduce the results obtained in the preceding sections.

Weak projection and scope. A simple sentence like (150) may be assigned two structures. The first structure is one in which *exh* is adjacent to *only* at LF, as provided in (151). We continue to call this the non-split parse of the sentence.

(150) Only *Gali_F* arrived on time.

(151) $\llbracket \text{ASSERT} \llbracket \boxed{\text{exh}_C} \llbracket \boxed{\text{only}} \llbracket \text{Gali}_F \text{ arrived on time} \rrbracket \rrbracket \rrbracket \rrbracket$ (non-split parse)

The meaning of the structure is computed on the basis of the representation in (152). The output of the computation depends on which of the alternatives that enter the computation are excludable and, moreover, which of them are relevant (thus, in C). (Since ASSERT does not play a significant role on this parse, we leave it out from our representations.)

(152) $\llbracket \text{exh}_C \rrbracket(\langle [\lambda X. \neg \exists x: x \notin X \wedge x \text{ arrived on time}], \{ \text{Gali} \} \rangle)$

The set of excludable alternatives is built on every set that does not contain *Gali*, namely, all of these can be jointly negated while it holds that no one distinct from *Gali* arrived on time.¹⁹

(153) $\text{Excl}(\langle [\lambda X. \neg \exists x: x \notin X \wedge x \text{ arrived on time}], \{ \text{Gali} \} \rangle) =$

¹⁸The assumption that plural DPs are alternatives to singular DPs is natural also on Katzir's (2007) theory of alternatives, at least if proper names are full DPs like $[_{DP} \text{THE } [_{NumP} \text{SG } [_{NP} \text{Gali}]]]$ (see, e.g., Elbourne 2005, Matushansky 2008, Fara 2015).

¹⁹One concern that may arise pertains to the alternative built on the empty set, that is, in the case of $X = \emptyset$ (there are presumably no expressions that pick out the empty set). The same meaning can, however, be obtained if instead of the empty set one considers some individual that is not in the contextually determined set D. In this case, the subtraction of the individual from D, due to *only*, will be as vacuous as when one subtracts the empty set.

$$\{ \langle [\lambda X. \neg \exists x: x \notin X \wedge x \text{ arrived on time}], Y \rangle \mid Y \in \mathcal{P}(D \setminus \{\text{Gali}\}) \}$$

The asserted meaning of the structure in (151) is that no one distinct from Gali arrived, (154as). On the assumption of no contextual restriction (that is, all the alternatives to the structured meaning argument of exh_C are relevant), we obtain the presupposition in (154pr): it corresponds to a conjunction of propositions that someone from some set of individuals that includes Gali arrived on time. This presupposition is equivalent to the positive inference that Gali arrived on time, as stated in (155): namely, one of the conjuncts is that someone in the set containing just Gali arrived on time, and this conjunct entails all others. This corresponds to the reading of (150) that we began the paper with, the default reading of the sentence.

(154) **Meaning of (151) (no restriction on C):**

(pr) $\forall Y: Y \in \mathcal{P}(D \setminus \{\text{Gali}\}) \rightarrow \exists x: x \notin Y \wedge x \text{ arrived on time}$

(as) $\neg \exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time}$

(155) **Observation:** (154pr) \Leftrightarrow Gali arrived on time

The sentence in (150), however, has another parse. This is provided in (156), where exh_C and *only* are separated by an ASSERT operator (cf., e.g., Chierchia 2013, Meyer 2013, Fox 2016, Buccola & Haida 2019 for some further examples in which exh_C takes scope above ASSERT).

(156) [$\boxed{exh_C}$ [ASSERT [\boxed{only} [Gali_F arrived on time]]]] (split parse)

The excludable alternatives are again those based on the substitution of the focus with any set of individuals not containing the focus. Accordingly, if all these alternatives are relevant, we obtain the meaning in (157). The assertion is that the speaker knows that no one distinct from Gali arrived on time, (157as). The presupposition of the structure is that for every set not containing Gali, the speaker does not believe that no one who is not in that set arrived on time, as provided in (157pr); that is, for every set that includes Gali, the speaker takes it to be possible that someone in that set arrived on time. This is equivalent to the speaker taking it to be possible that Gali arrived on time. We thus derive the suspendability of the positive inference of (150) with a modalized continuation like *Perhaps she did not arrive on time either*, but not with a non-modalized continuation like *She did not arrive on time either*.

(157) **Meaning of (156) (unrestricted C):**

(pr) $\forall Y: Y \in \mathcal{P}(D \setminus \{\text{Gali}\}) \rightarrow \diamond_{sp}(\exists x: x \notin Y \wedge x \text{ arrived on time})$

(as) $\Box_{sp}(\neg \exists x: x \notin \{\text{Gali}\} \wedge x \text{ arrived on time})$

(158) **Observation:** (157pr) $\Leftrightarrow \diamond_{sp}(\text{Gali arrived on time})$

The derivation of the weak projection with exh thus parallels the one with MIN in Sect. 3.

Weak content and relevance. We derived the weak, existential positive inference of sentences like (159) by adjusting the domain of MIN. The same logic extends to the derivation with exh_C : if none of the alternatives except the one that yields vacuous subtraction are relevant (corresponding to *only X_F arrived on time*, where *only* does not range over X), (159) is predicted to have the presupposition in (160pr) – Gali got her BA from some institution.

(159) a. Gali only got her BA from Cal State_F.

b. [$\boxed{\text{exh}_C}$ [$\boxed{\text{only}}$ [Gali got her BA from Cal State_F]]]

(160) **Meaning of (159) ($C = \{\emptyset\}$):**

(pr) $\exists x: x \in D \wedge \text{Gali got her BA from } x$

(as) $\neg \exists x: x \notin \{CS\} \wedge \text{Gali got her BA from } x$

The constraints on relevance and pruning of alternatives that prevent overgeneration, say, that prevent one from obtaining existential positive inferences across all occurrences of *only*, can be taken wholesale from Sect. 5 – these are constraints (F) and (B) – and they, accordingly, condition the strength of positive inferences in the same way (see, e.g., Fox & Katzir 2011, Katzir 2014, Crnič et al. 2015, Bar-Lev 2018, Trinh 2019 for a more extensive discussion).

Moreover, the constraint in (F) may even shed light on why exhaustification is necessary in *only* sentences (as well as in exceptive sentences) – it applies in order to resolve the question about the focus. While this at most gestures towards a possible account, if it can be worked out, it would allow one to avoid the otherwise common stipulation that obligatory occurrences of *exh_C* are called upon due to the presence of uninterpretable features on the elements they appear to be twinned with (e.g., Gajewski 2013 on exceptives, Chierchia 2013 on certain NPIs).

6.3 Summary

The approaches that encode the positive inference as a presupposition of *only* have issues with accounting for the weak projection facts discussed in Sect. 3. They also face issues in accounting for the content of positive inferences discussed in Sects. 4 and 5: they either predict presuppositions of *only* that are sometimes too weak (approaches that adopt the existential or conditional presupposition) or too strong (approaches that adopt the prejacent presupposition). While the existential (or conditional) presupposition can be strengthened to fit some of the observed inferences, this seems to require construction-specific assumptions about the strengthening mechanism.

Nevertheless, the proposal put forward in this paper can be viewed as a resuscitation of the scalar implicature approaches. This is possible if one makes three assumptions argued for in recent years: the terminologically counterintuitive assumption (i) that scalar implicatures must be presupposed (Bassi et al. 2021), (ii) that they must be derivable in embedded positions (e.g., Chierchia 2004, Fox 2007, Chierchia et al. 2011, among many others), and (iii) that they can be computed above an ASSERT operator (e.g., Chierchia 2013, Meyer 2013, Fox 2016). Our characterization in the preceding sections was shown not only to allow for an implementation with *exh*, but to do so straightforwardly. We remain agnostic as to which of the two implementations of the distributed analysis discussed in this paper is to be preferred (but see Crnič 2018 for an argument from ellipsis and parallelism that may distinguish between them).

7 Outlook

A new path between the horns of Horn’s dilemmas was shown to emerge once we analyze *only* sentences as instances of exceptive sentences (von Stechow & Iatridou 2007), and analyze the latter as involving two separable components – a minimality and a subtraction component (Gajewski 2008). The separation of these two components at LF can lead to weak projection behavior; without such a separation, strong projection behavior obtains. Furthermore, the import of the minimality component, which gives rise to the positive inference, can be affected by the context:

unconstrained, it gives rise to a positive inference that corresponds to the prejacent; appropriately constrained, it can give rise to weaker content – an existential positive inference. Finally, we showed in the preceding section that our formalization in terms of minimality can be seen as a matter of convenience, and that an implementation on which the import of minimality is derived as a scalar implicature is possible.

We left a host of issues involving *only* aside in the belief that they are orthogonal to the core problem discussed in the paper – the nature of the positive inference. We hope to remedy this deficiency elsewhere. But there is one family of issues that we side-stepped and that is definitely not orthogonal to our concerns in this paper: all the examples in which the parallel between *only* and exceptives breaks down, and that thus run counter to the expectations raised by our proposal. We discuss two such discrepancies below, which we suggest are interconnected.

Negative polarity items. *Only* sentences and their exceptive counterparts differ in their ability to license different classes of NPIs. While there is no difference between these two types of sentences when it comes to NPIs like *any*, as exemplified in (161), they differ when it comes to NPIs like *in weeks*, as exemplified in (162) (e.g., Gajewski 2008, 2011).

- (161) a. Only Gali read any book.
 b. No one but Gali read any book.
- (162) a. *Only Gali arrived in weeks.
 b. No one but Gali arrived in weeks.

Given that we assigned these sentences effectively the same structures and interpretations, the unacceptability of the NPI in (162a) is unexpected. The LFs of the sentences in (162) are provided in (163), in which the XP constituents are both downward-entailing (in fact, anti-additive) with respect to the NPIs (that is, replacing *in weeks* with a stronger expression, say, *in days*, yields a weaker meaning of the XP). Moreover, our definitions of *only* and *no one but Gali* make them out to be anti-additive operators.²⁰

- (163) a. [MIN_C [XP only Gali_F arrived in weeks]]
 b. [MIN_C [XP no one but Gali arrived in weeks]]
 downward-entailing wrt *in weeks*

There is, however, at least one further difference between *only* and exceptive sentences that may shed light on the asymmetry in (162): the so-called mirativity inference of *only*.

Mirativity. In addition to their positive inferences, *only* sentences tend to give rise to the so-called mirative inferences, which can be roughly described as requiring the sister of *only* to be ranked low on the relevant scale of alternatives (e.g., Jacobs 1983, Klinedinst 2005, Beaver

²⁰Another aspect of the distribution of NPIs that connects to our discussion of the positive inference of *only* involves their unacceptability in the focus of *only*. Wagner (2006) accounted for these facts by crucially assuming that *only* triggers merely an existential positive inference as a presupposition. In contrast, Xiang (2017) accounts for them on the assumption of a strong presupposition. A detailed study of how the NPI licensing works in *only* sentences, and how it fits with the picture presented in this paper is high on our remaining to-do list. We can, however, already say that one conclusion shared by both abovementioned paper – that the NPI data support focus movement – can be easily incorporated into our analysis. In fact, our structured meaning representations, in which we follow Gajewski (2008), at least implicitly assume focus movement.

& Clark 2008, Grosz 2012, Coppock & Beaver 2014). This does not hold for exceptives. An illustration of this is provided in (164) (cf. Klinedinst 2005, p.12; see also Beaver & Clark 2008): the *only* sentence in (164) cannot be followed up by a continuation that conveys that the prejacent of *only* is ranked high on a scale; in contrast, the exceptive sentence can be followed up by a continuation that conveys that the main predicate holding of the exceptives is high on a scale.

- (164) a. #The meeting was only attended by those ten_F, a surprisingly high turnout.
b. The meeting was attended by no one but those ten, a surprisingly high turnout.

If the mirativity inference is encoded as a presupposition (or perhaps a conventional implicature) of *only*, as many of the above-cited authors assumed, we obtain a way of distinguishing between the *only* and exceptive sentences in relation to their ability to license NPIs: adding the mirativity presupposition changes *only* into a Strawson downward-entailing operator, that is, an operator that is not a strictly downward-entailing anymore. As such, it may have a different licensing profile than the negative quantifier modified by an exceptive, which remains strictly downward-entailing (cf. Gajewski 2011, Chierchia 2013). Whether such a modification of the proposed analysis of *only* is adequate, or whether mirativity emerges from some other factors that cannot be said to intervene with the licensing of some NPIs, should be investigated further.

Intervention. Although the centerpiece of the distributed analysis of *only* and exceptive sentences is the minimality component taking scope that is distinct from that of the subtraction component, we did not investigate it rigorously – we only looked at cases where a modal or an ASSERT operator intervene between the two. All else equal, we expect that one should find other quantifiers intervening between the two, say, universal nominal quantifiers. Some informal inquiries revealed that the behavior of speakers does not seem to be uniform in this respect, and some related discrepancies have been reported in the literature previously (cf. Beaver & Clark 2008, Gajewski 2008). If indeed the list of operators that may intervene between the minimality and the subtraction components is restricted, and if they vary between the *only* and exceptive sentences, this would need to be understood (cf. Gajewski 2008 for related discussion). This calls for a more ambitious project than we were able to undertake here.

References

- Abenina-Adar, Maayan & Yael Sharvit. 2021. On the presuppositional strength of interrogative clauses. *Natural Language Semantics* 29(1). 47–90.
- Alonso-Ovalle, L. & P. Menéndez-Benito. 2010. Modal indefinites. *Natural Language Semantics* 18(1). 1–31.
- Alonso-Ovalle, Luis & Aron Hirsch. 2019. Keep ‘only’ strong, McGill University. Forthcoming in *Semantics and Pragmatics*. <http://people.linguistics.mcgill.ca/~luis.alonso-ovalle/papers/AOHirsch.pdf>.
- Anvari, Amir. 2018. Logical integrity. In *Semantics and linguistic theory*, vol. 28, 711–726.
- Atlas, Jay David. 1993. The importance of being ‘only’: Testing the neo-gricean versus neo-entailment paradigms. *Journal of Semantics* 10(4). 301–318.

- Bade, Nadine & Konstantin Sachs. 2019. Exh passes on alternatives: A comment on fox and spectator (2018). *Natural Language Semantics* 27(1). 19–45.
- Bar-Lev, Moshe. 2018. *Free choice, homogeneity, and innocent inclusion*: The Hebrew University of Jerusalem dissertation. <https://semanticsarchive.net/Archive/2JiYWEyM/Bar-Lev%202018%20diss.pdf>.
- Bar-Lev, Moshe. 2021. An implicature account of homogeneity and non-maximality. *Linguistics and Philosophy* 44(5). 1045–1097.
- Barwise, Jon & Robin Cooper. 1981. Generalized quantifiers and natural language. *Linguistics and philosophy* 4(2). 159–219.
- Bassi, Itai, Guillermo Del Pinal & Uli Sauerland. 2021. Presuppositional exhaustification. *Semantics and Pragmatics* 14. 11. <https://semprag.org/article/view/sp.14.11>.
- Beaver, David. 2001. *Presupposition and assertion in dynamic semantics*. CSLI publications.
- Beaver, David & Brady Z. Clark. 2008. *Sense and sensitivity: How focus determines meaning*. Blackwell.
- Beaver, David & Emiel Krahmer. 2001. A partial account of presupposition projection. *Journal of Logic, Language and Information* 10(2). 147.
- Beaver, David & Henk Zeevat. 2007. Accommodation. In *The oxford handbook of linguistic interfaces*, 503–536. Oxford University Press.
- Beck, Sigrid. 2009. Multiple focus. *Journal of Semantics* 26. 159–184.
- Beck, Sigrid. 2016. Discourse related readings of scalar particles. In *Semantics and linguistic theory*, vol. 26, 142–165.
- Buccola, Brian & Andreas Haida. 2019. Obligatory irrelevance and the computation of ignorance inferences. *Journal of Semantics* 36(4). 583–616.
- Büring, Daniel. 2003. On d-trees, beans, and b-accents. *Linguistics and philosophy* 26(5). 511–545.
- Chierchia, Gennaro. 2004. Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. In Adriana Belletti (ed.), *Structures and beyond*, 39–103. Oxford University Press.
- Chierchia, Gennaro. 2013. *Logic in grammar*. Oxford: Oxford University Press.
- Chierchia, Gennaro, Danny Fox & Benjamin Spector. 2011. The grammatical view of scalar implicatures and the relationship between semantics and pragmatics. In Paul Portner, Claudia Maienborn & Klaus von Stechow (eds.), *Handbook of semantics*, Mouton de Gruyter.
- Cohen, Ariel & Manfred Krifka. 2014. Superlative quantifiers and meta-speech acts. *Linguistics and philosophy* 37(1). 41–90.
- Coppock, Elizabeth & David Beaver. 2014. Principles of the exclusive muddle. *Journal of Semantics* 31(3). 371–432.

- Cremers, Alexandre & Emmanuel Chemla. 2016. A psycholinguistic study of the exhaustive readings of embedded questions. *Journal of Semantics* 33(1). 49–85.
- Crnič, Luka. 2018. A note on connected exceptives and approximatives. *Journal of Semantics* 35(4). 741–756. <https://doi.org/10.1093/jos/ffy011>.
- Crnič, Luka. 2021. Exceptives and exhaustification. To appear in: *Proceedings of WCCFL 39*. <http://lukacrnic.com/pdfs/wccfl39.pdf>.
- Crnič, Luka. 2022. Number in NPI licensing. *Natural Language Semantics* 30(1). 1–46.
- Crnič, Luka, Emmanuel Chemla & Danny Fox. 2015. Scalar implicatures of embedded disjunction. *Natural Language Semantics* 23(4). 271–305.
- Elbourne, Paul D. 2005. *Situations and individuals*, vol. 90. MIT press Cambridge, MA.
- Faller, Martina. 2002. *Semantics and pragmatics of evidentials in cuzco quechua*: Stanford University dissertation.
- Fara, Delia Graff. 2015. Names are predicates. *Philosophical Review* 124(1). 59–117.
- von Fintel, K. 1994. *Restrictions on quantifier domains*: University of Massachusetts dissertation.
- von Fintel, Kai. 1993. Exceptive constructions. *Natural Language Semantics* 1(2). 123–148.
- von Fintel, Kai. 1997. Bare plurals, bare conditionals, and only. *Journal of Semantics* 14(1). 1–56.
- von Fintel, Kai. 1999. NPI licensing, Strawson entailment, and context dependency. *Journal of Semantics* 16(2). 97–148.
- von Fintel, Kai. 2008. What is presupposition accommodation, again? *Philosophical perspectives* 22. 137–170.
- von Fintel, Kai & Sabine Iatridou. 2007. Anatomy of a modal construction. *Linguistic Inquiry* 38(3). 445–483.
- Fox, Danny. 2007. Free choice and the theory of scalar implicatures. In Uli Sauerland & Penka Stateva (eds.), *Presupposition and Implicature in Compositional Semantics*, 71–120. Palgrave Macmillan.
- Fox, Danny. 2016. On why ignorance might be part of literal meaning: Commentary on Marie-Christine Meyer. Handout of a talk delivered at MIT Workshop on Exhaustivity, Cambridge, MA. <https://sites.google.com/site/exhaustivity2016/>.
- Fox, Danny. 2020. Pointwise exhaustification and the semantics of question embedding. Manuscript, MIT. <https://semanticsarchive.net/Archive/jc5NmIxN/Question%20Embedding>.
- Fox, Danny & Roni Katzir. 2011. On the characterization of alternatives. *Natural Language Semantics* 19(1). 87–107.

- Gajewski, Jon. 2008. NPI any and connected exceptive phrases. *Natural Language Semantics* 16(1). 69–110.
- Gajewski, Jon. 2009. L-triviality and grammar. Handout of a talk delivered at the UConn Logic Group. <https://jon-gajewski.uconn.edu/wp-content/uploads/sites/1784/2016/08/Logic.pdf>.
- Gajewski, Jon. 2011. Licensing strong NPIs. *Natural Language Semantics* 1–40.
- Gajewski, Jon. 2013. An analogy between a connected exceptive phrase and polarity items. In *Beyond any and ever*, vol. 262, 183–212. Walter de Gruyter.
- Gajewski, Jon & Yael Sharvit. 2012. In defense of the grammatical approach to local implicatures. *Natural language semantics* 20(1). 31–57.
- Geach, Peter. 1962. *Reference and generality*. Cornell University Press.
- Geurts, B & RA van der Sandt. 2004. Interpreting focus. *Theoretical Linguistics* 30. 1–44.
- Greenberg, Yael. 2018. A revised, gradability-based semantics for even. *Natural Language Semantics* 26(1). 51–83.
- Groenendijk, Jeroen & Martin Stokhof. 1984. *Studies on the semantics of questions and the pragmatics of answers*: University of Amsterdam dissertation.
- Grosz, Patrick Georg. 2012. *On the grammar of optative constructions*, vol. 193. John Benjamins Publishing.
- Guerzoni, Elena. 2004. Even-NPIs in yes/no questions. *Natural Language Semantics* 12(4). 319–343.
- Heim, Irene. 1983. On the projection problem for presuppositions. In Michael Barlow, Dan Flickinger & Micheal Wescoat (eds.), *Proceedings of WCCFL 2*, 114–125. Cascadilla Press Somerville, MA.
- Heim, Irene. 1987. Where does the definiteness restriction apply? evidence from the definiteness of variables. In Eric Reuland & Alice ter Meulen (eds.), *The representation of (in) definiteness*, vol. 14, Cambridge, MA: MIT Press.
- Heim, Irene. 1990. Presupposition projection. In *Reader for the nijmegen workshop on presupposition, lexical meaning, and discourse processes*, University of Nijmegen Nijmegen.
- Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9(3). 183.
- Hirsch, Aron. 2016. An unexceptional semantics for expressions of exception. In *University of pennsylvania working papers in linguistics*, vol. 22 1, <https://repository.upenn.edu/pwpl/vol22/iss1/16/>.
- Hirsch, Aron. 2017. *An inflexible semantics for cross-categorical operators*: Massachusetts Institute of Technology dissertation.
- Horn, Larry R. 1969. A presuppositional theory of ‘only’ and ‘even’. In *Proceedings of Chicago Linguistics Society* 5, .

- Horn, Larry R. 1972. *On the semantic properties of logical operators in English*: UCLA dissertation.
- Horn, Larry R. 1989. *A natural history of negation*. University of Chicago Press.
- Horn, Larry R. 1992. The said and the unsaid. In Chris Barker & David Dowty (eds.), *Proceedings of SALT 2*, .
- Horn, Larry R. 1996. Exclusive company: Only and the dynamics of vertical inference. *Journal of Semantics* 13(1). 1–40. doi:10.1093/jos/13.1.1.
- Horn, Larry R. 2002. Assertoric inertia and NPI licensing. In *Proceedings of Chicago Linguistics Society* 38, .
- Ippolito, Michela. 2008. On the meaning of only. *Journal of Semantics* 25(1). 45–91.
- Jacobs, Joachim. 1983. *Fokus und Skalen*. Niemayer.
- Kadmon, Nirit. 2001. *Formal pragmatics: Semantics, pragmatics, preposition, and focus*. Wiley-Blackwell.
- Karttunen, Lauri. 1974. Presupposition and linguistic context. *Theoretical Linguistics* 1. 181–94.
- Karttunen, Lauri. 1977. Syntax and semantics of questions. *Linguistics and philosophy* 1(1). 3–44.
- Katzip, Roni. 2007. Structurally defined alternatives. *Linguistics and Philosophy* 30. 669–690.
- Katzip, Roni. 2014. On the roles of markedness and contradiction in the use of alternatives. In Salvatore Pistoia-Reda (ed.), *Pragmatics, semantics and the case of scalar implicatures*, 40–71. Springer.
- Katzip, Roni & Raj Singh. 2015. Economy of structure and information: Oddness, questions, and answers. In *Proceedings of sinn und bedeutung*, vol. 19, 322–339.
- Klinedinst, Nathan. 2005. Scales and ‘only’. Unpublished ms. UCLA.
- Krifka, Manfred. 1992. A compositional semantics for multiple focus constructions. In *Informationsstruktur und grammatik*, 17–53. Springer.
- Krifka, Manfred. 1993. Focus and presupposition in dynamic interpretation. *Journal of semantics* 10(4). 269–300.
- Krifka, Manfred. 2014. Embedding illocutionary acts. In *Recursion: Complexity in cognition*, 59–87. Springer.
- Lewis, David. 1988. Relevant implication. *Theoria* 54(3). 161–174.
- Magri, Giorgio. 2009. A theory of individual level predicates based on blind mandatory scalar implicatures. *Natural Language Semantics* 17. 245–297.
- Marty, Paul & Jacopo Romoli. 2021. Presupposed free choice and the theory of scalar implicatures. *Linguistics and Philosophy* 1–62.

- Matushansky, Ora. 2008. On the linguistic complexity of proper names. *Linguistics and philosophy* 31(5). 573–627.
- Mayr, Clemens & Jacopo Romoli. 2016. A puzzle for theories of redundancy: Exhaustification, incrementality, and the notion of local context. *Semantics and Pragmatics* 9. 7–1.
- McCawley, James D. 1993. *Everything that linguists have always wanted to know about logic... but were ashamed to ask*. University of Chicago Press.
- Meyer, Marie-Christine. 2013. *Ignorance and grammar*: MIT dissertation.
- Mittwoch, Anita. 1977. How to refer to one's own words: speech-act modifying adverbials and the performative analysis. *Journal of linguistics* 13(2). 177–189.
- Nouwen, Rick. 2007. On appositives and dynamic binding. *Research on language and computation* 5(1). 87–102.
- Penka, Doris. 2011. *Negative indefinites* 32. Oxford University Press Mexico SA De CV.
- Potts, Christopher. 2004. *The logic of conventional implicatures*, vol. 7. OUP Oxford.
- Prince, Ellen F. 1978. A comparison of wh-clefts and it-clefts in discourse. *Language* 883–906.
- Repp, Sophie. 2009. *Negation in gapping*, vol. 22. Oxford University Press.
- Roberts, Craige. 1996. Information structure in discourse: Toward a unified theory of formal pragmatics. *Ohio State University Working Papers in Linguistics* 49. 91–136.
- Roberts, Craige. 2006. Only, presupposition and implicature. Ms., The Ohio State University.
- Roberts, Craige. 2011. Only: A case study in projective meaning. *The Baltic International Yearbook of Cognition, Logic and Communication* 6. 1–59.
- Rooth, M. 1992. A theory of focus interpretation. *Natural Language Semantics* 1(1). 75–116.
- Rooth, Mats. 1985. *Association with focus*: University of Massachusetts, Amherst, PhD dissertation.
- van Rooy, Robert & Katrin Schulz. 2007. *Only: Meaning and Implicatures*. In Maria Aloni, Alistair Butler & Paul Dekker (eds.), *Questions and Answers*, Elsevier.
- Schlenker, Philippe. 2013. Supplements without bidimensionality. *Linguistic Inquiry* 1–70.
- Soames, Scott. 1989. Presupposition. In *Handbook of philosophical logic*, 553–616. Springer.
- Spector, Benjamin & Yasutada Sudo. 2017. Presupposed ignorance and exhaustification: how scalar implicatures and presuppositions interact. *Linguistics and Philosophy* 40(5). 473–517.
- Stalnaker, Robert C. 1978. Assertion. In *Pragmatics*, 315–332. Brill.
- von Stechow, Arnim. 1991a. Current issues in the theory of focus. In *Semantik: Ein internationales Handbuch*, 804–825. De Gruyter Mouton.
- von Stechow, Arnim. 1991b. Focusing and backgrounding operators. In *Discourse particles*, 37–84. Benjamins Amsterdam.

- Taglicht, Josef. 1984. *Message and emphasis: On focus and scope in english* 15. Addison-Wesley Longman Limited.
- Tiemann, Sonja, Mareike Schmid, Nadine Bade, Bettina Rolke, Ingo Hertrich, Hermann Ackermann, Julia Knapp & Sigrid Beck. 2011. Psycholinguistic evidence for presuppositions: On-line and off-line data. In *Proceedings of sinn und bedeutung*, vol. 15, 581–596.
- Tonhauser, Judith. 2015. Are ‘informative presuppositions’ presuppositions? *Language and Linguistics Compass* 9(2). 77–101.
- Tonhauser, Judith, David Beaver & Judith Degen. 2018. How projective is projective content? gradience in projectivity and at-issueness. *Journal of Semantics* 35(3). 495–542.
- Tonhauser, Judith, David Beaver, Craige Roberts & Mandy Simons. 2013. Toward a taxonomy of projective content. *Language* 66–109.
- Trinh, Tue. 2019. Exhaustification and contextual restriction. *Frontiers in Communication* 4. 47.
- Vostrikova, Ekaterina. 2021. Conditional analysis of clausal exceptives. *Natural Language Semantics* 29(2). 159–227.
- Wagner, Michael. 2006. Association by movement: evidence from np_i-licensing. *Natural Language Semantics* 14(4). 297–324.
- Westerståhl, Dag. 1984. Determiners and context sets. In *Generalized quantifiers in natural language*, 46–71. Foris Dordrecht.
- Xiang, Yimei. 2017. Only: An NPI-licenser and np_i-unlicenser. *Journal of Semantics* 34(3). 447–481.