Even weak quantifiers can cause intervention effects

The issue of intervention effects with NPIs dates back to Linebarger (1980) where it was observed that certain quantifiers can disrupt the ability of downward entailing (DE) operators to license NPIs. More recently, Chierchia (2004) formulated the following generalization: NPI intervention is triggered by strong members of a scale (every but not a), and the culprit is the implicature that these items give rise to in DE environments (not every $\leadsto$ not (not some) = some).

(1) a. I didn’t show *every/not a boy any books.  b. I didn’t show any boys $\leadsto$ every/not a book.

In a nutshell, the idea is that the strong members of a scale become weak when embedded in the scope of a DE operator, thus giving rise to scalar implicatures (SIs) that disrupt the DE–ness required by NPIs to survive, hence the unacceptability in (1a).

**THE PROBLEM** However, Homer (2011) observed that quantifiers like every are not the only ones that can cause intervention, see (2). This data points suggests that the formulation in Chierchia (2004) is problematic and that his SI–based analysis not only fails to explain the ungrammaticality of (2), but in fact makes the opposite prediction given that someone is a weak indefinite, akin to a/one, and thus shouldn’t give rise to SIs in DE contexts.

(2) *I’m not sure that someone stole anything.

Prima facie, this data not only calls for a reassessment of intervention effects, but more generally questions the core assumption that NPI licensing & intervention effects should be seen as part of one and the same cohesive system. We will show that a uniform account of NPI licensing & intervention is possible and predicts the ungrammaticality of (2) once we adopt an exhaustification–based analysis of polarity items and note that the problematic interveners are positive polarity items (PPIs) that impose their own exhaustification requirements (Nicolae 2012). The analysis we present below solves a problem for the intervention-as-implicature system (Chierchia 2004, Gajewski 2011) while simultaneously providing independent support for Nicolae’s analysis of PPIs.

**THE BASELINE THEORY** NPIs: The analysis we adopt is based on the idea that NPIs are weak quantifiers with obligatorily active subdomain alternatives that require exhaustification ($e\forall h$), akin to the more general covert $e\forall h$ assumed when computing SIs of regular quantifiers (Chierchia, Fox & Spector). Their distribution follows from the type of alts they activate –subdomain – and the way these alts are integrated into meaning, via an $e\forall h$ operator which requires all stronger alts to be negated. In DE, the assertion entails/is stronger than the alts (if there’s no $x$ in domain, there won’t be an $x$ in any of its subdomains) and thus NPIs can survive. In UE, negating the stronger alts (there is no $x$ for any subdomain) ends up contradicting the assertion, hence no NPIs in UE.

Intervention: Quantifiers like every also have alternatives (their scale-mates) and in DE contexts they give rise to SIs since exhaustifying the alts boils down to negating all non–entailed alts (not every $\leadsto$ some). In UE no SIs arise since these elements entail their alts. Symmetrically, weak indefinites like a give rise to SIs in UE (a $\leadsto$ not all) but not in DE where they become the strongest elements. Chierchia 2004 and Gajewski 2011 account for intervention effects based on these facts. The idea is that in (1), the alts of every are taken into account and the previously DE environment created by the negation is no longer DE due to the SIs brought about by the quantifier: (1a) $\leadsto$ I showed some boys any books. The exhaustification of the NPI will thus be inconsistent. Someone is a weak quantifier, like a, and since a does not give rise to intervention, the Chierchia/Gajewski approach predicts that someone shouldn’t either. (2) then poses a big problem for this account.

PPIs: Note however that someone is a PPI (Szabolcsi 2004). Nicolae (2012) offers a novel analysis that integrates PPIs within this $e\forall h$–based approach. She takes PPIs to activate super–domain
alternatives that must be exhaustified by an \( \mathcal{E}XH \) operator that requires the assertion to be the least likely among the alts, a condition satisfied in UE but not in DE, hence their inability to survive under negation (DE: assertion: there is no \( x \) in a domain is not less likely than alts: there is no \( x \) in any super-domain). We summarize the \( \mathcal{E}XH \) conditions on NPIs and PPIs at LF in (3).

(3) a. \( \mathcal{E}XH \rangle \neg \rangle \text{NPI} \) b. \( \neg \rangle \mathcal{E}XH \rangle \text{NPI} \) c. \( \neg \rangle \mathcal{E}XH \rangle \text{PPI} \) d. \( \mathcal{E}XH \rangle \neg \rangle \text{PPI} \)

The analysis] We show that if we take into account the fact that someone is a PPI that requires the presence of \( \mathcal{E}XH \), data involving NPI–intervention by PPIs follows straightforwardly, without having to amend the Chierchia/Gajewski system. Consider the data in (4).


We assume \( \mathcal{E}XH \) operators can adjoin at any scope level; if adjacent, the relative order of two \( \mathcal{E}XH \)s is irrelevant. If we disregard the LFs containing the ungrammatical (3b) configuration, we are left with the following possible LFs for the data in (4).

(4’) a. \( \mathcal{E}XH \), \( \mathcal{E}XH \rangle \neg \rangle \text{NPI}, \text{PPI} \) c. \( \mathcal{E}XH \rangle \neg \rangle \text{NPI} \rangle \mathcal{E}XH \rangle \text{PPI} \)
   b. \( \mathcal{E}XH \), \( \mathcal{E}XH \rangle \neg \rangle \text{PPI}, \text{NPI} \) d. \( \mathcal{E}XH \), \( \mathcal{E}XH \rangle \neg \rangle \text{PPI} \rangle \text{NPI} \)

Looking at (4’), we see that all LFs except for (c) contain the ungrammatical sequence in (3d), which is precisely in line with the data in (4). This system predicts that whenever a PPI linearly intervenes between an NPI and a DE operator, deviance will result since there is no adjunction site for \( \mathcal{E}XH \) that allows the exhaustification of the PPI to proceed consistently, (4a,d), without also ruling out the NPI. On the other hand, a PPI can co–occur with an NPI in the scope of a DE operator as long as the PPI is embedded in a lower clause, (4c).

Note that a PPI can sometimes intervene even when not linearly preceding the NPI, (4a-b), contrary to every, (1a-b). The reason why (4c) is ok, unlike (4a), is due to the extra IP layer which provides an intermediate site for \( \mathcal{E}XH \) to attach between the NPI and PPI, a configuration not available for (4a). We’re assuming a standard analysis of double–object constructions wherein the quantified objects QR to the same position, thus disallowing an \( \mathcal{E}XH \) operator to adjoin in an intermediate position, i.e. a position where the PPI could be exhaustified to the exclusion of the NPI. This is in contrast to cases where the NPI and PPI occupy a subject and object position, respectively, since the subject NPI moves to a syntactic position distinct from that of the QR-ed PPI, allowing for \( \mathcal{E}XH \) to attach immediately, as the contrast in (5) shows.

(5) a. *I doubt that John told anyone something. b. I doubt that anyone said something.

The advantages] This analysis of intervention by weak quantifiers provides an account for the co–occurrence of NPIs and PPIs, while inheriting the advantages of an \( \mathcal{E}XH \)–based analysis of SIs and polarity sensitive items. The interactions we discussed above are determined by the lexical semantics of the items, their alternatives, and the ways these are integrated into the meaning of the construction, via \( \mathcal{E}XH \). Adopting this analysis and extending it to the cases above allows us to do away with licensing generalizations that are merely descriptive and lack in explanatory value. We have not only solved a puzzle for the implicature–based account of intervention, but also expanded its empirical coverage to other cases of intervention.