

## Not all scalar inferences are alike: The effect of existential presuppositions

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Weak scalar items such as *or* usually do not give rise to scalar inferences (SIs) in downward-entailing (DE) contexts [2], e.g., (1). In factive Strawson-DE (SDE) contexts such as the complement of *unaware*, the picture is more complex [5; 7], but most weak items tend not to trigger SIs in these cases either, e.g., (2).

(1) I didn't drink wine or beer. ( $\not\sim$  Either I drank neither wine nor beer or I drank both.)

(2) Nintendo is completely unaware that I or my stories exist. ( $\not\sim$  I or my stories, but not both, exist.)

In this paper, I observe a puzzling pattern in the context of the indirect SI 'not all'  $\rightsquigarrow$  'some'. When 'not all' is embedded in an SDE context, certain constructions give rise to more robust SIs than others even though they express the same proposition. Consider the contrast between (3a) and (3b), where 'not all' is embedded under *surprised*, which is SDE. (3b) strongly implies that some of the students failed even though this SI conflicts with the common ground (CG) that none failed. In contrast, (3a), does not have a 'not all but some' interpretation in this context, which makes it felicitous. The absence of an SI in (3a) is similar to (2).

(3) *Context: Mary teaches Intro to Statistics. She accidentally gave the students the exam of Advanced Statistics. She expected that they would all fail, but surprisingly, they all passed.*

Mary: You should all be proud of yourselves for passing the exam. Frankly, ...

a. I was surprised that you didn't all fail!

b. #I was surprised that not all of you failed!

Another example is in (4), where 'not all' occurs in a different SDE context. In both sentences, we consider counterfactual situations where it is not the case that everyone died in the crash. However, only in (4a) are there also relevant situations where in fact nobody died (i.e., there is no SI), possibly because the plane never crashed. In contrast, (4b) only considers situations where some teammates did die in the crash, which is incongruent with the consequent. Thus, (4b) has an unexpected SI, while (4a) patterns with (2).

(4) a. Their team would have been solid if they hadn't all died in that plane crash.

b. #Their team would have been solid if not all of them had died in that plane crash.

**Generalization.** I argue that this contrast is related to whether or not the quantifier phrase (QP) occurs in a focus construction. Clausal negation constructions such as (5) are non-conventionally focus sensitive. They can, but need not, associate with focus. In contrast, negative focus constructions (NFCs) such as (6) are conventionally focus sensitive. They must have a focus within their scope [1].

(5) a. The cookies didn't all burn. (floating quant.)      b. I didn't burn all the cookies. (object quant.)

(6) a. Not all of the cookies burned. (negated quantifier phrase construction)

b. It's not every student who has access to their teacher 24 hours a day. (negated cleft)

In (5), the SI 'not all but some' is a cancelable implicature. Typically, there is no implicature in DE contexts because the assertion with 'not all' is stronger than the alternative with 'none'. However, I propose that in NFCs (6) the SI is due to an existential presupposition triggered by these constructions. Since the SI arises from a presupposition, it is present even when it conflicts with the CG (3b) and in SDE contexts (4b).

**The source of the existential presupposition.** I will start with negated clefts (6b) and return to negated quantifier phrase constructions (6a) later. I follow the analysis of clefts in [9], who propose that the existential presupposition comes from the question under discussion (QUD) that the cleft addresses. In (6b), the QP (or just the quantifier) is focused. The QUD is (7a), and it contains the alternatives in (7b). Accepting a QUD introduces a presupposition that one of the propositions in the alternative set is true [6]. Therefore, the cleft presupposes that the disjunction of (7b) is true, which gives rise to the existential presupposition in (7c). If we combine the assertion (7d) with the existential presupposition (7c), we get an SI ('not all but some'), which is derived independently of whatever general mechanism one assumes for implicature calculation.

(7) a. QUD: How many students have access to their teacher 24 hours a day?

b. Focus alternatives: {Some/Most/All students have access to their teacher 24 hours a day.}

- c. Presupposition: Some students have access to their teacher 24 hours a day.
- d. Assertion: The alternative with *all* is rejected (a partial answer to the QUD).

**Evidence for presuppositional status.** The SI in (8a) projects from the scope of a probability adverb, which is characteristic of presuppositions. In contrast, regular implicatures do not arise in this context (8b).

- (8) a. It's very likely that not all of the cookies burned.  $\rightsquigarrow$  Some of the cookies burned.
- b. It's very likely that some of the cookies burned.  $\not\rightsquigarrow$  Not all of the cookies burned.

The analysis is further supported by a comparison with the SI of *some*. While *or* and *not...all* (with clausal negation) need not trigger an SI in factive SDE contexts ((2) and (3a), respectively), *some* does tend to trigger an SI in such cases [7]. For example, (9) is infelicitous in the context of (3) because it gives rise to a 'some but not all' SI. This appears to be parallel to the infelicity of (3b). However, the parallelism breaks down if the matrix clause is negated: while (10a) is felicitous (i.e., *some* does not give rise to an SI), (10b) is still bad due to a 'not all but some' SI. Setting aside the question of why (9) is bad, the contrast in (10) suggests that the SIs in (3b) and (9) come from different sources. Hence, there seems to be no way of deriving the SIs in (3b) and (4b) from general principles of implicature calculation. On the other hand, a presuppositional account explains why the SIs appear and why they disappear in certain cases (below).

- (9) #I was surprised that some of you passed!
- (10) *Context: Mary expected that 40-60% of the students would pass. Surprisingly, they all failed.*
  - a. I wasn't surprised that some of you failed, but I certainly did not expect that all of you would!
  - b. #I wasn't surprised that not all of you passed, but I did not expect that none of you would!

**Negated quantifier phrase constructions as NFCs.** I argue that constructions such as (6a) are NFCs too, and their semantics is the same as negated clefts (though they have a different distribution in English). To illustrate this, I will show that focus placement changes the type of existential presupposition triggered by negated quantifier phrase constructions, which is parallel to a previous observation about clefts [9].

In negated quantifier phrase constructions, the focused constituent is usually the quantifier. Hence, a sentence like (6a) normally has an existential presupposition ('Some of the cookies burned') just like a negated cleft. However, the focused constituent may also be the NP complement of the quantifier. In this case, the QUD gives rise to a different presupposition. In (11), the alternative set is propositions of the form 'All of the *P* burned'. The disjunction of these alternatives does not entail that some of the cookies burned. Rather, the existential presupposition is that there is a type of pastry such that all of its members burned. Further evidence that negated quantifier phrase constructions are NFCs is that the QP cannot be given information. In the intended reading of (12), the alternative set is 'All of the witnesses *V* the gunfire', which means that the QP is given and no SI is expected. However, this interpretation is not possible. Because the QP is in a focus position (see below), it must be focused for (12) to be acceptable. In this case, the construction triggers an existential presupposition that leads to an SI, which conflicts with the continuation of the sentence.

- (11) Not all of the COOKIES burned—all of the MUFFINS burned. The cookies are fine.
- (12) #Not all the witnesses SAW the gunfire—all the witnesses HEARD the gunfire. Nobody saw it happen.

**Theoretical consequences.** Previous studies have shown that some scalar items trigger SIs more frequently than others [8]. This paper shows that there is variation not only across lexical scales (e.g., ⟨some, all⟩ vs. ⟨warm, hot⟩) but also between grammatical constructions (e.g., clausal negation vs. NFCs). Additionally, there is a recent debate about the structure of negated universal quantifier phrase constructions. [3] suggests that negation modifies the entire quantifier phrase, and the resulting constituent fills the subject position, e.g., [*IP* [*NegP* **Not** [*QP* **all** of the students]] came]. In contrast, [4] argue that negation is in a high clause-external position, and the QP is adjacent to it because it is fronted to a focus position in the left periphery, e.g., [*NegP* **Not** [*FocP* [*QP* **all** of the students]<sub>1</sub> *Foc*<sup>o</sup>] [*IP* *t*<sub>1</sub> came]]. The evidence presented in this paper supports the latter view, in which the QP is in a focus position.

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