

NPI Intervention of *too*¹

Dorothy Ahn — Harvard University

Abstract. The additive focus particle *too* has an intervention effect on NPI licensing (Homer 2008, 2009). While Homer argues that it is the non-DE additive presupposition that intervenes, this analysis contrasts with generalizations that presuppositional components of licensors do not affect NPI licensing, especially weak NPIs like *anything* (von Stechow 1999, Chierchia 2004, Gajewski 2011, a.o.). By arguing that *too* asserts a conjunction between the host proposition and a propositional anaphor that refers to some salient antecedent, this paper provides an explanation of *too*'s intervention effect while maintaining the generalization made in Gajewski 2011 that only strong NPIs are sensitive to non-truth conditional meanings of their licensors. Noting that a fully parallel intervention effect is also found with an overt conjunction in English (Chierchia 2013), it is argued that the analysis provided for the overt conjunction can be applied directly to explain why *too*, a covert conjunction, intervenes with NPI licensing.

Keywords: NPI intervention, presupposition *too*.

1. Introduction

This paper is concerned with explaining the NPI intervention effect of the focus-sensitive additive particle *too*. The NPI intervention effect of *too* as well as the determiners *the* and *both* is discussed in Homer (2008, 2009) as exemplifying cases where a presuppositional component of licensors block Negative Polarity Items (NPI). This contrasts with both von Stechow's (1999) proposal that NPIs are licensed with respect to Strawson downward-entailing (SDE) contexts, and Gajewski 2011 and Chierchia's 2013 generalization that only strong NPIs are sensitive to non-truth conditional meaning of licensors. While an alternative explanation of the intervention effect of *the* and *both* has been suggested in order to maintain the generalizations on weak and strong NPIs (Gajewski 2011), the case with *too* remains a puzzle. This paper suggests that a conjunction account of *too* proposed in Ahn 2015 can provide a solution to this puzzle. Specifically, it is argued that the intervention effect of *too* is not due to the presuppositional component of *too* as Homer assumes, but instead due to the covert conjunction that is proposed to be part of the truth-conditional meaning of *too* under the conjunction analysis. This way of looking at the intervention effect of *too* allows us to a) maintain the generalizations on the strong/weak distinction in NPIs and their licensing requirements; and b) explain the puzzling contrast between *too* and *again* with respect to intervention effects for which neither Homer (2008) or Gajewski (2011) provides an explanation.

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2. NPI Licensing

While it is generally assumed that NPIs are licensed in downward entailing (DE) contexts, the DE hypothesis is not without problems. Observing cases where NPIs are licensed in apparently non-DE conditions such as in the scope of *only* as shown in (1), von Stechow (1999) suggests that NPIs are licensed with respect to Strawson DE environments as defined in (2). The basic argument is that NPIs like *anything* are not sensitive to presuppositional components, and the DE-ness of an environment is revealed once the presuppositional component is factored out.

- (1) Only John ate anything.
 - a. Presupposes: John ate something. (UE)
 - b. Asserts: No one else ate anything. (DE)

- (2) Strawson Downward Entailment (SDE):
A function f of type $\langle \sigma; t \rangle$ is SDE iff for all x, y of type σ such that $x \Rightarrow y$ and $f(x)$ is defined:
 $f(y) \Rightarrow f(x)$

Another line of research examines different types of NPIs and how their licensing requirements vary (Gajewski 2011, Chierchia 2004, a.o.) Observing that weak NPIs such as *any* and *ever* have different licensing requirements than strong NPIs such as punctual *until* and additive *either*, Gajewski and Chierchia argue that the two types of NPIs differ on what meaning components of licensors they are sensitive to. Specifically, Gajewski (2011) proposes that while strong NPIs are sensitive to non-truth conditional meaning of licensors such as presuppositions and implicatures, weak NPIs are not.

2.1. NPI Intervention

Homer (2008, 2009) discusses cases where presuppositions of a licensor interfere with NPI licensing. First he notes that the restrictors of *the* and *both* do not allow NPIs in them, as shown below.

- (3) Context: There is exactly one student who read some books on NPIs. [Homer 2008 (9)]
 - a. *The student who read any books on NPIs is selling them.
 - b. The student who read books on NPIs is selling them.
 - c. Presupposition of (3b) : There is exactly one student who read books on NPIs.

- (4) Context: Exactly two students read some linguistics books. [Homer 2008 (11)]

- a. *Both students who read any linguistics books have applied to the department.
- b. Both students who read linguistics books have applied to the department.
- c. Presupposition of (4b) : There are exactly two students who read linguistics books.

If NPIs are licensed with respect to Strawson DE environments as von Stechow (1999) argues, this NPI intervention effect is surprising. This is because, once the presuppositions in (3c) and (4c) are satisfied in the context, the determiners *the* and *both* are SDE with respect to their restrictors (Giannakidou 2004). Homer uses cases like (3) and (4) to argue that the presuppositions of *the* and *both* do indeed interfere with the licensing of *any*. However, as Gajewski (2011) notes, it is not clear why presuppositions of some licensers would have the intervention effect while others, like that of *only* does not.

Chierchia (2004) and Gajewski (2011) suggest an alternative explanation for the intervention effect of *the* and *both*. Noting that Homer's assumption that the truth-conditional meaning of *the* and *both* is strictly DE is not obvious, Gajewski suggests the possibility that the truth-conditional meaning of *the* and *both* may also contain existence. The suggested meanings are given below, with the existence component underlined.

- (5) $\llbracket \mathbf{both}(A)(B) \rrbracket$ is defined only if $|A|=2$.
When defined, $\llbracket \mathbf{both}(A)(B) \rrbracket = 1$ iff $A \neq \emptyset$ & $A \subseteq B$.
- (6) $\llbracket \mathbf{the}_{sg}(A)(B) \rrbracket$ is defined only if $|A|=1$.
When defined, $\llbracket \mathbf{the}_{sg}(A)(B) \rrbracket = 1$ iff $A \neq \emptyset$ & $A \subseteq B$.

If this were the case, Gajewski argues, there is no reason to believe that it is the presupposition that interferes with NPI licensing: the truth-conditional meaning of the determiners is already not adequate to license NPIs. Gajewski further notes that if it could be generalized that presuppositions of licensers never interfere with the licensing of weak NPIs, it would mirror the generalization made in Chierchia 2004 that implicatures of licensers never interfere with weak NPI licensing.

In addition to *the* and *both*, Homer discusses another set of data which suggests that the presuppositions of licensers can interfere with NPI licensing. Specifically, Homer observes that the focus sensitive additive particle *too* interferes with the licensing of *any*:

- (7) Context: Mary read some interesting book. [Homer 2008 (17)]
 - a. *I dont think [John]_F read anything interesting too.
 - b. I dont think [John]_F read something interesting too.
 - c. Presupposition of (7b): Somebody other than John read something interesting.

Gajewski does not discuss *too* further and leaves open the question of why *too* shows this intervention effect. In the next section, I elaborate on the intervention data with *too*. I also introduce the puzzle that neither Homer nor Gajewski solves: that the intervention effect only arises with *too* and not *again*, which is similar to *too* in the way its presupposition is analyzed.

3. NPI Intervention of *too*

Homer (2008, 2009) assumes that the truth-conditional meaning of *too* is DE, and thus argues that the additive presupposition of *too* is what blocks the licensing of *anything*. This is shown in (8), where the host proposition *John read anything interesting* is DE, but the antecedent proposition *Mary read something interesting* is UE. This upward-entailing presupposition is argued to be what blocks the NPI *anything* from being licensed.

- (8) Mary read something_D interesting. \wedge \neg [John read anything_D interesting].
 \uparrow \downarrow
 Mary read something'_D interesting. \wedge \neg [John read anything'_D interesting].

The infelicitous (7a) is contrasted to the grammatical (9a), where additive *either* does not show the same intervention effect as *too*:

- (9) Context: Mary didnt read anything interesting.
 a. I dont think [John]_F read anything interesting either.
 b. Presupposition: Somebody other than John didnt read anything interesting.

Homer assumes that the only difference between *too* and *either* is the polarity in their presuppositions. While it is not specified in Homer what analysis of *too* he is taking, I give Rullmann's (2003) definitions of *too* and *either* for concreteness. Under Rullmann's analysis, *too* and *either* are identical except that *either* has a negative presupposition.

- (10) Semantics of *too*
 a. Ordinary semantic value: $\llbracket p \text{ too} \rrbracket^o = \llbracket p \rrbracket^o$
 b. Focus value: $\llbracket p \text{ too} \rrbracket^f = \{ \llbracket p \rrbracket^o \}$
 c. Presupposition: $\llbracket p \text{ too} \rrbracket$ presupposes that there is at least one contextually salient proposition $q \in \llbracket p \rrbracket^f - \{ \llbracket p \rrbracket^o \}$ such that q is true.

- (11) Semantics of *either*
 a. Ordinary semantic value: $\llbracket p \text{ either} \rrbracket^o = \llbracket p \rrbracket^o$
 b. Focus value: $\llbracket p \text{ either} \rrbracket^f = \{ \llbracket p \rrbracket^o \}$

- c. Presupposition: $[\textit{p either}]$ presupposes that there is at least one contextually salient proposition $q \in \llbracket \textit{p} \rrbracket^f - \{ \llbracket \textit{p} \rrbracket^o \}$ such that q is false.

Homer argues that the intervention is not caused by the mere presence of a presupposition trigger between the NPI licenser and the NPI because *either*, which appears in the same position, does not have this effect. Furthermore, since the only difference between *too* and *either* is that *either* has a negative presupposition as shown above, it must be the non-DE presupposition of *too* that intervenes with the licensing of *anything* in (7a).

There are at least two issues that need to be addressed. The first is an empirical issue that one of the predictions made by this analysis does not seem to be borne out in contrast to Homer's claim. The second is the puzzling contrast between *too* and *again*, where *again* does not have the same NPI intervention effect. I discuss these two issues in turn.

3.1. NPI Inside the Focus of *too*

Homer assumes that the non-DE nature of the presupposition is what causes the NPI intervention of *too*. The presupposition of *too* is created by replacing the focused element in the host proposition with a focus alternative as shown in (10). This means that, if an NPI appears inside the focus of *too*, it will appear in a DE position in the presupposition. Thus, Homer's analysis predicts that if the NPI appears as or inside the focus of *too*, the intervention effect should disappear. Homer gives such examples given in (12) and argues that this prediction is borne out.

- (12) Context: Many students in Mary's class read a very interesting book.
- a. I dont think [anybody in John's class]_F read something interesting too.
 - b. Presupposition: Somebody other than anybody in John's class read something interesting.

However, this judgment is not shared with all speakers. Three English speakers who were asked to judge the sentence did not find *too* felicitous in contexts like (12). In fact, the speakers suggested that *either* is much better than *too* in this sentence, showing that the contrast between *too* and *either* remains. The suggested modification is shown in (13a), where *too* is replaced with *either*. Speakers also noted that *anything* can be used in place of *something* as well.

- (13) Some people in Mary's class read something interesting.
- a. I dont think [anybody in Js class]_F read something/anything interesting either.

3.2. Contrast with *again*

Another issue in Homer's analysis is the contrast with *again* that both Homer and Gajewski discuss. The contrast is that *again*, unlike *too*, does not show the same intervention effect in (14). This is surprising considering that the presupposed content is non-DE as much as the presupposition of *too* is assumed to be in Homer.

- (14) *I dont think [John]_F read anything interesting, too.
- (15) a. I dont think John [ate anything interesting] again.
b. Presupposition: John ate something interesting before.

So far, we have looked at examples where the licensing of the NPI *anything* seem to be blocked in contexts that were apparently DE. Homer introduces these arguments as cases that tell us that sometimes presuppositions of licensors can affect NPI. This contrasts with von Stechow's argument that presuppositions must be factored out when assessing the licensing conditions of NPIs, as well as Gajewski's generalization that only strong NPIs are sensitive to non-truth conditional components of the licensors. In order to reconcile this disparity, Gajewski seeks a way to analyze the meaning of licensors in a way that allows the truth-conditional component of the licensors to be non-DE. While this was done for *the* and *both*, the problem of *too* has not yet been solved. We then looked at some additional issues with Homer's claims about *too*: unlike the prediction made by Homer that NPIs appearing within the focus of *too* should be licensed, such sentences are not felicitous; and there is no clear way in Homer's analysis to account for the fact that *again*, which also has a non-DE presupposition, does not have the same intervention effect.

In the next section, I introduce an alternative way of analyzing the focus particle *too*. Taking Ahn's (2015) proposal, I argue that *too* asserts a conjunction between two propositions. After a brief discussion of how this is an innocuous modification of the traditional view of *too*, I go on to show that this way of analyzing *too* allows us to account for the two issues we find in Homer and to maintain the generalization made in Gajewski 2011. It will be argued that the culprit of (7a)'s infelicitousness is not the additive presupposition of *too* that is non-DE. Instead, it is due to the covert conjunction that is assumed to be part of the asserted meaning of *too* under Ahn 2015. This parallels the argument made in Chierchia (2013) to explain a fully parallel case of intervention that is found with a conjunction but not with disjunction. Chierchia's explanation is extended to apply to both *too* and additive *either*, explaining the contrast that Homer observes.

4. Conjunction Analysis of *too*

I propose in Ahn 2015 that *too* asserts a conjunction between its host proposition and a propositional anaphor that refers to some antecedent.

$$(16) \quad \llbracket \text{too} \rrbracket(q)(\llbracket p \rrbracket_{\sim C}) = \lambda w: q \in C - \{\llbracket p \rrbracket^o\}. q_w \wedge \llbracket p \rrbracket^w$$

Too takes as its argument the host proposition p and a propositional anaphor q that refers to some salient antecedent proposition. It is presupposed that the antecedent of q is an element of a contextually-determined C , which has as its members the focus alternatives of p . The assertion is a conjunction between q and p . Thus, given (17), the host proposition p is *John left*, and a propositional anaphor q looks for a salient antecedent of the form *X left*. The assertion is a conjunction between q and *John left*, which can be paraphrased as ‘In addition to *that* (what q refers to), John left.’ As shown in (17c), the antecedent proposition does not have to be a strict focus alternative of p in the form of ‘*X left*’: as long as it entails a focus alternative of p , it can serve as the antecedent.

- (17) John_F left too.
- a. Assertion: $q \wedge$ John left
 - b. $C = \{\text{Bill left, someone left, Sue left, ...}\}$
 - c. Possible antecedent: Bill left, Bill didn’t stay, Most people left, ...

At first it may seem problematic that q is asserted as a conjunct rather than presupposed. *Too* is traditionally analyzed as only contributing a presuppositional component to the meaning of the host proposition (Heim 1992, Rullmann 2004, Cohen 2009, a.o.), and cases of presupposition projection displayed with sentences containing *too* as in (18) seem to support that the antecedent information is presupposed rather than asserted.

- (18)
- a. Did John leave too?
 - b. If John left too, then Mary would be angry.
 - c. It is possible that John left too.
 \rightarrow In all cases, the antecedent (*Bill left*) is “projected”

However, I argue that this is not problematic since what is asserted in the definition of *too* is not the antecedent proposition itself but an anaphor that refers to it. There is, for instance, a difference between actually asserting a proposition as in (19a) and having an anaphor as in (19b).

- (19)
- a. If Bill left and John left, Mary would be angry.
 - b. If that AND John left, Mary would be angry.

Because the antecedent information must hold in order for the anaphor to be resolved, the result is indistinguishable from presupposition projection.

4.1. Disjunction Analysis of Additive *either*

Homer assumes that the only difference between *too* and additive *either* is the nature of the presupposition. While he does not specify the exact definition, his examples suggest that he is assuming an analysis in a similar line as Rullmann's, where the presupposition of additive *either* is negative. However, this kind of contrast cannot apply to the conjunction account of *too*: there is no positive presupposition that can be negated to capture the meaning of additive *either*. Instead, Ahn (2015) argues that additive *either* has to be analyzed as a disjunctive counterpart of *too*.

$$(20) \quad \llbracket \text{either} \rrbracket(q)(\llbracket p \rrbracket_{\sim C}) = \lambda w: q \in C - \{ \llbracket p \rrbracket^o \}. q_w \vee \llbracket p \rrbracket^w$$

This claim, motivated by additive *either*'s diachronic and synchronic relation to other disjunctive uses of *either*, is shown to allow a natural explanation of its NPI distribution. For example, because it asserts a disjunction, which is an existential, it fits the generalization that existentials rather than universals tend to be polarity sensitive (Chierchia 2013). Also, assuming that additive *either* has the same scalar and domain alternatives as a regular disjunction, Ahn (2015) shows that there is a way to formally derive the NPI distribution under the exhaustification-based framework (Krifka 1995, Lahiri 1998, Chierchia 2006). While I refer the reader to Ahn's (2015) paper for more details on the definition of additive *either*, the analysis of *either* as a covert disjunction is mentioned here because it will become relevant in the next section where we discuss Chierchia's 2013 observation that conjunctions, but not disjunctions, show an NPI intervention effect.

5. NPI Intervention of Conjunction

Chierchia (2013) observes that conjunctions, but not disjunctions, intervene with NPI licensing.

- (21) a. ??Theo didn't drink the leftover wine and any coffee.
b. Theo didn't drink the leftover wine or any coffee.

In order to account for this, Chierchia uses notions of exhaustification, operator-based licensing of NPIs, and locality constraints. Basically, NPIs are assumed to obligatorily activate scalar and/or domain alternatives that are exhausted by an operator. Locality plays a role in that other alternative-carrying elements that appear in between the operator and the NPI must obligatorily be exhaustified. Using these notions, Chierchia shows that the implicature that results from a negated conjunction is what blocks the NPI. He argues that the implicatures associated with *and* must be computed before NPI due to locality constraints: as shown in (22), the scalar trigger *and* is structurally closer to the exhaustification site than the NPI.

(22) $O [\neg[\text{BoolP}_{[\sigma,D]} [\text{T drink wine and}_{[\sigma,D]} \text{T drink any}_{[\sigma,D]} \text{coffee}]]]$

The resulting implicature is (23), and the disjunct *Theo drank any coffee*, which is underlined, is the culprit of the intervention effect: *any* is appearing inside a non-DE environment, and thus it is ruled out.

(23) ??Theo didn't drink the leftover wine and any coffee.
a. Implies: $\neg[\text{Theo drank the leftover wine and (Theo drank) any coffee}]$
= *Theo drank the leftover wine or Theo drank any coffee.

Chierchia further argues that there is no implicature that arises from the disjunction in (21b) because the negation of a disjoined pair of propositions is the strongest within the scalar alternatives. Thus, there is no intervention effect and *any* is licensed.

(24) Theo didn't drink the leftover wine or any coffee.
a. Asserts: $\neg[\text{Theo drank the leftover wine}] \wedge \neg[\text{Theo drank any coffee}]$.

6. Going Back to *too*

In the last section we saw that Chierchia's analysis of NPI licensing can be used to explain why conjunction but not disjunction intervenes with NPI licensing. Under the conjunction account of *too*, it is possible to extend Chierchia's argument directly to the contrast shown in *too* and *either*. Under the conjunction account, *too* is itself a covert conjunction. Thus, the resulting implicature has the same problem discussed in Chierchia 2013, that the disjunct containing *any* is not DE. On the other hand, this is not the case with additive *either*, because, similar to Chierchia's example with an overt disjunction, the resulting implicature still provides a DE environment for *any*. Thus, under the assumption that *too* is a covert conjunction, we get the intervention effect for free.

(25) *I don't think John read anything interesting too.
a. $\neg[\text{q and John read anything interesting}]$
= *q or John read anything interesting.

6.1. Contrast with *again*

The contrast with *again* is also no longer a puzzle. The contrast was only considered a puzzle to the extent that both *too* and *again* were analyzed as having the same type of additive presuppositions.

If the additive presupposition of *too* intervenes, it is surprising that the repetitive presupposition of *again* does not intervene. However, if *too* is an asserted conjunction, then the fact that *again* does not intervene can simply follow from Gajewski's generalization that *any* is still licensed because the non-DE presupposition does not play a role in licensing weak NPIs.

(26) John cooked some good food yesterday. I don't think John cooked anything again today.

7. Conclusion

In this paper, I have shown that analyzing *too* as a covert conjunction coordinating a propositional anaphor and the host proposition can provide an alternative analysis of its NPI intervention effect (Homer 2008, 2009) in a way that is compatible with the generalization made in Chierchia 2004 and Gajewski 2011 that only strong NPIs are sensitive to non-truth conditional meaning of licensors. While there have been alternative explanations suggested for *the* and *both*, the intervention effect of *too*, especially the contrast with *again* which does not intervene, has remained a puzzle. By adopting a conjunction analysis that enables an explanation where the NPI is blocked solely due to the non-DEness of the asserted content, this paper strengthens Gajewski's generalization on how strong and weak NPIs differ in terms of their sensitivity to their licensing environments.

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