Gennaro Chierchia

Factivity meets polarity: On two differences between Italian vs. English factives .

A slightly different version appeared in D. Altshuler and J. Rett (eds), *The Semantics of Focus, Degrees and Times. Essays in honor of Roger* Schwarzschild; Springer, 2019,
pp. 111-134

Abstract: Italian and English factives differ from each other in interesting and puzzling ways. English emotive factives (*regret, sorry*) license Negative Polarity Items (NPIs), while their Italian counterparts don't. Moreover, when factives of all kinds (emotive or cognitive) occur in the scope of negation in Italian an intervention effect emerges that interferes with NPI licensing way more robustly than in English. In this paper, I explore the idea that this contrast between Italian and English may be due to a difference in the Complementizer (C) -system of the two languages that parallels a difference that has been noted in the literature between the singular and the plural definite determiner *the* with respect to NPI licensing. Understanding how factives differ across language with respect to polarity phenomena is not only interesting in its own right, but also because it sheds further light on how logical contradictions may affect grammaticality judgments.

1. Main data points.

As is well known, the adverb *only*, which presupposes the truth of its prejacent and is, thus, factive, licenses weak NPIs across many languages. I illustrate this here with English and Italian examples:

(1) a. Only John said anything
  i. Presupposition: John said something
  ii. Assertion: If someone said anything, it was John
 b. Solo Gianni si è mai lamentato
  only Gianni REFL has-PAST ever complained 'Only Gianni ever complained'
  i. Presupposition: Gianni complained
  ii. Assertion: If someone ever complained, it was Gianni

Since at least Ladusaw (1979), this has been imputed to the fact that in the assertion (1a.i/1b.i), the NPI (*anything, mai* 'ever') occurs in a downward entailing (DE) environment, where NPI occurrences are known to be quite generally grammatical. The factive presupposition of *only* does not interfere with the normal licensing of weak NPIs, however that may come about. Von Fintel (1999) has formalized this idea in terms of the notion of 'Strawson-Downward Entailment'.[1] It has been observed, moreover, that in English emotive factives are also NPI-licensors:

(2) a. She was surprised that there was any food left
 b. I am sorry that I ever met him
 c. I don't regret having done what was honorable; but I do regret that this should ever happen.
  (C. Dickens, *Nicholas Nickleby*)

---

* Versions of this paper were given at Zas in Berlin, at Suny Stony Brook, at UC Berkeley, and the Research Institute for Linguistics in Budapest. I am very grateful to those audiences for their input. I also wish to thank Anamaria Falauš, Alex Klapheke, and Florian Schwarz for good discussions of the central questions addressed in this paper. Finally, an anonymous referee provided me with very insightful comments.

Some key ideas presented here came about as an unexpected, almost subconscious byproduct of a joint seminar with Roger Schwarzschild on plural and mass nouns in the Fall of 2015; that seminar was in every respect both fun and enlightening, as all my interactions with Roger over the years.

[1] A function f is Strawson-Downward Entailing iff for any p, any world w and any q such that $q \subseteq p$, if f(p) is true in w and q is defined in w, then $f(p) \subseteq f(q)$. The definition of Strawson-DE can be readily generalized to all types that end in t.

The judgments illustrated in (2) are perfectly in line with the behavior of *only*, and can be analyzed along similar lines: the assertive component of the relevant factives is DE and this suffices for weak NPI licensing. For example, as argued by von Fintel, *she was surprised that p* asserts *she didn't expect p*, and presupposes that p is true. This is a very plausible idea, unsurprising in view of how *only* behaves. However, the Italian counterparts of the sentences in (2) are systematically ungrammatical:

(3) a. * Lei si sorprese che ci fosse alcun cibo
She REFL was surprised that there was-SUBJ any food
'She was surprised that there was any food'
a'. Lei non si aspettava che ci fosse alcun cibo
She not REFL expect that there was-SUBJ any food
'She didn't expect that there would be any food'
b. * Mi dispiace di averlo mai incontrato
(I) REFL am sorry to have-him ever met
I am sorry I ever met him
b'. Non penso di averlo mai incontrato
(I) don't think to have-him ever met
'(I) don't think I have ever met him'
c. *Rimpiango che questo che tu dici sia mai accaduto nel mio paese
(I) regret that this that you say has-SUBJ ever happened in my country
'I regret that what you describe ever happened in my country'
c'. Non penso che questo che tu dici sia mai accaduto nel mio paese
(I) not think that this that you say has-SUBJ ever happened
'I don't think that what you describe ever happened in my country'

So while Italian *solo* and English *only* pattern completely alike with respect to NPI licensing, a sharp difference emerges in the behavior of emotive factives. There is otherwise no obvious semantic difference in the truth-conditional meaning or presuppositional profile of the relevant class of predicates across the two languages. In particular, Italian factives presuppose the truth of their complements, by all the standard tests for presupposition detection. [2]

A second key difference between English and Italian, noted and discussed in Homer (2011), concerns all factives. In English negation can license an NPI across a factive verb:

(3) a. Mary doesn't realize that Bill does any housework.
b. It isn't so strange that anyone should complain
c. John won't be happy that you failed in any course.
d. Mary hadn't realized that Bill had ever been to Paris.

[2] In the examples in (2) I use systematically the subjunctive, which usually facilitates NPI-licensing (cf. the primed counterparts of the sentences in (2), which are given for contrast). Use of the indicative with emotive factives is also possible, and it makes the ungrammaticality of the relevant sentences more severe.

However, the Italian counterparts of (3) are severely deviant:[3]

(4) a. *Maria non capisce che Gianni fa alcun favore
Maria not understands that Gianni does any favor
b. *Gianni non sara' contento che tu fallisca in alcun corso
Gianni no be-FUT happy that you fail-SUBJ in any course
'Gianni won't be happy that you fail in any course'
c. *Non e' strano che Maria abbia mai sbagliato
(it) is not strange that Maria has ever made a mistake
c'. Non e' chiaro che Maria abbia mai sbagliato
(it) is not clear that Maria has ever made a mistake
d. * Maria non aveva realizzato che Gianni era mai stato a Parigi
Maria no had-IMP realized that Gianni had-IMP ever been in Paris
'Maria hadn't realized that Gianni had ever been to Paris'

Example (c') is provided for minimal contrast with (c), to show that it is really factivity that is at stake. The pattern that emerges from (3) vs. (4) is that English factives do not intervene (or intervene only mildly) in the licensing of NPIs in their complements from a higher licensor, while Italian factives give rise to a sizeable intervention effect.

Descriptively speaking, we can draw the following generalization. The factive presupposition seems to systematically get in the way of NPI-licensing for Italian *content* predicates, but not for *function* words like *only*. The question is of course why. What parameter might be responsible for this difference between Italian and English? This issue is particularly dramatic for theories that resort to logical triviality to account for NPI distribution, like exhaustification based approaches. On exhaustification based theories of polarity, NPI violations like **there are any cookies left* are not due to some syntactic or semantic licensing failure, but to the circumstance that such sentences come out as contradictory, i.e. informationally trivial.[4] The problem for such theories is that while an English sentence like *I am sorry I ever met you* is evidently non contradictory, its Italian translation should come out as contradictory, if that is how NPI failures are couched. And yet no obvious truth-conditional or presuppositional difference between the two sentences is readily accessible to introspection. An interesting puzzle, both empirically and conceptually.

---

[3] Some English speakers find the examples in (3) marginal. However, Klapheke (2017) has a run a Mechanical Turk experiment, comparing English, Italian, and French on data sets corresponding to (3) vs. (4), and the ratings do differ systematically and significantly between English vs. Italian along the lines indicated in the text.

[4] By analogy is with contrasts like

(i) * There is even ONE_F cookie left

(ii) There isn't even ONE_F cookie left (where F indicates focal stress)

It is fairly easy to see why (i) constitutes a contradiction, while (ii) does not. As is well known in many languages NPIs are literally constructed in this way (even + an expression of minimal quantity). Standard references on this are Lee and Horn (1994) and Lahiri (1998).

In what follows, after some background review, I'll develop a hypothesis as to how factive Cs may differ between Italian and English in a way that makes sense of these differences. I will then explore further consequences of this view for the approach to factive islands developed in Abrusan (2014).

2. Background.

There are several ways of thinking about NPI licensing we could use to frame our discussion of the Italian vs. English contrast presented in the introduction. I will now outline one such possibility. My sketch will have to be necessarily partial and incomplete. I hope, however, that what I am going to present will suffice to make my investigation of the factivity/polarity interaction both comprehensible and testable.

Besides the well known distributional restriction of NPIs to (approximately) DE contexts, contrasts such as those in (5) have also been observed and widely discussed, starting with Kadmon and Landman (1993):

(5) i. Q: Do you have an egg I can borrow? A: No I don't have ANY_F eggs
ii. Q: Do you have any eggs I can borrow? A: * No I don't have AN_F egg
iii. John broke AN_F egg, not twelve.

Unlike the dialogue in (5i), the one in (5ii) is notably deviant. The deviance of (5ii) is not due to the fact that the indefinite article *a* cannot be focused for focusing the indefinite article is in fact possible, as examples like (5.iii) show. Something that makes the deviance of (5.ii) particularly puzzling is the circumstance that there is by now widespread agreement that *any* and *a* are indefinites with essentially identical interpretations. If *a/any* have the same meaning, why is (5i) good and (5ii) deviant? An idea that has emerged in this connection is that NPIs activate subdomain alternatives and are restricted, when focused, to such alternatives.[5] Ordinary indefinites, on the other hand, when focused behave like any other focused item does: they activate alternative sets generated by replacing the focused item with elements of the same logical type (cf. e.g. Rooth (1992), a classical reference in this connection). In particular, according to Rooth, the alternatives activated in (5.iii) will be of the form $\{Q_D(\text{egg})(\lambda x.\text{john broke } x): Q \in \text{Det}\}$, where D is the (contextually determined) quantificational domain associated with the determiner meaning Q. Now sticking for explicitness' sake to Rooth's approach, the condition on contrastive focus requires that the context provide some constituent whose meaning belongs to the focus value of the contrastively stressed element. In the

[5] In fact, also ordinary indefinites activate subdomain alternatives, as this is arguably a necessary step for them to get Free Choice readings (as in (i)) or 'epistemic ignorance' readings (as in (ii)).
(i) Pick a card
(ii) Some student (or other) looked you up
However, ordinary indefinites do not activate such alternatives obligatorily, the way Polarity Sensitive Indefinites do. See Fox (2007) on Free Choice uses of disjunctions and indefinites; see also Chierchia (2013) for an extension of Fox's approaches to Polarity Sensitive Items. For a variety of approaches to Epistemic Indefinites cf. Alonso Ovalle and Menendez Benito (2015).

case of (5iii) such an 'antecedent' for the focused indefinite determiner is going to be *twelve$_D$(eggs)(λx.john broke x)*, i.e. the elided constituent in the scope of negation, which indeed has the right structure. So (5iii) is grammatical because the condition for the interpretation of contrastive focus is met. Compare this with (5.ii). The alternative set would be the same as the one for (5.iii). But given that *a(n)* and *any* are semantically alike, the context fails to provide an element of contrast, i.e. something distinct from the assertion which belongs to the set of focal alternatives. Finally, look at (5.i). If stressed *any* is restricted to activating subdomain alternatives (admittedly, a stipulation), then the set of alternatives active will be $\{\exists x \in D'[egg(x) \wedge have(x)(I)] : D' \subseteq D\}$, where, say, D = things within my reach. Now, the question in (5.i) may well provide an element of contrast that belongs to the active alternative set of the focused *any*, under the assumption that the domain selected in the question is a subdomain of the one in the answer (say, *things in my house*, under the assumption that $D_{\text{g's house}} \subseteq D_{\text{g's reach}}$). In other words, the condition on the interpretation of focus can be met, under the assumption that the domain of the quantifier in the answer is an extension of the quantificational domain in the question. This accounts elegantly for the fact that stressed *any* has the much discussed 'domain widening' effect.

The idea that *any* must activate subdomain alternatives does not just account for the behavior of *any* under contrastive stress. It also enables us to derive its distribution (i.e. the typical weak NPI behavior). Normally, active alternatives must be factored into meaning. And typically this happens via covert 'exhaustification' i.e. a process that strengthens meaning through what might be thought as a covert counterpart of *only*. Cf. example (6):

(6) a. I walked into my class, and asked John and Bill to follow me.
b. $\text{Only}_{\text{my class}}$(I asked $[\text{John and Bill}]_F$ to follow me)
= I asked only $[\text{John and Bill}]_F$ to follow me
c. $O_{ALT}(p) = p \wedge \forall q \in ALT[\, q \rightarrow p \subseteq q]$ where $\subseteq$ = entails
'The only members of ALT that are true are p and its entailments =
Anything not entailed by p in ALT is false'

The second sentence in (6a) is understood exhaustively as in (6b), where O is a (non presuppositional) phonologically null counterpart of *only*, defined as in (6c). Assuming that implicit exhaustification is more or less what goes on in general with active alternatives, this will have to happen also in the case of *any*: given that *any* always activates subdomain alternatives, its alternatives will have to be exhaustified. When *any* occurs in a DE environment, nothing much comes out of it. Here is why:

(7) a. I don't have any eggs
b. Assertion: $O_{ALT}(\neg\exists x \in D[eggs(x) \wedge have(x)(I)]) = \neg\exists x \in D[eggs(x) \wedge have(x)(I)]$
c. Alternatives: $\{\neg\exists x \in D'[eggs(x) \wedge have(x)(I)]: D' \subseteq D\}$

The alternatives in (7c) are all entailed by the prejacent in (7b). Hence, exhaustification will be vacuous (modulo, of course, the possibility of yielding domain widening in contrastive focus situations). In contrast with this, when *any* occurs in a non DE environment, exhaustification will generate a contradiction.

(8) a. I have any eggs
b. Assertion: $O_{ALT}(\exists x \in D[eggs(x) \wedge have(x)(I)]) = \bot$
c. Alternatives: $\{\exists x \in D'[eggs(x) \wedge have(x)(I)]: D' \subseteq D\}$
d. I have eggs within my reach, but not in my house, not in the stores in my reach,…

None of the alternatives in (8c) is entailed by the assertion, hence O requires that they all be false. This yields a contradiction of, roughly, the form in (8d); and it arguably explains why NPIs are restricted to DE contexts.

Approaches along these lines require a way of explaining why contradictions like (8a), if they are such, are perceived so differently from 'ordinary' contradictions of the *it rains and it doesn't* kind, which are perfectly grammatical and whose contradictory status is readily accessible to introspection. The line of reasoning that looks most promising in this connection (and that goes back to Gajewski 2002) rests on the distinction between functional vs. content words. Ungrammatical contradictions are those that can be determined on the basis of the functional lexicon alone, by ignoring content words. Here is a quick illustration of the idea:

(9) a. i. * John has any eggs
ii. Functional skeleton: $O_{ALT}(\exists x \in D[R(eggs)(x) \wedge R'(have)(x)(R''(John))])$
where, for any α, $R(\alpha)$ is of the same type as α
(R, R',… are 'replacement functions' for α)
b. i. It rains and it doesn't rain
ii. Functional skeleton: $R(rains) \wedge \neg R'(rains)$

The functional skeleton of a sentence is obtained by inserting distinct 'replacement functions' $R(\alpha)$ for each occurrence of a content word α. What happens then is that the contradictoriness of formulae like (9a) comes out for any choice of replacement functions; the contradictoriness of (9b), on the other hand, emerges only if R = R', i.e. if we replace *uniformly* the content words. A slightly different way of putting the same idea is that grammar is sensitive just to function words (whose meaning has to do primarily with inference). If a structure is logically trivial regardless of the choice of content words, as (9a) is, it is doomed to be out of the language. If, however, a structure comes out as contradictory only on some choices of content words, as (9b), one can envisage ways of rescuing it (e.g. by interpreting differently different occurrences of content words). This provides a principled and interesting account for why 'ungrammatical trivialities' like (9a) are perceived so differently from standard tautologies and contradictions like (9b).

The approach to polarity just outlined had to be necessarily quite sketchy and faces many issues of implementation and of substance, that are under debate. But I hope that even this cursory summary may be enough to provide sufficient preliminary motivation for testing the present approach against the interactions between factivity and polarity laid out in Section 1. As discussed there, such interactions should turn out to be particularly trying for approaches that treat NPI violations as cases of ungrammatical trivialities.

2. The proposal.

In this section I develop the idea that the difference between Italian vs. English of concern here is to be traced back to a difference in the C-system of the two languages. In order to motivate it, I will discuss a difference between how the plural vs. the singular definite determiner *the* interact with NPIs, difference that bears a striking resemblance to the one between Italian vs. English factives.

3.1. Another case of licensing vs. interference with NPIs: the definite determiner.

It has been noticed in the literature that the plural definite determiner licenses NPIs in its restriction, while the singular one doesn't. This difference appears to hold crosslinguistically. Here is an illustration:

(10) a. The students who took any of my classes in the past few years never complained
b. *The student who sat in any of my classes in the past semester didn't complain.
c. The clients that ever complained about any of our products are extremely rare.
d. *The client that ever complained about any of our products was duly refunded.
e. Le persone che si son mai lamentate di un nostro prodotto si contano sulle
The people that SELF AUX ever complained of a our product SELF count on
dita di una mano.
the fingers of a hand.
'The people that ever complained about one of our products are few"
f. * La persona che si e' mai lamentata di un nostro prodotto e' stata risarcita.
The person who ever complained of one of our product was refunded

Gajewski (2016) runs a quantitative study showing that this tendency is real and measurable. The contrasts in (10) may seem to constitute a serious difficulty for approaches to NPIs that rely on Strawson-Downward Entailingness, for both the_{SG} and the_{PL} trigger a maximality presupposition (which in the case of the_{SG} singular becomes a uniqueness presupposition), which makes them both Strawson-DE.[6] The parallel between the data in (10) and factives consists of the following: the_{SG} and the_{PL} share a presupposition, which however interferes negatively with NPI licensing only in the case of the_{SG}. Similarly, the Italian and English factives share a presupposition that, however, interferes with NPI licensing just in the case of Italian factives. What this may be taken to suggest is that the presupposition of Italian factives comes about through a functor (specifically a complementizer) analogous to the_{SG}, while the presupposition of the English factives comes about via a C parallel to the_{PL}.

[6] Lahiri (1998) observes that the restriction of the the_{SG} is both Strawson-DE and Strawson-UE and argues that for this reason the_{SG} fails to license NPIs in its restriction.

A way to account for the pattern in (10) can be found in Gajewski (2011). In the case of the plural definite article, the assertive component does have a DE subcomponent, corresponding to the restriction of the determiner, because *the*$_{PL}$ is interpreted like *all/every*. However, when it comes to the singular, the existence /maximality presupposition associated with the definite is not just presupposed, but also part of the assertion. Yablo (2006) independently argues for this position in order to account for why presuppositions denials with singular definites can be, in his terms, "non catastrophic", i.e. result in usable utterances. According to Gajewski's (and Yablo's) proposal, therefore, sentences like (11a,c) would have the interpretations shown in (11b,d), respectively:

(11) a. The clients complained
b. $\lambda w: \exists x\ clients_w(x) \wedge \forall y\ clients_w(y) \rightarrow y \leq x.\ \forall x\ client_w(x) \rightarrow complain_w(x)$
c. The client complained
d. $\lambda w: \exists x\ client_w(x) \wedge \forall y\ client_w(y) \rightarrow y \leq x.\ \exists x\ client_w(x) \wedge complain_w(x)$

On this view, both the singular and the plural presuppose that there is a maximal element in the extension of the restriction (which, if the restriction is singular, tantamounts to requiring the restriction to be a singleton). However, the assertive component of the definite is *universal* for the plural and *existential* for the singular. More specifically, (11a) presupposes that there is a maximal group of clients and asserts that all clients complained. Sentence (11c) presupposes that there is a unique client, and asserts that a client (namely, the only existing one) complained. The corresponding determiner meanings are given in (12). I am going to call the plural version of the definite determiner *weak* (as it merely presupposes existence) and the singular version strong (as it also asserts existence).

(12) a. $THE^W_{PL} = \lambda P \lambda Q \lambda w: \exists x\ P_w(x) \wedge \forall y\ P(y) \rightarrow y \leq x.\ \forall x\ [P_w(x) \rightarrow Q_w(x)]$
b. $THE^S_{SG} = \lambda P \lambda Q \lambda w: \exists x\ P_w(x) \wedge \forall y\ P(y) \rightarrow y \leq x.\ \exists x\ P_w(x) \wedge Q_w(x)$

It follows that the restriction of *the*$_{PL}$ constitutes a DE context, while the restriction of *the*$_{SG}$ does not, which would explain why plural definites can license NPIs in their restriction, while singular definites cannot. On an exhaustification based implementation of this idea, here is an example of what we would get with plural vs. singular definite determiners, respectively.

(13) a. i.The clients that had any complain were rare
ii. $O_{ALT}(\lambda w: \pi_w.\ \forall x[clients_w(x) \wedge \exists y \in D\ complain_w(y) \wedge has_w(y)(x) \rightarrow rare_w(x)])$
b. i. * The client that had any complain was refunded
ii. $O_{ALT}(\lambda w: \pi_w.\ \exists x[client_w(x) \wedge \exists y \in D\ complain_w(y) \wedge has_w(y)(x) \wedge refunded_w(x)])$

In the LFs associated with (13a) and (13b), I abbreviate the common presupposition as simply π_w; as in cases like (1) involving NPI licensing by *only*, exhaustification generally ignores the presupposition π_w and operates on the assertive component. In spelling out the assertive component of (13a-b), I notate explicitly just the domain associated with the NPI *any*$_D$ *complain*, ignoring the domains associated with other DPs (namely *the*$_{D'}$

client(s)) as the latter are irrelevant. In a structure like (13a), where (the domain of the) NPI occurs in a DE environment, all subdomains alternatives are entailed by the assertion, and hence exhaustification will be vacuous. In a structure like (13b), instead, the (domain of the) NPI occurs in a non DE environment, and application of O_{ALT} results in a contradiction.

This approach raises two interesting issues.[7] The first concerns the distribution of strength with respect to plurality vs. singularity: why is it that plural determiners are weak and singular strong and not the other way around? The second concerns the behavior of definite determiners under negation. Let us discuss them in turn.

The pattern of NPI licensing we find in English (with the_{PL} being a better NPI-licensor than the_{SG})[8] stands a good chance at being universal: languages where singular definites are clearly better NPI-licensors than plural ones have not been observed. However, in so far as the proposed lexical entries in (12) are concerned, it prima facie seems that we could easily 'swap them around', i.e. write an existential assertive component into the plural definite, while taking it out of the singular one. Hence, on the basis of (12), we might expect the possibility of NPI-licensing by plurals vs. singular definite Ds to be more of a parameter than what it appears to be. A possible way of answer to this observation is the following. What (12) embodies is the view that plural definites are essentially *universal* Ds, while singular ones are *existential* ones. They share and existence and maximality presupposition. Now, for singular definites, the maximality presupposition becomes a uniqueness one: it forces the denotation of the first argument of the_{SG} to be a singleton. So, a hypothetical weak singular definite would have to be a universal D with a uniqueness presupposition. But Ds of this sort are unattested. In fact, universal Ds require kind of an opposite presupposition; they require that it shouldn't follow from the common ground that their restriction is a singleton (cf. the deviance of things like *every nose of mine is crooked*). While one might want to turn this observation into a formal condition to get a proper explanation of why only the plural definite can be a universal, we may have here enough independent evidence to suggest that the line up in (12), where plurals are ∀ and singulars are ∃, is indeed the natural one. If this is so, the absence of weak singular definites is a manifestation of the absence of universal Ds with a uniqueness presupposition.

The second issue has to do with the interaction of strong Ds with negation. Adding a negation to the ungrammatical sentences in (10) does not rescue NPI violations (cf. 14a). But the approach we are currently exploring might be taken to suggest that it should (cf. 14b).

(14) a. * I doubt that the client that ever complained about any of our products was

---

[7] I am grateful to an anonymous referee for pointing out the centrality of these issues for the present proposal.

[8] Cases where the_{SG} licenses NPIs are typically generic, cf. the following example from Homer (2011) who credits Jack Hoeksema for it:
(a) The student who has ever tried to grasp this theorem knows how hard it is.
Presumably, the NPI is licensed here by the Generic operator rather than by the definite. See Homer (2011, 188-199) for relevant discussion.

duly refunded.
b. $\lambda w: \pi_w. \neg \exists x[client_w(x) \wedge \exists y \in D\ complain_w(y) \wedge has_w(y)(x) \wedge refunded_w(x)]$

The logical representation of (14a) is (14b), where, if ignore presuppositions, the NPI does occur in a DE environment and may, therefore, be well expected to be properly licensed. Chierchia (2013), building on Homer's (2011) observation that strong triggers intervene for NPI-licensing, proposes that when an exhaustification operator encounters on its path a strong trigger presuppositions and implicatures must be factored into the exhaustification process, as schematically indicated in (15):

(15) a. O^S_{ALT} [I doubt that the$_S$ client that ever$_D$ complained about any of our products was duly refunded]
b. O_{ALT} ($\lambda w: \exists x[client_w(x) \wedge \exists y \in D\ complain_w(y) \wedge has_w(y)(x) \wedge$
$\neg \exists x[client_w(x) \wedge \exists y \in D\ complain_w(y) \wedge has_w(y)(x) \wedge refunded_w(x)]$

Normally O doesn't take presuppositions and implicatures into consideration; but when a strong presupposition trigger intervenes as in (15a), it does, requiring a switch from O to O^S. The interpretation of (15a) is as in (15b), where the first line is (a simplified version of) the presupposition and the second line is the assertion proper. Since the NPI now occurs (also) in a UE environment, exhaustification will lead to a contradiction, condemning the structure. Chierchia suggests that this is part of a general phenomenon whereby exhaustifying operators act like probes that must 'agree' with all the potentially relevant elements that intervene between it and its target (in this case, the NPI *ever*).

In other words, strong presuppositional trigger (which in the present contexts refers to triggers that entail their presuppositions) interfere with ordinary NPI-licensing, presumably because their presupposition cannot be ignored in the exhaustification process. Exactly which triggers have this effect and why remains an open issue, although the fact that a component of meaning is asserted besides being presupposed might constitute a pausible enough cause for it to be included in the exhaustification process.[9]

---

[9] See Chierchia (2013, Chapter 7) for further discussion. Ahn (2016) provides an analysis of *too* as a conjunction with an anaphoric element, that allows to reduce intervention by *too* to ordinary cases of intervention by strong scalar items like *and*. Cf., e.g., the contrast between (i) and (ii)).
(i) I doubt that Theo drank the left over wine or any coffee
(ii) ?? I doubt that Theo drank the left over wine and any coffee.
This constitutes a step forward with respect to Chierchia' original proposal. The logic of Ahn's approach could be extended to the present case. For example, one might explore the idea that at issue entailments must be considered (on par with) scalar alternatives to the assertion (cf. Romoli 2015). For example, *the boy left* (= "there is a boy around and he left", uttered in a situation in which it is known that there is just one boy around) has as alternative 'there is a boy around'. In the positive case this has no effect, because the alternative is entailed. But in the negative (*the boy didn't leave*), exhaustification would yield "there is a boy around and he didn't leave", which is just the right result, and would immediately account

To sum up there are good reasons to believe that the different behavior of *the*$_{SG}$ vs. *the*$_{PL}$ with respect to polarity licensing has to do with the fact that sometimes a piece of meaning may be just presupposed, while other times it is also included in the assertion. If this idea holds water, something along very similar lines might well be how Italian vs. English factives differ. The rest of this paper investigates this hypothesis.

3.2.Factive Complementizers vs. Definite Articles.

The idea that factive presuppositions may come about through the complementizers of factive verbs goes back to an old classic, namely Kiparsky and Kiparsky (1971). Much research since has confirmed the special nature of factive Cs. For example, Ormazabal (2005) points out the following differences between factives and non factives, which he attributes to the nature of their respective C-systems.

(16) a. No that-deletion
  i. * John realized Sue wasn't there
  ii. John believed Sue wasn't there
 b. No ECM
  i. They reported Bacon to be the real author
  ii. *They regret Bacon to be the real author
 c. Different *consecutio*
  i. * John believed that Mary will arrive
  ii. John realized that Mary will arrive

First, that-deletion is systematically blocked with factives (16a); [10] second there are no ECM-constructions with factives; and third, the interaction with tense between the main verb and its complement appear to be systematically different, with factive complements displaying a greater degree of temporal independence. Topped with the degraded nature of wh-extraction out factives (cf. 17 below), there are, it seems, many reasons to believe that factive C's are special and, therefore, to adopt some version of Kiparsky and Kiparsky's proposal.

(17) a. * How does John regret that Mary will behave __?
 b. How does John think that Mary will behave __?

In light of these considerations let us assume that factive verbs semantically select for facts, and that facts are individuals of type e. Factive complementizers turn propositions into facts and they do so either by triggering a factive presupposition (English) or by triggering a factive presupposition and making it also part of the assertion (Italian), by analogy with how the plural vs. the singular definite behave. In so far as facts are

---

for the intervention effect along fully general lines. However, pursuing this idea in more detail here would take us too far afield.

[10] As pointed out by a referee, *know* does allow for C-deletion. So Ormazabal's generalization should probably be construed as identifying a tendency rather than in absolute terms.

concerned, we will adopt a rather simple view, along the lines of Chierchia (1984). The basic idea is that every proposition (and possibly every property) has an individual correlate of type e. Facts are individual correlates of *true* propositions, i.e. nominalized true propositions:

(18) a. For any proposition p (of type <w,t>) and every x (of type e):
  i. $^{\cap}p$ is of type e
  ii. if $x = {}^{\cap}p$, then $^{\cup}x = p$
  iii. $^{\cup\cap}p = p$
  b. fact = $\lambda w \lambda x \exists p[p_w \wedge {}^{\cap}p = x]$

This approach can be developed further along the lines of theories of situations, but we will not pursue this here. We assume that factive verbs like *know* or *regret* are relations between individuals and facts (defined in terms of relations between individuals and true propositions); the role of factive complementizers is to turn propositions into facts, thereby introducing the factive presupposition typical of these verbs. This happens in two ways that parallel roughly the behavior of the plurals vs. singular definite determiner, adjusting for the type. Thus there is a weak factive complementizer *that*^{W}, that introduces factivity as a presupposition, and a strong one *that*^{S}, that introduces it both as a presupposition and as part of the assertion. Let us begin with the weak (non intervening) factive C, by hypothesis, part of the functional lexicon of English (but not of Italian).

(19) i. $\text{that}^{W}{}_{w}$ it rains $\Rightarrow {}^{\cap W}\lambda w' \text{rain}_{w'}$
  where for any p, ${}^{\cap W}p = {}^{\cap}p$, if p is true in w, else undefined.
  ii. John regrets_w that_w it rains $\Rightarrow \text{regret}_w({}^{\cap W}\lambda w' \text{ rain}_{w'})(j)$

The proposition *John regrets that it rains* is defined in w iff it rains in w. Whenever defined, it is true iff John regrets the fact that it rains. The latter can be further spelled out as holding iff everything else being equal, raining puts John in a state of regret:

(20) $\text{regret}_w(x)(j) = \forall w' [S_w(w') \wedge \neg {}^{\cup}x(w') \rightarrow \neg \text{regretful}_{w'}(j)]$

S is the similarity relation, familiar from the literature on conditionals and the definition in (20) adopts, essentially, a causative view of emotive factives. The analysis of causation we follow here is the one developed by Lewis (1974), further articulated in Dowty (1979). The conditional in (20), applied to example (19), presupposes that it rains and states that in the worlds closest to the actual one in which it doesn't rains, John isn't regretful; in other words, the fact that it rains causes John to be regretful. Notice that in a conditional like (20) the complement of *regret* occurs in a DE environment, as seems right in view of the behavior of NPIs. Consider in this light and example like (21a). Its Logical Form would be as (21b), and its interpretation as in (21c).

(21) a. John regrets that he ever met Mary

b. O_{ALT} [$John_i$ $regrets_w$ $that_w$ he_i $ever_D$ met Mary]

c. O_{ALT} $\forall w'$ [S_w (w') $\wedge\neg$ $^{\cup}x(w') \rightarrow \neg regretful_{w'}(j)$]

where $x = {}^{\cap w} \lambda w' \exists t \in D[met_{w'}(mary)(john)(t)]$

The formula in (21c) is defined only in worlds where John met Mary sometime (in a temporal domain D). The presupposition is encoded in the nominalization operator '$^{\cap w}$'. Whenever defined, (21c) states that if John hadn't met Mary, he wouldn't be experiencing regret, i.e.:

(22) O_{ALT} $\forall w'$ [S_w (w') $\wedge\neg$ $\exists t \in D[met_{w'}(mary)(john)(t) \rightarrow \neg regretful_{w'}(j)]$

The complement of *regret* occurs in a DE environment in (22): If John hasn't met Mary in a certain time span D in a world w, he hasn't met her in any sub time span of D. The set of relevant alternatives ALT is constituted by the subdomains of D, as is generally the case for NPIs. Since all alternatives are entailed by the prejacent of O_{ALT}, exhaustification is vacuous, and an NPI like *ever* is grammatical in that environment. [11]

The treatment of *know* is fully parallel, except that its assertive component is Upward Entailing, as it states that the subject is justified in believing a certain fact.
Here is an example:

(23) a. $know_w(x)(y) = \forall w'$ [J-$DOX_{y, w}(w') \rightarrow {}^{\cup}x(w')$]
where J-DOX is the set of doxastic alternatives for y in w in which y is justified in believing that x holds.

b. $know_w ({}^{\cap w}\lambda w' rain_{w'})(j) = \forall w'$ [J-$DOX_w(w') \rightarrow {}^{\cup}[{}^{\cap w}\lambda w'' rain_{w''}](w')$]
$= \lambda w: rain_w. \forall w'$ [J-$DOX_w(w') \rightarrow rain_{w'}$]

The presupposition triggered by the nominalizing C projects in the usual way, as shown in (23b), and the complement of *know* is in a UE environment, where exhaustification of subdomain alternatives leads to a contradiction. Therefore, NPIs are not licensed in the

---

[11] Two technical points are worth commenting on in this connection. First, the DE character of the antecedent of conditionals is subject to contextual restrictions. See on this, e.g., von Fintel (2001), and Chierchia (2013). The approach outlined in the text is very close to von Fintel's position, modulo the substitution of exhaustification for the licensing condition in terms of Strawson-entailment he proposes.
Second, the formula in (20) only represents the assertive content of *John regrets that he ever met Mary*. The full-blown representation of the meaning of this sentence, presupposition included, is:

(i) $\lambda w: \exists t \in D[met_w(mary)(john)(t)]$.
O_{ALT} $\forall w'$ [$S_w(w') \wedge\neg \exists t \in D[met_{w'}(mary)(john)(t) \rightarrow \neg regretful_{w'}(j)]$

Where the first line in (i) is the presupposition encoded in '$^{\cap w}$' in (19c), and in the second line we have the truth-conditions.

complement of cognitive factives like *know*. Negation, however, reverses entailment patterns. So consider a sentence like *John didn't know that Mary had ever been to Paris*. This sentence gets the interpretation (24b):

(24) a. John didn't know that Mary had ever been to Paris.

b. $\neg\forall$w' [J-DOX$_{John,w}$(w') $\rightarrow$ $\cup[\cap^{w}$ λw''$\exists$t$\in$D[to$_{w''}$(Paris)(Mary)(t)](w')]

c. $\neg\forall$w' [J-DOX$_{John,\ w}$(w') $\rightarrow$ $\exists$t$\in$D[to$_{w'}$(Paris)(Mary)(t) (w')]

Ignoring the factive presupposition (triggered by nominalization), (24b) boils down to (24c), where the NPI *ever* occurs in a DE environment. All the subdomain alternatives are entailed, exhaustification is vacuous (modulo domain widening, as usual) and NPIs are licensed.

The proposed analysis thus far is fairly straightforward. I remain agnostic whether the factive C has an actual light noun *fact* as part of its syntactic structure. But semantically it does map a proposition into a fact, which can happen only on the basis of the presupposition that we are in a world where the proposition is true. Furthermore, as von Fintel and others propose, the assertive component of an emotive factive is DE. The assertive component of a cognitive factive is not, but of course negation turns it into a DE environment. Weak NPIs are existential terms that obligatorily activate subdomain alternatives that have to be exhaustified. The distribution of NPIs follows from this in the familiar manner.

We now turn to the strong factive C, which we are hypothesizing is part of the Italian functional lexicon. Such a C introduces factivity also as component of the truth-conditions of sentences with factive verbs and hence it must be treated as a generalized quantifier over facts. Here is an illustration:

(25) i. that$^{S}_{w}$ it rains $\Rightarrow$ λQ$\exists$x[x $= \cap^{w}\lambda$w'rain$_{w'}$ $\wedge$ Q$_{w}$(x)][12]

ii. John regrets$_{w}$ that$_{w}$ it rains $\Rightarrow$

λQ$\exists$x[x $= \cap^{w}\lambda$w'rain$_{w'}$ $\wedge$ Q$_{w}$(x)] (λyλw. regret$_{w}$(y)(j))

$= \exists$x[x $= \cap^{w}\lambda$w'rain$_{w'}$ $\wedge$ regret$_{w}$(x)(j)]

$= \lambda$w: rain$_{w}$. **rain$_{w}$** $\wedge$ $\forall$w' [S$_{w}$(w') $\wedge\neg$ rain$_{w'}$ $\rightarrow$ $\neg$regretful$_{w'}$(j)]

iii. that$^{S}_{w}$ = λpλQ$\exists$x[x $= \cap^{w}$p $\wedge$ Q$_{w}$(x)]

The virtual identity with the definite singular *the* should be apparent. I am assuming that the complement clause, being quantificational, undergoes scope assignment as in (25ii). The rest follows straightforwardly. The difference between *that^{S}* and *that^{W}* is in the constituent marked in the existential quantification over facts that amounts to asserting the truth of the complement.

---

[12] Using the definition of *fact* given in (16b), this can be equivalently stated as:

(i) that$^{S}_{w}$ it rains $\Rightarrow$ λQ$\exists$x[x = ιy [fact$_{w}$(y) $\wedge$ y = $\cap\lambda$w'rain$_{w'}$] $\wedge$ Q$_{w}$(x)]

This version may make the parallelism with the singular definite determiner even clearer.

Suppose that we try to embed an NPI under a strong factive C. The result is illustrated in (26):

(26) a. John regrets that he ever met Mary
b. $\exists t \in D[met_w(mary)(john)(t)] \wedge \forall w' [S_w(w') \wedge \neg \exists t \in D[met_{w'}(mary)(john)(t) \rightarrow \neg regretful_{w'}(j)]$

Formula (26b) expresses the truth conditions of (26b), ignoring the fact that the first conjunct is also presupposed. The NPI *ever* (= $sometime_D$, with D a contextually specified time span) now occurs within an environment that is UE, namely the first conjunct in (26b). Hence, subdomain alternatives to (26b) are not entailed by it and exhaustification will require sentence (26) to be true for a domain D, but false for all of its subdomains. This is, however, a logical impossibility, and the sentence is ruled out. The case with negated cognitive factives is fully parallel to the negation of singular definite determiners discussed in Section 3.1.

The strong C hypothesized for Italian is essentially a device that ensures local accommodation of the factive presupposition. The only alternative I can imagine exploring is finding a direct way of saying that factive presuppositions enter in the computation of weak NPI licensing in Italian but not in English, by participating in the determination of whether their environment is DE or not. However, an approach along these lines would face two questions. The first is the why-question. What kind of parameter makes presuppositions interfere in one language but not in another? The second is the behavior of *solo*, which is identical to that of *only*. With *solo/only* the factive presupposition doesn't seem to interfere with weak NPI licensing at all in either language (and the same hold for the_{PL} vs. the_{SG}). The factive C hypothesis, on the other hand, may well also face some version of the why-question: why are there two Cs that differ exactly this way? However, one can, in this connection, at least point to the existence of a parallel difference in the Determiner system; and moreover the fact that *only/solo* is immune to this variation is straightforwardly accounted for: *only/solo* are adverbs and do not select for complementizers.

I now turn to a further consequence of the hypothesis we are investigating.

4. Factives as weak islands

Abrusan (2014) has developed an account of contrasts such as those in (27) that makes an interesting use of ungrammatical triviality:

(27) a. How do you believe that John opened that suitcase __? With a knife
b. * How are you sorry that John opened that suitcase __?
c. * How much doesn't John weigh__?

Extraction of adjuncts across a factive as (27b) is degraded with respect to the parallel extraction across a non factive as (27a). This is a typical 'weak island' effect similar to extraction across negation, as (27c). These island effects can be ameliorated in a variety of ways, e.g. if the context identifies a range of possible values the wh-words may range over (cf., e.g., Abrusan 2014, pp. 65 ff). A particularly interesting way in which a weak

island extraction can be rescued is by insertion of a modal of possibility in the lower clause, a generalization discovered and discussed in Fox and Hackl (2007):

(28) a. i. How are you sorry that she was allowed to dress __?
ii. * How are you sorry that she is obliged to dress __?
b. i. How much isn't he allowed to weigh__?
ii. * How much mustn't he weigh __?

This ameliorative effect is particularly hard to understand on any purely structural approach to weak islands. Abrusan's proposal rests on two independently observable features of questions with factives. The first is that the factive presupposition of a declarive appears to project universally when a question is formed out of it:

(29) a. Who of John, Paul and Bill do you regret having invited?
Presupposition: You invited John, Paul and Bill
b. {p: ∃x∈ {j, m, b}[p = λw: **you invited x in w**. you regret having invited x in w]}

The question in (29a) is a set of partial propositions, containing a variable in their presuppositional component (in bold face in (29b)). The presupposition in the answer space appears to project universally. How this happens compositionally is controversial, but for our purposes the important point is that it indeed happens. The second observation is that manners typically have contraries:

(30) a. How did John behave? Wisely/unwisely
b. How did John open the window that was stuck? With/without a knife

If we put together these two observations (namely that (i) factive presuppositions project universally, and (ii) manners come in pairs of contraries), we see that one comes to expect that how-questions out of factive complements will yield a contradictory presupposition:

(31) a. i. How do you regret that Mary behaved __?
ii. {p: ∃x∈ {WISELY, UNWISELY,…}[p = λw: **Mary behaved x-ly in w**. you regret that Mary behaved x-ly in w]}
iii. Presupposition: Mary behaved wisely and she behaved unwisely and…
b. i. Who do you regret that Mary invited __?
ii. {p: ∃x∈ {John, Bill,…}[p = λw: **Mary invited x in w**. you regret that Mary invited x in w]}

iii. Presupposition: Mary invited John and she invited Bill and…

The logical form of the question in (31a.i), namely (31a.ii), projects universally over the domain of manners; since the latter come in incompatible pairs, the universal projection of presuppositions, yields the contradictory presupposition in (31a.iii). In contrast with this, argument extraction yields a coherent presupposition (31b.iii), because individuals do not come with contraries.

This approach predicts further that modals of possibility will diffuse the contradiction by, effectively, distributing the presupposition across worlds:

(32) i. How do you regret that Mary was allowed to behave __?
ii. {p: ∃x∈ {WISELY, UNWISELY,…}[p = λw: **∃w' ∈ACC$_w$(w')[Mary behaves x-ly in w']**. you regret in w that ∃w' ∈ACC$_w$(w')Mary behaves x-ly in w']}
iii. Presupposition: Mary was allowed to behave wisely and she was allowed to behave unwisely and…

ACC in (32) is the contextually supplied accessibility relation ranging over the worlds in which allowable behaviors occur. As it can be seen from (32iii), the projected universal presupposition is no longer contradictory. Replacement of the existential modal in (32) with a universal one would re-create a contradictory presupposition.

Abrusan's proposal has many appealing features. It captures an intricate pattern as simple consequences of independently observable generalizations. Her proposal presupposes some version of the idea that certain contradictions are ungrammatical. However, it raises an issue concerning the way in which ungrammatical trivialities are sifted from grammatical ones. Recall that on Gajewski's proposal ungrammatical contradictions are those that can be detected on the basis of the functional skeleton alone. The functional skeleton of sentences like (31), repeated below in (33a) would be as in (33b) or, in our version that uses replacement functions R, as in (33c):

(33) a. How$_i$ do you regret that Mary behaved t_i ?
b. How$_i$ do __ ___ that __ __ t_i?
c. How$_i$ do R(you) R(regret) that R(Mary) R(behaved) R(t_i) ?

The problem is that (33a) won't be contradictory for any replacement of the content words; it will only be contradictory if we replace *regret* with another factive. This complicates the definition of ungrammatical triviality, for *regret* can in no way be regarded as a function word. Abrusan is aware of this issue and proposes addressing it by constraining the notion of possible replacement to those that preserve 'not at issue' content (i.e. presuppositions). However it is unclear that her proposal can be made to work in general. Consider for example:

(34) The boy you are looking at is the girl you used to play with

The above sentence is grammatical. Yet the definite descriptions trigger contradictory presuppositions. If substitutions of content words must always preserve not at issue content, then the sentence in (34) will come out as contradictory for any such substitution. On the functional skeleton approach, this problem doesn't arise. Be that as it may, it is interesting to see whether Abrusan's approach can be made consistent with our approach to ungrammatical triviality, which sticks to the functional skeleton idea in its simplest form. It should be apparent that this indeed is so. The functional skeleton for (33a) on our proposal is:

(35) How$_i$ do R(you) R(regret) that$^{S/W}$ R(Mary) R(behaved) R(t_i) ?

The key point is that the factive complementizer *that*$^{S/W}$ is clearly part of the functional lexicon; and it is the complementizer in (35) that introduces a factive presupposition in structures like (35), no matter how the content word *regret* is replaced. The standard interpretation rules will follow their usual course, i.e. they will project universally the presupposition of the embedded clause introduced by *that*$^{S/W}$ into the question meaning, and the question winds up having a contradictory presupposition. This explains why factive island violations are perceived as ungrammatical/deviant and don't have the same status as canonical contradictions of the *it rains and it doesn't* kind.

To conclude this section, the present approach to factivity not only is compatible with Abrusan's proposal; it arguably simplifies it, by allowing us to stick to a simple view of the role of the functional skeleton in determining ungrammatical triviality, a desirable consequence.

5. Further issues.

In this section I discuss some issues that remain open under the present view. The present approach relies on a lexical difference observable in the determiner system and hypothesizes a parallel one in the complementizer system. It of course remains to be seen whether differences of this sort constitute a primitive option of the functional lexicon, or can be derived from something else. Moreover, the hypothesis that the role of the factive C is that of turning propositions into facts may suggests in which direction to look for explanations of the other peculiar properties of factive C's listed in (16), and repeated here as (36):

(36) a. No that-deletion
  i. * John realized Sue wasn't there
  ii. John believed Sue wasn't there
 b. No ECM
  i. They reported Bacon to be the real author
  ii. *They regret Bacon to be the real author
 c. Different *consecutio*
  i. * John believed that Mary will arrive
  ii. John realized that Mary will arrive

In connection with the marked character of C-deletion with factives (36a), it is natural to conjecture that a semantically contentful C would be harder to elide (= less recoverable) than a semantically vacuous one. Along similar lines, the impossibility of ECM with factives may be due to the fact that ECM requires elision of the C, which, as we just mentioned, might be impossible for a semantically contentful C. Finally, the greater independence of the tense of the embedded clause (36c) can well be related to the observation that facts are established independently of (cognitive or emotive) attitudes towards them. But all of this, of course requires a closer scrutiny of the relevant constructions, which we will have to leave for further research.

The idea that certain factives may include what they presuppose as part of their truth conditions (or, equivalently, may presuppose parts of what they entail) has been put forth

elsewhere in the literature. In particular, Schwarz (2015) and Djärv et al. (2017) explicitly conjecture that the truth of a factive complement is *entailed* (and not just presupposed) by the truth conditions of cognitive factives, and it is not entailed, but merely presupposed, by the truth-conditions of the emotive ones. They point out in this connection contrasts such as those in (37), originally discussed by Simons (2007):

(37) i. Q: Where was John yesterday?
A: Mary discovered that he had a job interview at Princeton
ii. Q: Where was John yesterday
A: ?? Mary is happy that he had a job interview at Princeton

The question/answer pair in (37.i) is felicitous; suggesting that the content of A directly addresses the question, as it would be if *that John had a job interview at Princeton* was entailed. The question/answer pair in (37.ii) is less than felicitous, suggesting that the complement in this case, though presupposed to be true, is not also entailed. Based on this, Djärv et al. design an experiment aimed at probing whether cognitive factives indeed entail the truth of their complement. Their experiment has the following structure:

(38) Q: is Maria happy/aware that Mike is moving back to Chicago
A1: Yes, although he isn't.
A2: No, because he isn't.

Participants are simply asked to rate the naturalness of the responses in (38) on a 1-7 Lickert scale. The conjecture is that yes-answers should be worse with cognitive factives (*aware*), for a yes-answer indicates acceptance of the content, and the continuation in the answer contradicts it. Yes-answers should fare better with emotive factives (*happy*) because the truth of the complement is not entailed. No predictions are made for no-answers. Djärv et al. claim that experimental outcome indeed goes in the direction of their prediction, and thus supports overall their conjecture.

One way of cashing out Djärv et al.'s proposal within the present framework is by assuming that emotive factives select for $that^{W}$, while cognitive ones for $that^{S}$. In other words, what we are suggesting as a parameter that differentiates the functional lexicon of Italian vs. English should rather be thought of as a selectional property of specific sub-classes of factive predicates. The immediate problem that this raises is how to account for the cross-linguistic variation. We would expect emotive factives to uniformly license NPIs across languages and cognitive factives to uniformly intervene under negation, which clearly isn't the case. One way around this unwelcome consequence might be along the following lines. First, emotive factives do differ cross-linguistically as suggested in the present paper: in English they select $that^{W}$, in Italian $that^{S}$. This means that in Italian they won't be able to license NPIs. It also ought to follow, then, that experiments such as Djärv et al. should have a different output in Italian vs. English, which remains to be seen. Second, cognitive factives uniformly select $that^{S}$ across languages. However, this selection is 'absolute' for Italian (the Italian functional lexicon simply lacks $that^{W}$) but an overridable *default* for English cognitive factives. In other words, English cognitive factives select by default $that^{S}$ in e.g. (39a), which makes the complement part of what is asserted. However, in a sentence like (39b) where

exhaustification of the alternatives associated with the NPI would generate a contradiction in presence of *that*^{S}, English rescues the situation by allowing substituting *that*^{W} for *that*^{S} as a last resort:

(39) a. John is aware that^{S} Mary left
Assertion: Mary left and John is aware of it
b. John isn't aware that Mary has ever been to Paris
i. O_D[John isn't aware that^{S} Mary has ever$_D$ been to Paris]
Assertion: Mary has ever been to Paris and John doesn't consciously believe it
→ contradictory
ii. O_D[John isn't aware that^{W} Mary has ever$_D$ been to Paris]
Assertion: John doesn't consciously believe that Mary has ever been to Paris
→ non contradictory

Switching from the default (39a)/(39b.i) to the non default (39b.ii) in English is only allowed under threat of contradictoriness, and for Italian is never allowed, for Italian simply lacks *that*^{W}. This idea might be part of an account for why cognitive factives have been reported as giving rise to intervention also in English (e.g. Homer 2011 talks of 'dialectal variations' internal to English); moreover what Klapheke (2017) finds in his quantitative cross-linguistic study is that indeed some intervention is found in English sentences like (39b), although such effect is significantly milder than in Italian. On the present hypothesis, intervention is present in English because the same (deviant) structure as Italian (namely (39.b.i)) needs to be computed. The milder character of the offence is due by the option of resorting to the non deviant structure in (39b.ii), option with can be conceivably be graded (i.e. adopted with greater or lesser ease by individual speakers).[13]

Obviously, much of the above is speculative, or/and in need of further probing, from both a conceptual and an experimental standpoint. It is interesting, however, how the present hypothesis can help in sharpening the hypotheses currently under investigation and provide a principled way of navigating a very complex empirical landscape.

6. Concluding remarks.

The type of variation in NPI licensing by factives discussed in this paper is about a differential impact of presuppositions across languages. The basic generalization is simple enough. Presuppositions of content factives (as opposed to functional ones, like

[13] According to Homer (2011), French might have an intermediate status between English and Italian: In French, emotive factives license NPIs as in English, but cognitive factives intervene with respect to NPI-licensing as in Italian. On the present approach, this would entail that French emotive factives select $that_W$ as in English, but the rescue strategy for cognitive factives operative in English is not available in French. Obviously, to test whether this hypothesis is on the right track will take further work. The present paper is a first approximation attempt at developing a calculus which is both restrictive enough to rule out unattested patterns and flexible enough to deal with the intricacy of the data.

only/solo or *the*$_{SG}$/*the*$_{PL}$) interfere with NPI licensing in Italian but not in English. And the scenario is complicated by the fact that intervention in presence of a canonical licensor like negation appears to be graded, while the one concerning lexical factives is categorical. This variation cannot plausibly be a global difference among languages concerning presuppositions as such. Which raises the theoretically interesting question of what the culprit for this variation could be. In principle, it could be in the class of lexical factives that somehow varies across languages, or possibly the NPIs of the two languages, that are differently sensitive to factives. Our proposal is that neither of these conjectures is right. The difference is actually more in line with other parametric differences that have been so intensely investigated over the years: it lies in the functional lexicon. The strength of complementizers differs in Italian with respect to English, in a very specific sense. The view of factives we build on is wholly traditional: factive predicates are relations between experiencers and facts. In virtue of the correspondence between facts and true propositions, factive relations invoke conditional dependencies. By and large, such dependencies involve either checking whether a certain fact holds in a set of epistemic alternatives (with cognitive factives) or they involve the state induced in the experiencer by a certain fact (with emotive factives). In the first case, the propositions corresponding to the factive complement with up in an upward entailing environment; in the second, typically, in a downward entailing one. The factive complementizer shifts propositions into facts, thereby inducing the factive presupposition, which upon being triggered enters into a projective compositional device. Factives Cs play this role in two ways, by analogy with the way in which the definite article seems to work. Like the plural definite article, weak factive Cs introduce a presupposition but leave things, for the rest, unchanged. The factive verb, thus, applies to the resulting partial (i.e. presuppositional) entity, which will wind up in a DE or UE environment, depending on the lexical semantics of the factive verb. The strong C on the other hand, like the singular definite article, not only introduces the requirement that the proposition must be factual, it also adds to the factive construction the claim that the proposition is true. There might be good reasons for emotive factives to prefer the weak C: emotive factive foreground an emotion towards a fact. And perhaps one could also find reasons why cognitive factives may like to make the truth of their complement part of what they entail; for one cannot hold the "right" cognitive relation (of knowledge, discovery, awareness,…) towards entities that are not factual. But there is variation on this score. Surely emotive and cognitive factives do differ with respect to what gets compositionally projected, as the differences between Italian and English show. The present hypothesis addresses how that can be.

The discussion of the cross-linguistic difference between Italian and English has been based on a controversial approach to polarity. On the view adopted here, NPIs are not subject to licensing. There are no axioms of the form: item A is licensed in context X/ by item X. NPIs are simply indefinites, which activate *obligatorily* alternatives that ordinary indefinites activate *optionally* in particular contexts.[14] The presence of alternatives in the

[14] E.g. ordinary indefinites have 'Free Choice' construals in context such as:
(i) Pick a card [= pick any card]
(ii) You may borrow a book of mine [= you may borrow any of my books]

life of NPIs cannot be ignored and forces us to always factor them into their meaning, in a way that conditions their distribution. Variation (e.g. between NPIs and Free Choice Items) stems from the ways in which alternatives may be factored into meaning (i.e. the ways in which exhaustification takes place). However, in the present instance, the difference of concern is not internal to the polarity system. On the present view there is no difference between English vs. Italian weak NPIs

The approach to polarity we used to frame our discussion relies on a theory of why certain informationally trivial structures (for such are what NPI violations amount to) yield ungrammaticality, while others (typical tautologies/ contradictions) do not. As it turns out, many other phenomena rely on a notion of ungrammatical triviality, including for example weak island violations, if Abrusan is right. The present approach helps preserving a simple take on what ungrammatical triviality amounts to, namely tautologies/contradictions that can be determined on the basis of the functional skeleton of a sentence alone. Finally, we may begin to make sense of how languages differ with respect to *which* sets of constructions turn out to be ungrammatical triviliaties. Sentences with virtually identical meanings may differ on whether some aspect of presupposed meaning is also asserted or not; this may well make a construction sensitive to monotonicity flip in or out of (ungrammatical) contradictoryness. This addresses the mystery of how a sentence can be perfect in language A while its word-by-word translation may turn out to be contradictory in language B, without there being any difference in the meaning/presupposition of the content words readily accessible to introspection. We have a concrete illustration of the explanatory power of an approach to linguistic variation that focuses on *logical* properties (such as contradictoriness) compositionally induced by the functional lexicon. Differently put, the present approach, if correct, supports the view that semantics is more of an inferential apparatus than a referential one.

References

Abrusan, M. (2014) *Weak Island Semantics*, Oxford University Press.

Ahn, D. (2016) "NPI Intervention of *too*", in *Proceedings of Sinn und Bedeutung* 20.

Alonso Ovalle, L. and P. Menendez Benito (2015) *Epistemic Indefinites: Exploring Modality beyond the Verbal Domain*, Oxford University Press.

Chierchia, G. (1984) *Topics in the Syntax and Semantics of Infinitives and Gerunds*, Ph. D. Dissertation, University of Massachusetts at Amherst; reprinted in 2017, by Routledge, London and New York.

Chierchia, G. (2013) *Logic in Grammar*, Oxford University Press.

Djärv, K., J. Zehr, and F. Schwarz (2017) "Cognitive vs. Emotive Factive: An Experimental Differentiation," In R. Truswell (ed.) *Proceedings of Sinn un Bedeutung 21*, Edinburgh.

Dowty, D. (1979) *Word Meaning in Montague Grammar*, D. Reidel, Dordrecht.

Fox, D. (2007) "Free Choice and the Theory of Scalar Implicatures", in P. Stateva and U. Sauerland (eds) *Presuppositions and Implicatures in Compositional Semantics*,

---

FC uses of ordinary indefinites have presumably to go through the same semantic mechanism operative in the case of FC readings in general, which is, in fact, the activation of sub-domain alternatives. See Fox (2007), Chierchia 2013.

Palgrave-McMillan.
Fox, D. and M. Hackl (2007) “The Universal Density of Measurement,” Linguistics and Philosophy, 29.5: 537-86.
Homer, V. (2011) *Polarity and Modality*, Ph. D. Dissertation, UCLA.
Gajewski, J. (2002) “L-Analiticity and Natural Language”, ms. University of Connecticut.
Gajewski, J. (2011) "Licensing strong NPIs." *Natural Language Semantics* 19.2: 109-148.
Gajewski, J. (2016) “Another Look at NPIs in Definite descriptions: An Experimental Approach,” in P. Larrivee and C. Lee (eds) *Negation and Polarity: Experimental Perspectives*, Springer.
Kadmon, N. and F. Landman (1993) “Any,” *Linguistics and Philosophy*, 15: 353-422.
Kiparsky, P. and C. Kiparsky (1971) “Fact,” in D. Steinberg and L. Jakobovits (eds) *Semantics: An Interdisciplinary Reader in Philosophy, Linguistics and Psychology*, Cambridge University Press.
Klapheke, A. (2017) “NPI Intervention: Experimental Data”, ms, Harvard University.
Ladusaw, W. (1979) *Polarity Sensitivity as Inherent Scope Relation*, Ph. D. Dissertation, University of Texas at Austin.
Lee, Y. S. and L. Horn (1994) “Any as Indefinite plus Even”, ms, Yale University.
Lewis, D. (1974) “Causation,” *The Journal of Philosophy* 70.17: 556-567.
Ormazabal, J. (2005) “The Syntactic Distribution of Factive Complements,” *Recherches Linguistique de Vincennes*, 33: 91-110.
Romoli, J. (2015) “The presuppositions of soft triggers are obligatory scalar implicatures” *Journal of Semantics 32(2): 173-219*
Rooth, M. (1992) “A Theory of Focus Interpretation,” *Natural Language Semantics*, 1:75-117
Schwarz, F. (2015) “Experimental Perspectives on Presuppositions,” in F. Schwarz (ed) *Studies in Theoretical Psycholinguistics*, Springer.
Simons, M. (2007) “Observations on Embedding Verbs, Evidentiality, and Presupposition**,”** *Lingua* 117(6), 1034-1056
Von Fintel. K. (1999) “NPI-licensing, Strawson-entailment, and Context-dependency,” *Journal of Semantics* 16: 97-148.
Von Fintel, K. (2001) “Counterfactuals in a Dynamic Context”, in M. Kenstowicz (ed) *Ken Hale: A Life in Language*, MIT Press.
Yablo, S. (2006) "Non-catastrophic presupposition failure, " in J. Thompson and A. Byrne (eds) *Content and modality: Themes from the philosophy of Robert Stalnaker*, Oxford University Press.